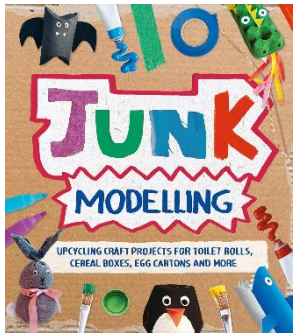
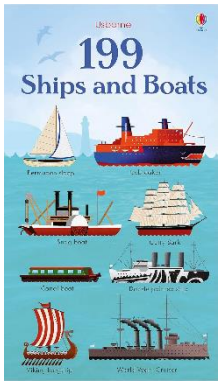
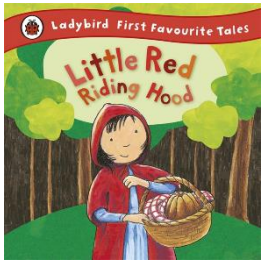
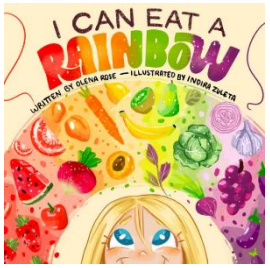
ST.ANNE'S COPP CHURCH OF ENGLAND PRIMARY SCHOOL, GREAT ECCLESTON

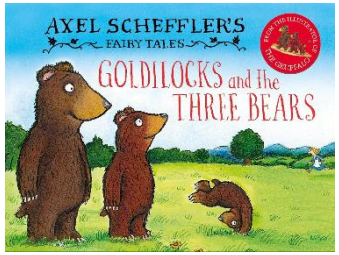
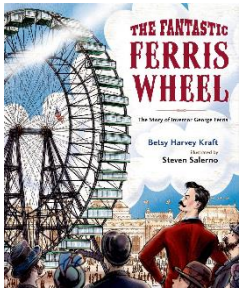
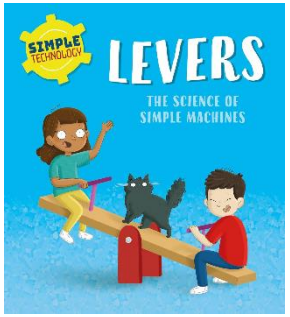
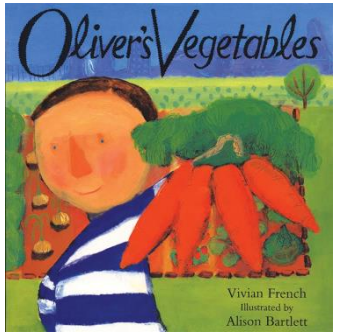
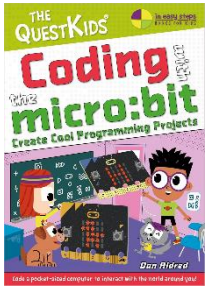
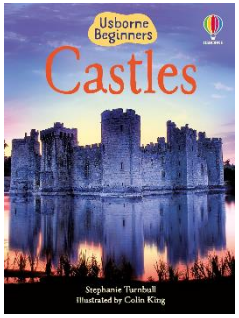
DESIGN TECHNOLOGY CURRICULUM

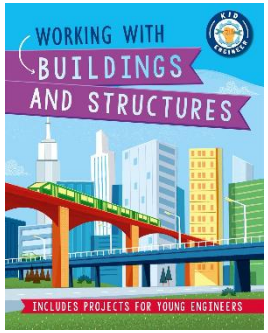
In building solid foundations for every unique individual and putting God's love at the centre of all we do, our children learn to embrace our diverse world. We encourage our children to learn universally in order to understand our heritage and roots as a village, town, region and nation. Through strong community links, our children grow in **compassion** and **understanding**, **promote justice** and possess commitment and **aspire** to make a positive difference. We offer an ambitious curriculum that ignites **curiosity** along with high personal expectations that fosters **resilience** and which enables them to flourish. Our children are easily distinguished by the **courage** they show when making brave choices and understand the importance of becoming the very best versions of themselves.

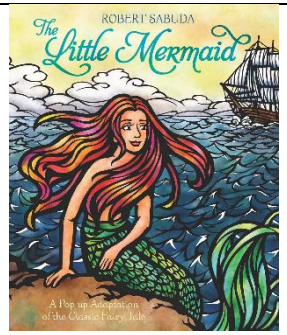
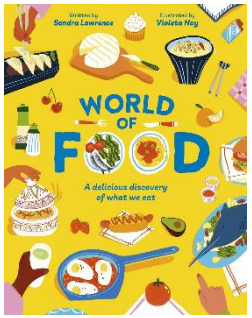
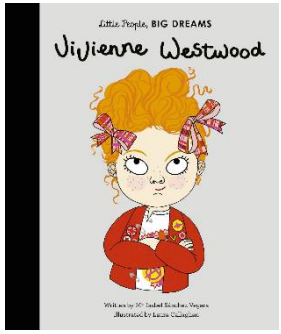
"Let us love, not in word, but in truth and action." (1 John 3:18)

Overview

	AUTUMN		SPRING		SUMMER	
EYFS	**Structures: Junk modelling** Exploring and learning about various types of permanent and temporary join. Pupils are encouraged to tinker using a combination of materials and joining techniques in the junk modelling area.	**Text:** 	Continue applying skills of junk modelling in continuous provision Seasonal crafts		**Structures: Boats** Exploring what is meant by 'waterproof', 'floating' and 'sinking', pupils experiment and make predictions with various materials to carry out a series of tests. They learn about the different features of boats and ships before investigating their shape and structures to build their own.	**Text:** 
Y1	**Structures: Constructing windmills** Construct a windmill to complete a request from a user. Develop an understanding of different types of windmill, how they work and their key features. Begin to use technical skills such as making evenly spaced cuts and adding weight	**Cross Curricular:** Maths- Shape	**Textiles: Puppets** Exploring different ways of joining fabrics before creating their own hand puppets based upon characters from a well-known fairytale. Children work to develop their technical skills of cutting, glueing,	**Cross curricular:** English- traditional tales **Text:** 	**Cooking and nutrition: Smoothies** Handle and explore fruits and vegetables and learn how to identify fruit, before undertaking taste testing to establish chosen ingredients for a smoothie they will make, with accompanying packaging.	**Cross curricular:** Science: Identifying and classifying. **Text:** 

	to ensure a successful structure.		stapling and pinning.			
Y2	**Structures: Baby bear's chair** Using the tale of Goldilocks and the Three Bears as inspiration, children help Baby Bear by making him a brand new chair. When designing the chair, they consider his needs and what he likes and explore ways of building it so that it is strong	**Text:**  **Cross curricular links:** Maths- shape	**Mechanisms: Fairground wheel** Designing and creating their own Ferris wheels, considering how the different components fit together so that the wheels rotate and the structures stand freely. Pupils select appropriate materials and develop their cutting and joining skills	**Text:**  **Cross curricular:** Maths- Shape and symmetry	**Mechanisms: Making a moving monster** After learning the terms; pivot, lever and linkage, children design a monster which will move using a linkage mechanism. Children practise making linkages of different types and varying the materials they use to bring their monsters to life	**Text:** 
Y3	**Cooking and nutrition: Eating seasonally** Pupils discover when and where fruits and vegetables are grown and learn about seasonality in the UK. They respond to a design brief to design a seasonal food tart using ingredients	**Text:**  **Cross curricular links:** Geography- Human and physical / climate zones	**Digital world: Wearable technology** Design, code and promote a piece of wearable technology to use in low light conditions, developing their understanding of programming to	**Text:**  **Cross Curricular links:** Computing: Design, write and debug	**Structures: Constructing a castle** Learning about the features of a castle, children design and make one of their own. Using configurations of handmade nets and recycled materials to make towers and turrets and	**Text:**  **Cross curricular link** **Cross curricular links:** Maths- shape

	harvested in the UK in May and June		monitor and control products to solve a design scenario	programs that accomplish specific goal History: Changes within living memory	constructing a base to secure them.	history- invaders
Y4	**Structures: Pavilions** Exploring pavilion structures, children learn about what they are used for and investigate how to create strong and stable structures before designing and creating their own pavilions, complete with cladding	**Cross Curricular links:** Maths- geometry/ shape **Text:** 	**Electrical systems: Torches** Applying their scientific understanding of electrical circuits, children create a torch, designing and evaluating their product against set design criteria.	**Cross Curricular links:** Science- electricity History of light bulb	**Mechanical systems: Making a slingshot car** Transforming lollipop sticks, wheels, dowels and straws into a moving car. Using a glue gun to, making a launch mechanism, designing and making the body of the vehicle using nets and assembling these to the chassis.	**Text:** 
Y5	**Mechanical systems: Making a pop-up book** Creating a four-page pop-up storybook design incorporating a range of mechanisms and decorative features, including: structures, levers, sliders, layers and spacers.	**Cross curricular links:** English fiction/ story writing for an audience	**Electrical systems: Doodlers** Explore series circuits further and introduce motors. Explore how the design cycle can be approached at a different starting point, by	**Cross curricular links:** Science- electrical circuit	**Cooking and nutrition: Developing a recipe** Research and modify a traditional bolognaise sauce recipe to improve the nutritional value. Cook improved version and create packaging that fits design criteria. Learn about where beef comes from	**Cross curricular links:** **Cross curricular links:** Mathematics: Statistics – Complete, read and interpret information in tables, including timetables Computing: Select, use and combine a variety of software

			investigating an existing product, which uses a motor, to encourage pupils to problem-solve and work out how the product has been constructed, ready to develop their own.			**Text:** 
Y6	**Textiles: Waistcoats** Selecting suitable fabrics, using templates, pinning, decorating and stitching to create a waistcoat for a person or purpose of their choice.	**Text:** 	**Structures: Playgrounds** **Designing and creating a model of a new playground** featuring five apparatus, made from three different structures. Creating a footprint as the base, pupils visualise objects in plan view and get creative with their use of natural features.		**Digital world: Navigating the world** Programming a navigation tool to produce a multifunctional device for trekkers. Combining 3D objects to form a complete product in CAD 3D modelling software and presenting a pitch to 'sell' their product.	

	Autumn	Spring	Summer

EYFS	**Structures: Junk modelling** Exploring and learning about various types of permanent and temporary join. Pupils are encouraged to tinker using a combination of materials and joining techniques in the junk modelling area.	**Vocab:** Join, Stick, Cut, Bend, Slot, Scissors, Measure, Materials, Fix **Cross curricular:** Maths- measure **Text:** Junk Modelling: Upcycling Craft Projects for Toilet Rolls, Cereal Boxes, Egg Cartons and More : Stanford, Sara: Amazon.co.uk: Books	Continue junk modelling applying skills. Seasonal crafts		**Structures: Boats** Exploring what is meant by 'waterproof', 'floating' and 'sinking', pupils experiment and make predictions with various materials to carry out a series of tests. They learn about the different features of boats and ships before investigating their shape and structures to build their own.	**Vocab:** Waterproof, Absorb, Prediction, Variable, Experiment, Investigation, Float, Sink, Junk **Cross curricular-** Science- floating and sinking **Text:** 199 Ships and Boats (199 Pictures): Amazon.co.uk: Kristie Pickersgill, Gabriele Antonini: 9781474986526: Books

	DESIGN	MAKE	EVALUATE	KNOWLEDGE

Junk Modelling	• Making verbal plans and material choices.	• Improving fine motor/scissor skills with a variety of materials. • Joining materials in a variety of ways (temporary and permanent). • Joining different materials together. • Describing their junk model, and how they intend to put it together.	• Giving a verbal evaluation of their own and others' junk models with adult support. • Checking to see if their model matches their plan. • Considering what they would do differently if they were to do it again. • Describing their favourite and least favourite part of their model.	• To know there are a range to different materials that can be used to make a model and that they are all slightly different. • Making simple suggestions to fix their junk model.

Y1	**Structures: Constructing windmills** Designing, decorating and building a windmill for their mouse client to live in, developing an understanding of different types of windmill, how they work and their key features.	**Vocab:** Axle, Base, Centre, Design, Evaluation, Equal, Evaluate, Middle, Rotate, Rotor, Rotor Blades, Sails, Same, Stable, Strong, Structure, Test, Weak, Wind, Windmill **Cross Curricular:** Maths- Shape	**Textiles: Puppets** Exploring different ways of joining fabrics before creating their own hand puppets based upon characters from a well-known fairytale. Children work to develop their technical skills of cutting, glueing, stapling and pinning.	**Vocab:** Decorate, Design, Fabric, Glue, Model, Hand puppet, Safety pin, Staple, Stencil, Template **Cross Curricular:** English- traditional tales **Text:** Little Red Riding Hood: Ladybird First Favourite Tales: Amazon.co.uk: Ross, Mandy: 9781409306313: Books	**Cooking and nutrition: Smoothies** Handle and explore fruits and vegetables and learn how to identify fruit, before undertaking taste testing to establish chosen ingredients for a smoothie they will make, with accompanying packaging.	**Vocab:** Blender, Fruit, Healthy, Ingredients, Recipe, Smoothie, Vegetable, Seed, Root, Leaf, Stem, Flavour, Design, Cut, Juice, Table knife, Juicer, Plant, Bush, Tree, Vine, Chopping board, Fork, Taste, Select, Blend, Evaluate, Compare **Cross curricular:** Science: Identifying and classifying. **Text:** I Can Eat a Rainbow (Children's Book Collection) : Rose, Olena: Amazon.co.uk: Books

STRUCTURES	• Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design	• Making stable structures from card, tape and glue. • Learning how to turn 2D nets into 3D structures. • Following instructions to cut and assemble the supporting structure of a windmill. • Making functioning turbines and axles which are assembled into a main supporting structure.	• Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't • Suggest points for improvements	• To understand that the shape of materials can be changed to improve the strength and stiffness of structures. • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • To understand that axles are used in structures and mechanisms to make parts turn in a circle. • To begin to understand that different structures are used for different purposes. • To know that a structure is something that has been made and put together • To know that a client is the person I am designing for. • To know that design criteria is a list of points to ensure the product meets the clients needs and wants. • To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. • To know that windmill turbines use wind to turn and make the machines inside work. • To know that a windmill is a structure with sails that are moved by the wind. • To know the three main parts of a windmill are the turbine, axle and structure.
TEXTILES	• Using a template to create a design for a puppet	• Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing the steps taken during construction.	• Reflecting on a finished product, explaining likes and dislikes.	• To know that 'joining technique' means connecting two pieces of material together. • To know that there are various temporary methods of joining fabric by using staples. glue or pins. • To understand that different techniques for joining materials can be used for different purposes.

				• To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • To know that drawing a design idea is useful to see how an idea will look.
COOKING AND NUTRITION	• Designing smoothie carton packaging by-hand.	• Chopping fruit and vegetables safely to make a smoothie. • Juicing fruits safely to make a smoothie.	• Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. • Comparing their own smoothie with someone else's.	• To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables is any edible part of a plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).

	Spring		Summer		Spring	
Y2	**Structures: Baby bear's chair**	**Vocab:**	**Mechanisms: Fairground wheel**	**Vocab:**	**Mechanisms: Making a moving monster**	**Vocab:**

	Using the tale of Goldilocks and the Three Bears as inspiration, children help Baby Bear by making him a brand new chair. When designing the chair, they consider his needs and what he likes and explore ways of building it so that it is strong	Function, Man-made, Mould, Natural, Stable, Stiff, Strong, Structure, Test, Weak **Cross curricular links:** Maths- 2D and 3D shape English- Traditional tales **Text:** Axel Scheffler's Fairy Tales: Goldilocks and the Three Bears: Amazon.co.uk: Scheffler, Axel, Scheffler, Axel: 9780702307850: Books	Designing and creating their own Ferris wheels, considering how the different components fit together so that the wheels rotate and the structures stand freely. Pupils select appropriate materials and develop their cutting and joining skills	Axle, Decorate, Evaluation, Ferris wheel, Mechanism, Stable, Strong, Test, Waterproof, Weak **Text:** The Fantastic Ferris Wheel: The Story of Inventor George Ferris eBook : Kraft, Betsy Harvey, Salerno, Steven: Amazon.co.uk: Kindle Store **Cross curricular:** Maths- Shape and symmetry	After learning the terms; pivot, lever and linkage, children design a monster which will move using a linkage mechanism. Children practise making linkages of different types and varying the materials they use to bring their monsters to life	Evaluation, Input, Lever, Linear motion, Linkage, Mechanical, Mechanism, Motion, Oscillating motion, Output, Pivot, Reciprocating motion, Rotary motion, Survey **Text:** Levers : Lennon, Liz, O'Shea, Ellie: Amazon.co.uk: Books

	DESIGN	MAKE	EVALUATE	KNOWLEDGE

Structures	• Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects.	• Making a structure according to design criteria. • Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper.	• Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure.	• To know that shapes and structures with wide, flat bases or legs are the most stable. • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily. • To know that natural structures are those found in nature. • To know that man-made structures are those made by people.
Mechanisms	• Selecting a suitable linkage system to produce the desired motion. • Designing a wheel.	• Selecting materials according to their characteristics. • Following a design brief.	• Evaluating different designs. • Testing and adapting a design.	• To know that different materials have different properties and are therefore suitable for different uses. • To know the features of a ferris wheel include the wheel, frame, pods, a base an axle and an axle holder. • To know that it is important to test my design as I go along so that I can solve any problems that may occur.
Mechanisms	• Creating a class design criteria for a moving monster.	• Making linkages using card for levers and split pins for pivots.	• Evaluating own designs against design criteria. • Using peer feedback to modify a final design.	• To know that mechanisms are a collection of moving parts that work together as a machine to produce movement.

	• Designing a moving monster for a specific audience in accordance with a design criteria.	• Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly.		• To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working. • To know that an output is the movement that happens as a result of the input. • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism is made up of a series of levers. • To know some real-life objects that contain mechanisms.

	Autumn		Spring		Summer	
Y3	**Cooking and nutrition: Eating seasonally**	**Vocab:** Arid, Climate, Complementary,	**Digital world: Wearable technology**	**Vocab:** Analogue, Analyse, Annotate, Badge, CAD,	**Structures: Constructing a castle**	**Vocab:** 2D shapes, 3D shapes, Castle,

	Pupils discover when and where fruits and vegetables are grown and learn about seasonality in the UK. They respond to a design brief to design a seasonal food tart using ingredients harvested in the UK in May and June	Country, Export, Import, Mediterranean, Mock-up, Mountain, Peel, Polar, Seasonal, Seasons, Snip, Temperate, Texture, Tropical, Weather **Cross curricular links:** Geography- Human and physical / climate zones **Text:** Oliver's Vegetables : French, Vivian, Bartlett, Alison: Amazon.co.uk: Books	Design, code and promote a piece of wearable technology to use in low light conditions, developing their understanding of programming to monitor and control products to solve a design scenario	Control, Design criteria, Develop, Digital, Digital revolution, Digital world, Display, Electronic, Fastening, Feature, Feedback, Form, Function, Initiate, Layers, Loops, Micro:bit, Monitor, Net, Point of sale, Product, Product concept, Program, Sense, Simulator, Smart, Technology, Test, User **Cross Curricular links:** Computing: Design, write and debug programs that accomplish specific goal History: Changes within living memory **Text:** Coding with the micro: bit - Create Cool Programming Projects : The QuestKids children's series (The QuestKids - In Easy Steps) : Aldred, Dan: Amazon.co.uk: Books	Learning about the features of a castle, children design and make one of their own. Using configurations of handmade nets and recycled materials to make towers and turrets and constructing a base to secure them.	Design criteria, Evaluate, Facade, FeatureFlag, Net, Recyclable, Scoring, Stable, Strong, Structure, Tab, Weak **Cross curricular links:** Maths- shape history- invaders **Text:** Castles (Beginners): Amazon.co.uk: Turnbull, Stephanie, Jackson, Ian: 9781474903189: Books

	DESIGN	MAKE	EVALUATE	KNOWLEDGE

Cooking and nutrition	• Designing a recipe for a savoury tart.	• Following the instructions within a recipe. • Tasting seasonal ingredients. • Selecting seasonal ingredients. • Peeling ingredients safely. • Cutting safely with a vegetable knife.	• Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart.	• To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions are known as a 'recipe'. • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country.. • To know that eating seasonal foods can have a positive impact on the environment. • To know that similar coloured fruits and vegetables often have similar nutritional benefits. • To know that the appearance of food is as important as taste.
Digital world	• Problem solving by suggesting which features on a micro:bit might be useful and justifying my ideas. • Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge. • Developing design ideas	• Following a list of design requirements. • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.	• Analysing and evaluating wearable technology. • Using feedback from peers to improve design.	• To understand that, in programming, a 'loop' is code that repeats something again and again until stopped. • To know that a micro:bit is a pocket-sized, codeable computer. • To know that a simulator is able to replicate the functions of an existing piece of technology. •To know what the 'Digital Revolution' is and features of some of the products that have evolved as a result. • To understand what is meant by 'point of sale display.' • To know that CAD stands for 'Computer-aided design'. • To know what a focus group is by taking part in one.

	through annotated sketches to create a product concept. • Developing design criteria to respond to a design brie			
Structures	• Designing a castle with key features to appeal to a specific person/purpose. • Drawing and labelling a castle design using 2D shapes, labelling: - the 3D shapes that will create the features - materials needed and colours. • Designing and/or decorating a castle tower on CAD software	• Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials	• Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs.	• To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures. • To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose. • To know that a façade is the front of a structure. • To understand that a castle needed to be strong and stable to withstand enemy attack. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product.

	Autumn	Spring	Summer

Y4	**Structures: Pavilions** Exploring pavilion structures, children learn about what they are used for and investigate how to create strong and stable structures before designing and creating their own pavilions, complete with cladding	**Vocab:** Aesthetic, Cladding, Design criteria, Evaluation, Frame structure, Function, Inspiration, Pavilion, Reinforce, Stable, Structure, Target audience, Target customer, Texture, Theme **Cross curricular links:** **Cross Curricular links:** Maths- geometry/ shape **Text:** Working with Buildings and Structures : Howell, Izzi: Amazon.co.uk: Books	**Electrical systems: Torches** Applying their scientific understanding of electrical circuits, children create a torch, designing and evaluating their product against set design criteria.	**Vocab:** Battery, Bulb, Buzzer, Cell, Component, Conductor, Copper, Design criteria, Electrical item, Electricity, Electronic item, Function, Insulator, Series circuit, Switch, Test, Torch, Wire **Cross Curricular links:** Science- electricity History of light bulb **Text:**	**Mechanical systems: Making a slingshot car** Transforming lollipop sticks, wheels, dowels and straws into a moving car. Using a glue gun to, making a launch mechanism, designing and making the body of the vehicle using nets and assembling these to the chassis.	**Vocab:** Aesthetic, Air resistance, Chassis, Design, Design criteria, Function, Graphics, Kinetic energy, Mechanism, Net, Structure **Text:** simple machines book for kids: simple machines wheels, levers, and pulleys force and motion physical book for kids 8-12 (physics books for kids) : BOOKSGEEK: Amazon.co.uk: Books

	DESIGN	MAKE	EVALUATE	KNOWLEDGE
Structures	• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight.	• Creating a range of different shaped frame structures. • Making a variety of free standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials	•Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs.	• To understand what a frame structure is. • To know that a 'free-standing' structure is one which can stand on its own. • To know that a pavilion is a a decorative building or structure for leisure activities. • To know that cladding can be applied to structures for different effects. • To know that aesthetics are how a product looks. • To know that a product's function means its purpose. • To understand that the target audience means the person or group of people a product is designed for. • To know that architects consider light, shadow and patterns when designing.
Electrical systems	• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.	• Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria.	• Evaluating electrical products. • Testing and evaluating the success of a final product	• To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity that can be used to power products. • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit • To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens.

				• To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.
Mechanical systems	• Designing a shape that reduces air resistance. • Drawing a net to create a structure from. • Choosing shapes that increase or decrease speed as a result of air resistance. • Personalising a design	• Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design.	• Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.	• To understand that all moving things have kinetic energy. • To understand that kinetic energy is the energy that something (object/person) has by being in motion. • To know that air resistance is the level of drag on an object as it is forced through the air. • To understand that the shape of a moving object will affect how it moves due to air resistance. • To understand that products change and evolve over time. • To know that aesthetics means how an object or product looks in design and technology. • To know that a template is a stencil you can use to help you draw the same shape accurately. • To know that a birds-eye view means a view from a high angle (as if a bird in flight). • To know that graphics are images which are designed to explain or advertise something. •To know that it is important to assess and evaluate design ideas and models against a list of design criteria.

	Autumn		Spring		Summer	
Y5	**Mechanical systems: Making a pop-up book** Creating a four-page pop-up storybook design incorporating a range of mechanisms and decorative features, including: structures, levers, sliders, layers and spacers.	**Vocab:** Aesthetic, Computer-aided design (CAD), Caption, Design, Design brief, Design criteria, Exploded-diagram, Function, Input, Linkage, Mechanism, Motion, Output, Pivot, Prototype, Slider, Structure, Template **Cross curricular links:** English fiction/ story writing for an audience **Text:** The Little Mermaid: The classic fairy tale with super-sized pop-ups!: Amazon.co.uk: Sabuda, Robert: 9781471118586: Books	**Electrical systems: Doodlers** Explore series circuits further and introduce motors. Explore how the design cycle can be approached at a different starting point, by investigating an existing product, which uses a motor, to encourage pupils to problem-solve and work out how the product has been constructed, ready to develop their own.	**Vocab:** Circuit component, Configuration, Current, Develop, DIY, Investigated, Motor, Motorised, Problem solve, Product analysis, Series circuit, Stable, Target user **Cross curricular links:** Science- electrical circuit	**Cooking and nutrition: Developing a recipe (**6 lessons) Research and modify a traditional bolognese sauce recipe to improve the nutritional value. Cook improved version and create packaging that fits design criteria. Learn about where beef comes from	**Vocab:** Abattoir, Adaptation, Balanced, Beef, Brand, Cook, Cross-contamination, Develop, Enhance, Equipment, Farm, Label, Measure, Nutrient, Nutrition, Nutritional value, Preference, Press, Process, Safety, Theme **Cross curricular links:** Mathematics**:** Statistics – Complete, read and interpret information in tables, including timetables Computing: Select, use and combine a variety of software **Cultural links: Text:** World of Food: A delicious discovery of the foods we eat : Lawrence, Sandra, Noy, Violeta: Amazon.co.uk: Books

	DESIGN	MAKE	EVALUATE	KNOWLEDGE
Mechanical Systems	• Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book.	• Following a design brief to make a pop up book, neatly and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.	• Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement.	• To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms. • To know that a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.
Electrical systems	• Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. • Developing design criteria based on findings from investigating existing products. • Developing design criteria that clarifies the target user.	• Altering a product's form and function by tinkering with its configuration. • Making a functional series circuit, incorporating a motor. • Constructing a product with consideration for the design criteria. • Breaking down the construction process into steps so that others can make the product.	• Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. • Determining which parts of a product affect its function and which parts affect its form. • Analysing whether changes in configuration positively or negatively affect an existing product. • Peer evaluating a set of instructions to build a product	• To know that series circuits only have one direction for the electricity to flow. • To know when there is a break in a series circuit, all components turn off. • To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. • To know a motorised product is one which uses a motor to function. • To know that product analysis is critiquing the strengths and weaknesses of a product. • To know that 'configuration' means how the parts of a product are arranged.

Cooking and nutrition	• Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe. • Researching existing recipes to inform ingredient choices	• Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe	• Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups.	• To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed. • To know that recipes can be adapted to suit nutritional needs and dietary requirements. • To know that I can use a nutritional calculator to see how healthy a food option is. • To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. • To know that coloured chopping boards can prevent cross-contamination. • To know that nutritional information is found on food packaging. • To know that food packaging serves many purposes.

	Autumn		Spring		Summer	
Y6	**Textiles: Waistcoats** Selecting suitable fabrics, using templates, pinning, decorating and stitching to create a waistcoat for a person or purpose of their choice.	**Vocab:** Accurate, Adapt, Annotate, Design Design criteria, Detail, Fabric, Fastening, Knot Properties, Running-stitch, Seam, Sew, Shape, Target audience, Target customer, Template, Thread, Unique, Waistcoat, Waterproof **Text:** Vivienne Westwood: Little People, Big Dreams: 24 : Sanchez Vegara, Maria Isabel, Callaghan, Laura: Amazon.co.uk: Books	**Structures: Playgrounds** Designing and creating a model of a new playground featuring five apparatus, made from three different structures. Creating a footprint as the base, pupils visualise objects in plan view and get creative with their use of natural features	**Vocab:** Adapt Apparatus, Bench hook, Cladding, Coping saw, Design, Dowel, Evaluation, Feedback, Idea, Jelutong, Landscape, Mark out, Measure, Modify, Natural materials, Plan view, Playground, Prototype, Reinforce, Sketch, Strong, Structure, Tenon saw, Texture, User, Vice, Weak **Text:** Ways into Technology: Playground Rides: Amazon.co.uk: Spilsbury, Richard, Spilsbury, Louise: 9780749680831: Books	**Digital world: Navigating the world** Programming a navigation tool to produce a multifunctional device for trekkers. Combining 3D objects to form a complete product in CAD 3D modelling software and presenting a pitch to 'sell' their product.	**Vocab:** 3D CAD, Application (apps), Boolean, Cardinal compass, Client, Compass, Concept, Convince, Corrode, Duplicate, Environmentally friendly, Equipment, Feature, Finite, Function, Functional, GPS tracker, If statement, Infinite, Investment, Lightweight, Loop, Manufacture, Materials (wood, metal, plastic etc.), Mouldable, Navigation, Non-recyclable, Product lifecycle, Product lifespan, Program, Recyclable, Smart, Sustainable, Sustainable design, Unsustainable design, Variable, Workplane

	DESIGN	MAKE	EVALUATE	KNOWLEDGE
Textiles	• Designing a waistcoat in accordance to a specification linked to set of design criteria. • Annotating designs, to explain their decisions	• Using a template when cutting fabric to ensure they achieve the correct shape. • Using pins effectively to secure a template to fabric without creases or bulges. • Marking and cutting fabric accurately, in accordance with their design. • Sewing a strong running stitch, making small, neat stitches and following the edge. • Tying strong knots. • Decorating a waistcoat, attaching features (such as appliqué) using thread. • Finishing the waistcoat with a secure fastening (such as buttons). • Learning different decorative stitches. • Sewing accurately with evenly spaced, neat stitches.	• Reflecting on their work continually throughout the design, make and evaluate process.	• To understand that it is important to design clothing with the client/ target customer in mind. • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches.
Structures	• Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.	• Building a range of play apparatus structures drawing upon new and prior knowledge of structures. • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures.	• Improving a design plan based on peer evaluation. • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure	• To know that structures can be strengthened by manipulating materials and shapes. • To understand what a 'footprint plan' is. • To understand that in the real world, design , can impact

				users in positive and negative ways. • To know that a prototype is a cheap model to test a design idea.
Digital world	• Writing a design brief from information submitted by a client • Developing design criteria to fulfil the client's request • Considering and suggesting additional functions for my navigation tool • Developing a product idea through annotated sketches • Placing and manoeuvring 3D objects, using CAD • Changing the properties of, or combine one or more 3D objects, using CAD	• Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo) • Explaining material choices and why they were chosen as part of a product concept • Programming an N,E, S,W cardinal compass	• Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool • Developing an awareness of sustainable design • Identifying key industries that utilise 3D CAD modelling and explain why • Describing how the product concept fits the client's request and how it will benefit the customers • Explaining the key functions in my program, including any additions • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch	• To know that accelerometers can detect movement • To understand that sensors can be useful in products as they mean the product can function without human input • To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request • To know that 'multifunctional' means an object or product has more than one function • To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing

			• Demonstrating a functional program as part of a product concept	