Whipton Barton Federation Design Technology Long Term Curriculum Map

At Whipton Barton Federation, our Design and Technology curriculum aims to ignite curiosity and creativity in our pupils, inspiring them to become innovative and resourceful thinkers. Through a structured and progressive approach, we aim to foster an understanding of the product design cycle, allowing pupils to explore the stages of ideation, creation, and evaluation. We want children to feel confident taking risks, experimenting with ideas, and evaluating both their own and others' work.

The curriculum is designed to develop not only the technical and practical expertise required for everyday tasks but also the critical thinking and problem-solving skills needed to thrive in an increasingly technological world. As pupils progress, they will gain an appreciation for the impact of design and technology on their daily lives and understand the importance of sustainability, functionality, and aesthetics in the world around them.

Our vision is to empower pupils to become forward-thinking, enterprising citizens who are equipped with the skills necessary to contribute to future design advancements. This will be achieved by building a strong foundation in six key areas, which are revisited throughout the curriculum with increasing complexity:

Cooking and Nutrition, Mechanisms/Mechanical Systems, Structures, Textiles, Electrical Systems (KS2 only), and the Digital World (KS2 only).

The Design and Technology curriculum follows the National Curriculum's Programme of Study and is structured around four key strands that run through all year groups:

Design

- Research existing products and identify the needs of users.
- Develop design criteria, considering both functional and aesthetic requirements.
- Generate ideas through sketches, prototypes, and models (physical and digital).
- Innovate and create fit-for-purpose solutions to design problems.
- Use tools such as cross-sectional diagrams, exploded diagrams, and templates to communicate ideas.

Make

- Select and use appropriate tools, materials, and equipment for different tasks.

- Understand the properties of materials and components, including those used in cooking and nutrition.
- Carry out practical tasks with precision, focusing on health and safety.
- Work with a variety of materials and processes, including shaping, decorating, and assembling products.

Evaluate

- Investigate and analyse existing products.
- Test, evaluate, and critique designs against established criteria.
- Reflect on personal work and the work of others to make improvements.
- Study the impact of key individuals, events, and inventions in design history.

Technical Knowledge

- Understand the principles behind mechanisms, structures, electrical systems, and digital technology.
- Apply knowledge of materials, tools, and components to real-world design challenges.
- Learn the basics of food preparation and cooking, including the principles of healthy eating and the origins of food.

Each strand is developed progressively, with children responding to design briefs that require them to consider the needs of others and work through the design process. This approach helps build and apply a broad repertoire of skills, knowledge, and understanding.

The **design process** is central to our curriculum, with pupils engaging in the stages of **Design**, **Make**, and **Evaluate**, underpinned by technical knowledge. This enables them to create high-quality prototypes and products, continually refining their skills and reflecting on their learning. The curriculum is structured as a spiral, revisiting key concepts and challenges to allow pupils to build on prior knowledge and enhance their understanding.

Early Years:

Children in our Reception classes begin to develop their understanding of Design and Technology from the very beginning. Through the safe use of scissors, paintbrushes, playdough modelling tools, and construction materials, children learn 'the best tools for the job'. Throughout the year, children have access to a well-resourced creative area where they design and make their own models; it is here they discover the joys of PVA glue compared to a glue stick or masking tape compared to sticky tape.

In the Spring term of Reception, children are introduced to a project where they design, make, and evaluate their own chairs for Baby Bear. They select the tools they need to join their components together, developing problem-solving skills and an understanding of how different materials and joining methods work in a practical context. This experience forms the foundation for more complex design and technology projects as they progress through the school. In the Summer term of Reception, Reception children are introduced to their 'Healthy, Happy Me' topic which includes looking at eating a healthy, balanced diet. This topic introduces the children to the different food groups needed for a healthy diet and forms the foundation of nutritional knowledge which is built on as they progress through the school.

Key Areas of Focus:

1. **Cooking and Nutrition**
   Pupils will explore the principles of healthy eating, understand the nutritional value of different foods, and develop cooking skills that allow them to prepare balanced meals. They will study the relationship between diet and health, learning where food comes from and the importance of seasonality.
2. **Mechanisms/Mechanical Systems**
   Pupils will design and make models with moving parts, understanding the mechanics behind levers, pulleys, gears, and cams.
3. **Structures**
   Pupils will investigate and design structures that can support loads, learning about materials, shapes, and stability.
4. **Textiles**
   Pupils will design, make, and evaluate textile-based products, developing skills in sewing, weaving, and other fabric manipulation techniques.
5. **Electrical Systems (KS2 only)**
   In Key Stage 2, pupils will explore the principles behind electrical circuits, learning how to use basic components like bulbs, buzzers, and motors to create functioning products.
6. **Digital World (KS2 only)**
   Pupils will be introduced to basic principles of programming, designing and creating interactive digital products that meet specific user needs.

Oracy in Design and Technology

We believe in the power of oracy to deepen learning and foster communication skills. Pupils will develop their speaking and listening skills by:

- Presenting their design ideas to different audiences.
- Explaining their preferences and the reasoning behind their design choices.
- Collaborating in groups, organising tasks, and sharing ideas.
- Critiquing their own and others' designs, offering constructive feedback.

- Reflecting on feedback to improve and adapt their products.
- Using new vocabulary to discuss their work and evaluate products.

By the end of their primary education, pupils at Whipton Barton Federation will:

- Have a comprehensive understanding of the functional and aesthetic properties of materials.
- Be able to use a range of tools and techniques to create high-quality products.
- Be equipped with the skills and confidence to evaluate their work and the work of others.
- Appreciate the importance of sustainability and the social and environmental impact of design decisions.
- Be knowledgeable about healthy eating and nutrition, and possess cooking skills to make informed choices about their diet.
- Demonstrate a clear understanding of key historical figures, events, and inventions in the world of design and technology.
- Be confident, reflective learners who can apply their skills to new challenges and real-world problems.

Our Design and Technology curriculum prepares children to actively participate in the technological world of the future, equipping them with the practical and creative skills needed to excel in a variety of fields. Through hands-on learning, critical thinking, and reflective practice, children will be ready to shape the world around them with ingenuity and confidence.

Year	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Reception	Children in our Reception classes begin to develop their understanding of Design and Technology from the very beginning. Through the safe use of scissors, paintbrushes, playdough modelling tools, and construction materials, children learn 'the best tools for the job'. Throughout the year, children have access to a well-resourced creative area where they design and make their own models; it is here they discover the joys of PVA glue compared to a glue stick or masking tape compared to sticky tape. In the Spring term of Reception, children are introduced to a project where they design, make, and evaluate their own chairs for Baby Bear. They select the tools they need to join their components together, developing problem-solving skills and an understanding of how different materials and joining methods work in a practical context. This experience forms the foundation for more complex design and technology projects as they progress through the school. In the Summer term of Reception, Reception children are introduced to their 'Healthy, Happy Me' topic which includes looking at eating a healthy, balanced diet. This topic introduces the children to the different food groups needed for a healthy diet and forms the foundation of nutritional knowledge which is built on as they progress through the school.					
	Term 1	**Term 2**	**Term 3**	**Term 4**	**Term 5**	**Term 6**
Year 1		**Unit:** **Mechanisms: Wheels and Axles**		**Unit:** **Textiles: Puppets**		**Unit:** **Structures: Constructing a windmill**
Knowledge		To know that wheels need to be round to rotate and move. To understand that for a wheel to move it must be attached to a rotating axle.		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 know that the sails or blades of a windmill are moved by the wind. To know that windmills are used to generate power and were used for grinding flour.

		To know that an axle moves within an axle holder which is fixed to the vehicle or toy. To know that the frame of a vehicle (chassis) needs to be balanced. To know some real-life items that use wheels.		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.		To know that a structure is something built for a reason. To know that stable structures do not topple. To know that adding weight to the base of a structure can make it more stable.
Skills		Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move. Creating clearly labelled drawings that illustrate movement. Adapting mechanisms. Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move.		Using a template to create a design for a puppet. Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. Sequencing steps for construction. Reflecting on a finished product, explaining likes and dislikes.		Finding the middle of an object. Puncturing holes. Adding weight to a structure. Creating supporting structures. Cutting evenly and carefully. Evaluating and improving a product.
Key Vocabulary		Axle, Axle holder, Chassis, Design, Evaluation, Fix, Mechanic, Mechanism, Model, Test, Wheel		Decorate, Design, Fabric, Glue, Model, Hand puppet, Safety pin, Staple, Stencil, Template		Base, Centre, Design, Equal, Evaluate, Middle, Rotate, Rotor, Rotor Blades,

						Sails, Same, Stable, Strong, Structure, Test, Weak, Wind, Windmill
National Curriculum Objectives	Design purposeful, functional, appealing products for themselves and other users based on design criteria. (Mechanisms - Wheels and Axles; Textiles – Puppets; Structures – Windmill) Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. (Mechanisms - Wheels and Axles; Textiles – Puppets; Structures – Windmill) Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. (Mechanisms - Wheels and Axles; Textiles – Puppets; Structures – Windmill) Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. (Mechanisms - Wheels and Axles; Textiles – Puppets; Structures – Windmill) Explore and evaluate a range of existing products. (Mechanisms - Wheels and Axles; Structures – Windmill) Evaluate their ideas and products against design criteria. (Mechanisms - Wheels and Axles; Textiles – Puppets; Structures – Windmill) Build structures, exploring how they can be made stronger, stiffer and more stable. (Structures – Windmill) Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. (Mechanisms - Wheels and Axles; Structures – Windmill) Use basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from.					
Year 2		**Unit:** **Textiles: Pouches**		**Unit:** **Mechanisms: Making a moving monster**		**Unit:** **Cooking and Nutrition: Balanced Diet**
Knowledge		To know that sewing is a method of joining fabric.		To know that mechanisms are a collection of moving parts that work together as a machine to produce movement.		To know that 'diet' means the food and drink that a person or animal usually eats. To know what makes a balanced diet.

		To know that different stitches can be used when sewing. To understand the importance of tying a knot after sewing the final stitch. To know that a thimble can be used to protect my fingers when sewing.		To know that there is always an input and an 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 that the five main food groups are: carbohydrates, fruits and vegetables, protein, dairy and oils and spreads. To know that I should eat a range of different foods from each food group, and roughly how much of each food group. To know that 'ingredients' means the items in a mixture or recipe. To know how to cut, grate, snip and spread to prepare foods. To know how to review and give a score to evaluate.
Skills		Designing a pouch. Selecting and cutting fabrics for sewing. Decorating a pouch using fabric glue or running stitch. Threading a needle. Sewing running stitch, with evenly spaced, neat, even stitches to join fabric.		Creating a design criteria for a moving monster as a class. Designing a moving monster for a specific audience in accordance with a design criteria. Making linkages using card for levers and split pins for pivots. Experimenting with linkages adjusting the widths, lengths and thicknesses of card used.		Chopping foods safely to make a wrap. Grating foods to make a wrap. Snipping smaller foods instead of cutting. Spreading soft foods to make a wrap. Identifying the five food groups. Learning about a balanced diet.

		Neatly pinning and cutting fabric using a template. Troubleshooting scenarios posed by teacher. Evaluating the quality of the stitching on others' work. Discussing as a class, the success of their stitching against the success criteria. Identifying aspects of their peers' work that they particularly like and why.		Cutting and assembling components neatly. Evaluating own designs against design criteria. Using peer feedback to modify a final design.		Tasting and evaluating different food combinations. Describing appearance, smell and taste. Designing three wrap ideas.
Key Vocabulary		Accurate, Fabric, Knot, Pouch, Running-stitch, Sew, Shape, Stencil, Template, Thimble		Evaluation, Input, Lever, Linear motion, Linkage, Mechanical, Mechanism, Motion, Oscillating motion, Output, Pivot, Reciprocating motion, Rotary motion, Survey		Appearance, Balanced, Carbohydrates, Combination, Dairy, Design, Design brief, Diet, Feel, Grate, Grater, Menu, Oils, Prepare, Proteins, Review, Scissors, Smell, Snip, Spread, Spreads
National Curriculum Objectives	Design purposeful, functional, appealing products for themselves and other users based on design criteria. (Textiles – Pouches; Mechanisms – Monsters; Cooking & Nutrition – Balanced Diet) Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. (Textiles – Pouches; Mechanisms – Monsters; Cooking & Nutrition – Balanced Diet) Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. (Textiles – Pouches; Mechanisms – Monsters; Cooking & Nutrition – Balanced Diet)					

	Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. (Textiles – Pouches; Mechanisms – Monsters; Cooking & Nutrition – Balanced Diet) Explore and evaluate a range of existing products. (Textiles – Pouches; Mechanisms – Monsters; Cooking & Nutrition – Balanced Diet) Evaluate their ideas and products against design criteria. (Textiles – Pouches; Mechanisms – Monsters; Cooking & Nutrition – Balanced Diet) Build structures, exploring how they can be made stronger, stiffer and more stable. Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. (Mechanisms – Monsters) Use basic principles of a healthy and varied diet to prepare dishes. (Cooking & Nutrition – Balanced Diet) Understand where food comes from. (Cooking & Nutrition – Balanced Diet)					
Year 3		**Unit:** **Mechanisms: Pneumatic Toys**		**Unit:** **Structures: Constructing a castle**		**Unit:** **Cooking and Nutrition: Eating seasonally**
Knowledge		To understand how pneumatic systems work. To understand that pneumatic systems can be used as part of a mechanism. To know that pneumatic systems operate by drawing in, releasing and compressing air.		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 know that seasonal means foods that grow in a given season in a given country. To know that some seasonal foods that grow in the UK and what season they grow in. To know that eating seasonal foods can have a positive impact on the environment. To know how to describe the flavour and texture of foods. To know how to cut and peel safely.

				To understand that a castle needed to be strong and stable to withstand enemy attack.		To know that the appearance of food is as important as taste. To know that similar coloured fruits and vegetables often have similar nutritional benefits.
Skills		Designing a toy that uses a pneumatic system. Developing design criteria from a design brief. Generating ideas using thumbnail sketches and exploded diagrams. Learning that different types of drawings are used in design to explain ideas clearly. Creating a pneumatic system to create a desired motion. Building secure housing for a pneumatic system. Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy.		Designing a castle with key features to appeal to a specific person/purpose. Drawing and labelling a castle design using 2D shapes. 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.		Describing how climate affects where foods grow. Identifying seasonal ingredients from the UK. Tasting seasonal ingredients. Describing the texture and flavour of ingredients. Peeling foods by hand or with a peeler. Cutting ingredients safely. Choosing ingredients based on a design brief. Following the instructions within a recipe. Describing the benefits of seasonal fruits and vegetables and their impact on the environment.

		Selecting materials due to their functional and aesthetic characteristics. Manipulating materials to create different effects by cutting, creasing, folding and weaving. Using the views of others to improve designs. Testing and modifying the outcome, suggesting improvements. Understanding the purpose of exploded-diagrams through the eyes of a designer and their client.		Suggesting points for modification of the individual designs.		
Key Vocabulary		Exploded-diagram, Function, Input, Lever, Linkage, Mechanism, Motion, Net, Output, Pivot, Pneumatic system, Thumbnail sketch		2D shapes, 3D shapes, Castle, Design criteria, Evaluate, Façade, Feature, Flag, Net, Recyclable, Scoring, Stable, Strong, Structure, Tab, Weak		Arid, Climate, Complementary, Country, Export, Import, Mediterranean, Mock-up, Mountain, Peel, Polar, Seasonal, Seasons, Snip, Temperate, Texture, Tropical , Weather
National Curriculum Objectives	Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. (Mechanisms – Pneumatic Toys; Structures – Castles) Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. (Mechanisms – Pneumatic Toys; Structures – Castles; Cooking & Nutrition – Eating Seasonally) Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. (Mechanisms – Pneumatic Toys; Structures – Castles; Cooking & Nutrition – Eating Seasonally)					

	Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. (Mechanisms – Pneumatic Toys; Structures – Castles; Cooking & Nutrition – Eating Seasonally) Investigate and analyse a range of existing products. (Mechanisms – Pneumatic Toys; Structures – Castles) Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. (Mechanisms – Pneumatic Toys; Structures – Castles) Understand how key events and individuals in design and technology have helped shape the world. (Mechanisms – Pneumatic Toys) Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. (Structures – Castles) Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. (Mechanisms – Pneumatic Toys) Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. Apply their understanding of computing to program, monitor and control their products. Understand and apply principles of a healthy and varied diet. (Cooking & Nutrition – Eating Seasonally) Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques. (Cooking & Nutrition – Eating Seasonally) Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. (Cooking & Nutrition – Eating Seasonally)					
Year 4		**Unit:** **Mechanisms: Slingshot car**		**Unit:** **Electrical Systems: Torches**		**Unit:** **Cooking and Nutrition: Adapting a recipe**
Knowledge		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.		Electrical conductors are materials which electricity can pass through. Electrical insulators are materials which electricity cannot pass through.		That the amount of an ingredient in a recipe is known as the 'quantity'. That safety and hygiene are important when cooking.

		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.		A battery contains stored electricity that can be used to power products. An electrical circuit must be complete for electricity to flow. A switch can be used to complete and break an electrical circuit.		The following cooking techniques: sieving, measuring, mixing/stirring, cutting out and shaping. The importance of budgeting while planning ingredients for a recipe. That products often have a target audience.
Skills		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.		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.		Evaluating and comparing a range of products. Following a baking recipe. Understanding safety and hygiene rules. Identifying a target audience. Designing a biscuit within a given budget. Suggesting modifications. Adapting a recipe. Conducting market research. Evaluating an adapted recipe.

Key Vocabulary		Aesthetic, Air resistance, Chassis, Design, Design criteria, Function, Graphics, Kinetic energy, Mechanism, Net, Structure		Battery, Bulb, Buzzer, Cell, Component, Conductor, Copper, Design criteria, Electrical item, Electricity, Electronic item, Function, Insulator, Series circuit, Switch, Test, Torch, Wire		Adapt, Addition, Budget, Buttery, Combine, Comment, Construct, Cream, Crunchy, Cuboid, Fold, Hygiene, Layout, Market research, Modify, Multiplication, Opinion, Pounds, Sieve, Sift, Target audience, Texture, Unique, Wooden spoon
National Curriculum Objectives	Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. (Mechanisms – Slingshot Car; Electrical Systems – Torches; Cooking & Nutrition – Adapting a recipe) Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. (Mechanisms – Slingshot Car; Electrical Systems – Torches; Cooking & Nutrition – Adapting a recipe) Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. (Mechanisms – Slingshot Car; Electrical Systems – Torches; Cooking & Nutrition – Adapting a recipe) Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. (Mechanisms – Slingshot Car; Electrical Systems – Torches; Cooking & Nutrition – Adapting a recipe) Investigate and analyse a range of existing products. (Mechanisms – Slingshot Car; Electrical Systems – Torches; Cooking & Nutrition – Adapting a recipe) Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. (Mechanisms – Slingshot Car; Electrical Systems – Torches; Cooking & Nutrition – Adapting a recipe) Understand how key events and individuals in design and technology have helped shape the world. (Mechanisms – Slingshot Car; Electrical Systems – Torches) Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. (Mechanisms – Slingshot Car) Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. (Electrical Systems – Torches) Apply their understanding of computing to program, monitor and control their products. (Cooking & Nutrition – Adapting a recipe)					

	Understand and apply principles of a healthy and varied diet. (Cooking & Nutrition – Adapting a recipe) Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques. (Cooking & Nutrition – Adapting a recipe) Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.					
Year 5		**Unit:** **Electrical Systems: Steady Hand Game**		**Unit:** **Mechanisms: Pop-up book**		**Unit:** **Cooking and Nutrition: Developing a recipe**
Knowledge		To know that 'form' means the shape and appearance of an object. To know the difference between 'form' and 'function'. To understand that 'fit for purpose' means that a product works how it should and is easy to use. To know that 'form over purpose' means that a product looks good but does not work very well. To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind. To understand the diagram perspectives 'top view', 'side view' and 'back'.		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.		That beef comes from cows reared on farms. That recipes can be adapted to suit nutritional needs and dietary requirements. That nutritional information is found on food packaging. That coloured chopping boards can prevent cross-contamination. That food packaging serves many purposes.

Skills		Designing a steady hand game, identifying and naming the components required. Drawing a design from three different perspectives. Generating ideas through sketching and discussion. Modelling ideas through prototypes. Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'. Constructing a stable base for a game. Accurately cutting, folding and assembling a net. Decorating the base of the game to a high-quality finish. Making and testing a circuit. Incorporating a circuit into a base. Testing their own and others' finished games, identifying what went well and making suggestions for improvement.		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.		Explaining the farm-to-fork process. Researching existing recipes. Suggesting alternative ingredients. Analysing nutritional content. Writing an alternative recipe. Understanding cross-contamination. Using preparation skills. Designing a jar label. Making a developed recipe

		Gathering images and information about existing children's toys. Analysing a selection of existing children's toys.				
Key Vocabulary		Assemble, Battery, Battery pack, Benefit, Bulb, Bulb holder, Buzzer, Circuit, Circuit symbol, Component, Conductor, Copper, Design, Design criteria, Evaluation, Fine motor skills, Fit for purpose, Form, Function, Gross motor skills, Insulator, LED, User		Aesthetic, Computer-aided design (CAD), Caption, Design, Design brief, Design criteria, Exploded-diagram, Function, Input, Linkage, Mechanism, Motion, Output, Pivot, Prototype, Slider, Structure, Template		Abattoir, Adaptation, Balanced, Beef, Brand, Cook, Cross-contamination, Develop, Enhance, Equipment, Farm, Label, Measure, Nutrient, Nutrition, Nutritional value, Preference, Press, Process, Safety, Theme
National Curriculum Objectives	Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. (Electrical Systems – Steady Hand Game; Mechanisms – Pop-Up Book; Cooking & Nutrition – Developing a recipe) Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. (Electrical Systems – Steady Hand Game; Mechanisms – Pop-Up Book; Cooking & Nutrition – Developing a recipe) Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. (Electrical Systems – Steady Hand Game; Mechanisms – Pop-Up Book; Cooking & Nutrition – Developing a recipe) Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. (Electrical Systems – Steady Hand Game; Mechanisms – Pop-Up Book; Cooking & Nutrition – Developing a recipe) Investigate and analyse a range of existing products. (Electrical Systems – Steady Hand Game; Mechanisms – Pop-Up Book; Cooking & Nutrition – Developing a recipe) Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. (Electrical Systems – Steady Hand Game; Mechanisms – Pop-Up Book; Cooking & Nutrition – Developing a recipe) Understand how key events and individuals in design and technology have helped shape the world. (Electrical Systems – Steady Hand Game; Cooking & Nutrition – Developing a recipe)					

	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. (Mechanisms – Pop-Up Book) Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. (Electrical Systems – Steady Hand Game) Apply their understanding of computing to program, monitor and control their products. (Cooking & Nutrition – Developing a recipe) Understand and apply principles of a healthy and varied diet. (Cooking & Nutrition – Developing a recipe) Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques. (Cooking & Nutrition – Developing a recipe) Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. (Cooking & Nutrition – Developing a recipe)					
Year 6		**Unit:** **Structures: Bridges**		**Unit:** **Textiles: Waistcoats**		**Unit:** **Cooking and Nutrition: Come dine with me**
Knowledge		To understand some different ways to reinforce structures. To understand how triangles can be used to reinforce bridges. To know that properties are words that describe the form and function of materials. To understand why material selection is important based on their properties.		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.		That 'flavour' is how a food or drink tastes. That many countries have 'national dishes' which are recipes associated with that country. That 'processed food' means food that has been put through multiple changes in a factory. That it is important to wash fruit and vegetables before eating to remove any dirt and insecticides.

		To understand the material (functional and aesthetic) properties of wood.				What happens to a certain food before it appears on the supermarket shelf (farm to fork).
Skills		Designing a stable structure that is able to support weight. Creating a frame structure with focus on triangulation. Making a range of different shaped beam bridges. Using triangles to create truss bridges that span a given distance and support a load. Building a wooden bridge structure. Independently measuring and marking wood accurately. Selecting appropriate tools and equipment for particular tasks. Using the correct techniques to saw safely. Identifying where a structure needs reinforcement and using card corners for support.		Designing a waistcoat in accordance with a specification and design criteria to fit a specific theme. Annotating designs. Using a template when pinning panels onto fabric. Marking and cutting fabric accurately, in accordance with a design. Sewing a strong running stitch, making small, neat stitches and following the edge. Tying strong knots. Decorating a waistcoat – attaching objects using thread and adding a secure fastening. Learning different decorative stitches. Sewing accurately with even regularity of stitches.		Writing a recipe, explaining the key steps, method and ingredients. Including facts and drawings from research undertaken. Following a recipe, including using the correct quantities of each ingredient. Adapting a recipe based on research. Working to a given timescale. Working safely and hygienically with independence. Evaluating a recipe, considering: taste, smell, texture and origin of the food group. Taste testing and scoring final products. Suggesting and writing up points of improvements in productions. Evaluating health and safety in production to minimise cross contamination.

		Explaining why selecting appropriate materials is an important part of the design process. Understanding basic wood functional properties. Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. Suggesting points for improvements for own bridges and those designed by others.		Evaluating work continually as it is created.		
Key Vocabulary		Abutment, Accurate, Arched bridge, Beam bridge, Coping saw, Evaluation, File, Mark out, Material properties, Measure, Predict, Reinforce, Research, Sandpaper, Set square, Suspension bridge, Tenon saw, Test, Truss bridge, Wood		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		Balance, Bitter, Bridge method, Complement, Cookbook, Farm to fork, Method, Nationality, Reared, Research, Pairing, Preparation, Salty, Sour, Storyboard, Sweet, Umami
National Curriculum Objectives	Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. (Structures – Bridges; Textiles – Waistcoats; Cooking & Nutrition – Come dine with me) Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. (Structures – Bridges; Textiles – Waistcoats; Cooking & Nutrition – Come dine with me) Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. (Structures – Bridges; Textiles – Waistcoats; Cooking & Nutrition – Come dine with me)					

	Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. (Structures – Bridges; Textiles – Waistcoats; Cooking & Nutrition – Come dine with me) Investigate and analyse a range of existing products. (Structures – Bridges; Textiles – Waistcoats) Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. (Structures – Bridges; Textiles – Waistcoats; Cooking & Nutrition – Come dine with me) Understand how key events and individuals in design and technology have helped shape the world. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. (Structures – Bridges) Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. Apply their understanding of computing to program, monitor and control their products. Understand and apply principles of a healthy and varied diet. (Cooking & Nutrition – Come dine with me) Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques. (Cooking & Nutrition – Come dine with me) Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. (Cooking & Nutrition – Come dine with me)