

Design and Technology - Designing and making something, for someone, for some purpose.

	Who we are	How we express ourselves	How the world works	How the world works	Sharing the planet	Sharing the planet
Nursery CYCLE A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	<p>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.</p>	<p>Physical development Choose the right resources to carry out their own plan. Use one-handed tools and equipment, for example, making snips in paper with scissors.</p>	<p>Physical Development Use large-muscle movements to wave flags and streamers, paint and make marks. Expressive art and design Explore different materials freely, in order to develop their ideas about how to use them and what to make.</p>	<p>Understanding the World Explore how things work.</p>	<p>Expressive art 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, in order 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.</p>	<p>Expressive art and design Create closed shapes with continuous lines, and begin to use these shapes to represent objects.</p>
	Ongoing					
	Design		Make		Evaluate	
Nursery skills	With support, begin to design a product they want to create		Explore materials, textures, tools and techniques Age appropriate language for making		With support, reflect on products they have made Age appropriate language for analysing and evaluating	
	Who we are	How we express ourselves	Where we are in place and time	Where we are in place and time	Sharing the planet	Sharing the planet
Reception CYCLE A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	<p>Physical development Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.</p>	<p>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</p>	<p>Expressive Arts and Design Return to and build on their previous learning, refining ideas</p>	<p>Expressive Arts and Design Progress towards a more fluent style of moving, with developing control and grace.</p>	<p>Expressive Arts and Design Create collaboratively, sharing ideas, resources and skills</p>	<p>Expressive arts and design 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 Physical Development Use a range of small tools, including scissors, paintbrushes and cutlery</p>
	Ongoing					
	Design		Make		Evaluate	
Reception skills	Design a product they want to create		Explore, use and refine a variety of tools and techniques to express their ideas Create collaboratively, sharing ideas, resources and skills Age appropriate language for making		Return to and build on their previous learning, refining their ideas With support, reflects on how they have achieved their goals. Age appropriate language for analysing and evaluating	
	Who we are	How we organise ourselves	Where we are in place and time	Sharing the planet	How the world works	How we express ourselves
KS1 Cycle A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Project	Cooking and Nutrition	Mechanisms	Technical Knowledge	Design and Evaluate/ Exploring Textiles	Mechanisms	Cooking and Nutrition
	Understanding what makes a healthy plate. Designing and making healthy smoothies	Mechanisms (levers) - Design, make and build toys with moving parts. Design, make and build a pop up Christmas cards.	Building structures. Designing and making model houses/GFOL.	Use a range of materials and textiles. Designing and making a pencil case.	Mechanisms (wheels and axel) Inventing their own vehicle - moon buggies.	Exploring where food comes from. Designing a biscuit for a group in our community.

Knowledge (National Curriculum Element)	-use the basic principles of a healthy and varied diet to prepare dishes -understand where food comes from. -select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]	-design purposeful, functional, appealing products for themselves and other users based on design criteria -generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology -explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products	-build structures, exploring how they can be made stronger, stiffer and more stable -explore and evaluate a range of existing products -evaluate their ideas and products against design criteria	-select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] -select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics	-explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. -explore and evaluate a range of existing products -evaluate their ideas and products against design criteria	-understand where food comes from. -select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
Design (National Curriculum Element)	Planning of the smoothie (example: Look at the recipe and decide what equipment is needed).	Design a page in a pop up card based on a Christmas tradition. Decide what type of motion you want your pop up to be.	Generate a plan for the manufacture - teachers and students work together to plan how they are going to make the model structure. Use research to identify period features.	Complete research about to generate a set of design features and remit. Consider functionality and necessary components for design to be successful. Create sketch designs with annotations to explain choices.	Design a vehicle to a success criteria / design a vehicle with a template as a guide. Label different parts of the vehicle with key terminology, justifying choices of materials/components selected.	Use research to understand the different types of biscuit and the ingredients required to make a biscuit. Select the type of biscuit the children wish to make. Consider the intended consumer - what would they want from the product?
Make (National Curriculum Element)	Preparing themselves for a practical - washing hands, wearing aprons, safe use of knives to cut fruits, assembling the fruit, putting them in the blender and using the blender safely, washing up equipment safely.	Testing different linkages with card and split pins.	Students use resistant materials such as card and plastics to model their house. Use scissors, glue, tape and split pins to assemble the model.	Development of children's technical sewing skills. Children to learn how to complete a running stitch and overstitch. Practising skills (could practice a straight stitch and blanket stitch on paper beforehand for example). How to thread a needle and keep the needle threaded when sewing. Creation of the pencil case using materials selected.	Use modelling materials to create an outcome - a net template may be used to generate a 3D shape. Select equipment and assemble to ensure product meets design brief.	Using identified ingredients and recipe, create biscuit. Preparing themselves for a practical - washing hands, wearing aprons, safe use of equipment necessary for the creation of the biscuit. Health and safety processes strictly adhered to.
Evaluate (National Curriculum Element)	Sensory analysis of different seasonal fruits. Could rate them out of 5 for taste and texture. Discuss the process of making the smoothie and evaluate the overall taste.	Test different types of linkages through prototyping - reverse motion, parallel motion, crank and slider. Use card and split pins to create prototypes of these.	Students complete comparisons of their product against period structures - have they met the brief? What features are easily identified and similar? What is different? Why? What could be changed and how?	Students evaluate the effectiveness of their designs. Peer assessment - does it look like a pencil case? Does it have the features the case should have? Does the product successfully hold items like pencils and pens? What could be improved?	Peer assessment / self assessment of the designed vehicle. Testing the effectiveness of the final made vehicle - does it move? Does it meet the success criteria?	Consumer feedback - aesthetic quality of biscuit, quality of biscuit, taste of biscuit.
Technical Knowledge (National Curriculum Element)	Seasonal fruits, safe use of equipment, importance of sensory analysis, how to work safely in a kitchen, identification of equipment, safety and hygiene in the kitchen.	The movement of simple mechanisms - fixed and moving pivots, linkages, motion, levers, types of motion.	How different textiles can be used in the same construction. How freestanding structures can be made stronger, stiffer and more stable. Understanding the simple working characteristics of different materials and components.	Different sewing techniques - running stitch and blanket stitch. Different types of joining methods (not just stitching, but joining different materials through tape, glue, sewing...), designing with a success criteria in mind, what is evaluating, different stitch types, different fabric types, material components.	Properties of the materials being used for the modelling - card - easy to bend, easy to cut etc. Types of motion - the wheels move in a rotary motion etc. What is the purpose of a template. Why would people use templates to make lots of the same item? Health and Safety rules around using different tools and equipment.	Food ingredients should be combined according to their sensory characteristics.
Suggested Sequence	1. Research seasonal fruits. 2. Sensory analysis of fruits 3. Plan the smoothie 4. Make smoothie	1. Discuss what a lever / linkage is. Find examples within the classroom / school. 2. Prototype different linkages with card and split pins (parallel motion, reverse motion, crank and slider). Can students identify the difference between a fixed pivot and a moving pivot? 3. Students design their pop up book page and decide which linkage to use. How will it make the character move? 4. Students make the linkage and design their character. Add decoration for the background.	1. Planning the sequence of making as a class 2. Following these steps to create model airplanes with functioning propellers 3. Testing the function of the planes and documenting findings.	1. Research endangered animals. 2. Discuss characteristics of different animals and what they look like. 2. Provide drawing templates to help them with their design ideas. 3. Model each step of the making and then students make their ideas 4. Evaluate their own outcomes as well as others.	1. Discuss what a vehicle is - what is considered a vehicle? (transporting goods, usually on land). 2. Design a vehicle within set parameters (maybe a 3 wheeled vehicle, or a vehicle that moves very quickly). 3. Model the vehicle using modelling tools. 4. Test the vehicles and whether they move and evaluate.	1. Research different types of biscuits, their ingredients and recipes. 2. Design the aesthetic qualities of the biscuit using annotated sketches. 3. Make biscuit. 4. Consumer feedback and analysis.
Vocab	Seasonal, Sensory, Taste, Texture, Flavour, Blender, Knife, Chopping	Fixed and moving pivots, linkages, motion, levers.	Function, evaluate, test, stiffen, strengthen, stability, component	Running stitch, blanket stitch, Fabric, Needle, Sewing, Straight Stitch, Thread,	motion, vehicle, evaluate, wheels, modelling, designing, template, testing	Seasonal, Sensory, Taste, Texture, Flavour, Recipe, Ingredient, Aesthetic, Consumer
Suggested ATL	Research Skills - Researching seasonal fruits	Thinking - Critical thinking about different applications of motion.	Thinking - devising the plan of manufacture and the sequence they'll follow to make the model. Thinking about developments after testing their made item.	Communication Skills - Giving feedback in a kind way. Being able to describe the process they undertook using technical vocab?	Social Skills - Working with others to create an outcome.	Communication Skills - Giving feedback in a kind way. Being able to describe the process they undertook using technical vocab?
Useful Links	Food a fact of life	Technology Student - Linkages	NASA Aerodynamics		Technology Student - Motion	
Ongoing						
Year 1 Skills	Design	Make	Evaluate			
	Design a product for themselves following design criteria Beginning to explain the purpose of the products	Begin to plan the stages of making Beginning to select from a range of tools, equipment, materials and components With support assemble, join and combine materials and components together	Begin to make suggestions about how their products could be improved Talk about existing products			
Ongoing						
Year 2 Skills	Design	Make	Evaluate			
	Design products for themselves and others using design criteria Explain the purpose of the product	Plan the stages of making by suggesting what to do next Select from a range of tools, equipment, materials and components, explaining their choices Assemble, join and combine materials and components together	Suggest how their products could be improved Beginning to evaluate how good existing products are			

	Who we are	How we express ourselves	Where we are in place and time	How the world works	How we organise ourselves	Sharing the planet
LKS2 Cycle A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Project	Cooking and Nutrition	Structure	Electrical and Mechanical Systems	Stiff and Mouldable Sheet Materials	Textiles	Mouldable Materials
		Prepare a variety of dishes, using a range of cooking techniques.	Designing and building an Ironage structure.	Design and create a Greek catapult.	Create a model of a Greek temple.	Make a toga.
Knowledge (National Curriculum Element)	- Understand and apply the principles of a healthy and varied diet - prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques - understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	- 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 - Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately - generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional diagrams and prototypes - evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional diagrams and prototypes - Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages) - Understand how key events and individuals in design and technology have helped shape the world	- Sse research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose - Apply their understanding of how to strengthen, stiffen and reinforce more complex structures	- Select from and use a wider range of materials and components, including textiles and ingredients, according to their functional properties and aesthetic qualities - Investigate and analyse a range of existing products	- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose - Select from and use a wider range of tools and equipment to perform practical tasks accurately - Apply their understanding of how to strengthen, stiffen and reinforce more complex structures
Design (National Curriculum Element)	Using knowledge of healthy eating, design a dish with appropriate food choices (link to science). Consider the traffic light system on packaging.	Pupils develop their ability to use and apply different drawing and sketching techniques to design ideas for an Ironage structure based on a success criteria or a brief. Students could draw or sketch ideas that have come from inspiration images or reference photos. They can use annotations to describe their ideas in detail. They are able to develop their ideas, by making sensible and appropriate changes.	Pupils develop their ability to use and apply their mechanism will work. Pupils will create drawings of their design, annotating to share detail of design components in line with design brief. Pupils will evidence their growing knowledge of catapult functions, demonstrating how they will ensure it will be functional.	Students explain what would make the project successful. Students draw or sketch ideas that have come from inspiration using images or reference photos. They can use annotations to describe their ideas in detail and use ACCESS FM to support their writing.	Pupils apply drawing and sketching techniques to design a toga based on success criteria. Using historical sources, the drawings contain detail that can be interpreted and include annotations to describe their ideas in detail. They consider the size, shape and material for their toga and use this to analyse their work at the end of the project.	students research and design their own Roman pot, considering the mouldable materials they will use to create their pot. They will learn the skills of clay sculpting and generate an explicit design brief using their knowledge and use of artefacts and historical sources.
Make (National Curriculum Element)	Using a written recipe, make a healthy dish by measuring ingredients and cooking correctly. Children understand and apply the necessary health and safety rules when working with food. Children make an appealing product for their intended audience, meeting a food design brief.	Students use a range of materials to create an outcome. They practise different shaping and forming techniques, such as sawing, filing and cutting. They understand how different materials can be joined, such as with tape or glue. Children utilise their designs to ensure they are meeting the design brief.	Students will select and use a range of materials, using techniques to create an accurate catapult. They will consider how their components will be joined and consider how their design is a scale model of an original catapult used during the Greek period.	Students understand the specifications of the structure and what its intended use is. This helps to inform the selection of materials and the necessary joins required to make it a sturdy and rigid structure.	Students work with a range of fabrics to create their toga. This includes the use of sewing techniques and the use of a template to ensure their design is accurate in size. Students carefully consider how the materials may link and join and consider how the properties of the materials may influence their design e.g how the material may feel and consider the fabrics they wear and how that influence design.	Students use a range of sculpting techniques, accurately utilising tools to support their product creation and make links between their design, product and those of their intended product.
Evaluate (National Curriculum Element)	Evaluate against the Eatwell guide - could their dish be improved? Sensory test - how does the product taste? How does it look aesthetically? Has it met the design brief?	Students can reflect on their own work in an informed way. They can describe what they have made and the purpose of the product. They can describe whether it functions as intended. They are able to articulate the process they undertook, and why they did it this way, they can also suggest how they'd do it differently. They can describe what they like, what they don't like and what they'd change.	Students can reflect on their own work in an informed way. They can describe what they have made and the purpose of the product. They can describe whether it functions as intended. They are able to articulate the process they undertook, and why they did it this way, they can also suggest how they'd do it differently. They can make relevant links between their project and the real world.	Pupils make informed decisions about the success of their project using ACCESS FM - is it aesthetically pleasing? Does it meet the function of the structure? Have the materials used been successful?	Using a fashion show, children evaluate their own design and the designs of others, suggesting what they like and dislike and how they may make changes to their designs.	Students analyse their own work against the design brief, suggesting changes they could make, considering their likes and dislikes about their product. They can describe if it would function as intended.
Technical Knowledge (National Curriculum Element)	Students know a range of different foods, and can explain their own likes and dislikes. They understand where foods come from. They know that fruits and vegetables make up a part of a healthy diet and have a good understanding of the Eatwell Guide. They can undertake some basic food preparation practices, such as chopping, spreading or stirring, and more complex skills such as whisking or blending. They can use sensory analysis to talk about the taste, texture and smell of different foods. They can prepare dishes with a good level of skill.	Students should demonstrate that they can use specialist tools and equipment safely and confidently. Students are able to identify different materials, and can describe how they differ. They can explain why these materials are used for different items. They will be able to describe why things like structures would be built from strong materials, and explain what would happen if they were not built from strong materials.	Students will be able to describe why things like structures would be built from strong materials, and explain what would happen if they were not built from strong materials. They will use a reference picture to inform their design and describe how they have used it when designing their own product. Students will use some of the same practices in maths and apply them to DT. Examples are using a ruler to measure accurately, or using a ruler to accurately mark out.	Students can identify and describe the materials they use and why they have been selected. They can describe why they have designed the structure in the way they have and why the materials they have selected have been done so because they are strong. Children are able to explain what could happen if they selected materials with the wrong properties and demonstrate why the use of specialist equipment safely and confidently.	Students can justify the use of materials to create their toga, considering their properties in their justification. They draw on the designs of Ancient Greeks to inform their own designs and use specialist equipment safely and confidently during the Make stage. Students will apply skills learned in the wider curriculum to measure accurately.	Children can describe why the materials they have selected are easy to shape and can use specialist tools safely and confidently. They can name specialist equipment and what they are used for.
Suggested Sequence	1. Research and select a culinary dish, identifying a recipe and necessary ingredients. 2. Design own dish, inspired by research. 3. Make dish. 4. Evaluate dish, considering aesthetic evaluation, sensory evaluation and meeting of brief.	1. Identify features of Stone Age structures and necessary design features. 2. Design structure, identifying the types of materials required, justifying annotated sketches. 3. Construct design. 4. Evaluation	1. Research catapult design using images and diagrams of catapult. 2. From design through drawing and generate model. 3. Select materials and make catapult. 4. Evaluate product - is it functional?	1. Research/explore temple designs and the features of a temple. 2. Design the temple using the specifications identified in the initial research phase. 3. Select appropriate materials to build structure. 4. Evaluate design against brief using ACCESS FM.	1. Research/explore temple designs of Ancient Greek togas. 2. Design their toga using the specifications identified in the initial research phase. 3. Select appropriate materials and use templates and sewing techniques to create toga. 4. Evaluate design against brief using ACCESS FM - the aesthetics of the product, the size of the product and the manufacture of the product.	1. Research and design a Roman pot using artefacts and historical sources to inform design. 2. Use malleable materials (clay) to create pot. 3. Evaluate design and its functional properties.

Vocab	Measure, Roll, Mix, nutrition, Eatwell Plate, healthy, protein, carbohydrate	Measure, saw, stiffness, component, design feature, structure, sturdiness, strength	Lever, axes, motions, prototype, functional, purposeful, model, joining, component, strong, rigid, design criteria	Purposeful, functional, material, properties, rigid, tough, research, specification	Pattern, drawing, develop, cutting, material, textiles, aesthetics, needle, thread	Malleable, product, purposeful, aesthetics, function, material, research, strong
Suggested ATL	Thinking - How can the product be improved?	Self-managment - resilience when cutting as it is a new skill.	Research - Finding existing ways of collecting water	Thinking - what necessary temple features should be included to make the design as authentic as possible?	Social - working in groups to create a toga	Research - using a variety of historical sources and artefacts to support designing Roman pot.
Useful Links						
	Ongoing					
	Design		Make		Evaluate	
Year 3 Skills	Generate realistic ideas considering its purpose Design products beginning to take into account the needs of others		Order the main stages of making with some support Select suitable and appropriate tools, equipment, materials and components, beginning to think about their purpose Perform practical tasks, beginning to develop some accuracy		Begin to use their design criteria to evaluate their completed product Begin to evaluate existing products	
	Ongoing					
	Design		Make		Evaluate	
Year 4 Skills	Design products that take into account the needs and wants of particular individuals and groups Develop their own design criteria and use these to inform their ideas		Order the main stages of making Select suitable and appropriate tools, equipment, materials and components, thinking about their purpose Perform practical tasks with some accuracy		Use design criteria to evaluate their completed product Evaluate existing products	
	Who we are	Sharing the planet	Where we are in place and time	How the world works	How we organise ourselves	How we express ourselves
UKS2 Cycle A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Project	Cooking and Nutrition	Textiles	Mechanical Mechanisms	Mechanical Mechanisms	Electrical Mechanisms	Structural mechanisms
	Celebration of cultures to create a selection of healthy dishes from around the world.	Use the properties of fabric to design and make clothing inspired by the Vikings.	Design an industrial machine.	Create an industrial machine.	Billboard design for a futuristic world.	Make a Viking longboat.
Knowledge (National Curriculum Element)	- understand and apply the principles of a healthy and varied diet - prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques - select from and use a wider range of materials and components, including ingredients, according to their functional properties and aesthetic qualities	- select from and use a wider range of materials, including textiles, according to their functional properties and aesthetic qualities - 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 - select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately	- 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 - understand how key events and individuals in design and technology have helped shape the world - understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages) - investigate and analyse a range of existing products	- Understand that mechanical systems have an input, process and output. - select from and use a wider range of materials and components, including construction materials according to their functional properties and aesthetic qualities - select from a wide range of tools, equipment, materials and components, thinking about their purpose and functionality	- understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors) - generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams - apply their understanding of computing to program, monitor and control their products.	- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams and prototypes - evaluate their ideas and products against their own design criteria and consider the views of others to improve their work - apply their understanding of how to strengthen, stiffen and reinforce more complex structures
Design (National Curriculum Element)	Understand and design a cultural dish that applies the principles of a healthy and varied diet.	Use knowledge of historical design to influence their designs. Make design decisions considering the resources available, using their research to influence this. Think about the features of their design that will appeal to the intended user and use annotated sketches to articulate and justify this. Select materials carefully with the product's intended use in mind.	Design an innovative and functional industrial machine that uses cams and pulleys. Children will learn and draw on their knowledge of how cams and pulleys work and generate a design specification to enable them to clearly explain how their product will work using annotated sketches and diagrams, highlighting the materials they will use and why.	Children will implement their design of an innovative and functional industrial machine that uses cams and pulleys.	To design their own billboard structure in response to a theme or brief. To label their design using appropriate technical language like circuit, insulator and conductor.	Make design decisions considering resources. Select materials carefully, considering the intended use of the product and functionality. Use annotated sketches and clearly explain how parts of the design will work and how they are fit for purpose.
Make (National Curriculum Element)	Children understand and apply the necessary health and safety rules when working with food. Children make an appealing product for their intended audience, meeting a food design brief.	Revision and practise of basic stitches and evaluate their use before learning new and a variety of techniques that could be applied to their design idea. Create a product/fashion garment, using the techniques revised and learned.	Children will produce a variety of cross-sectional and annotated sketches to design their chosen product, explaining and justifying their design choices, including their use of materials, method of construction and proposed tools and equipment they intend to use.	Children will select from a wide range of tools, materials and components precisely to create an industrial machine, inclusive of cams and pulleys for the entertainment of younger children. They will produce a suitable list of tools and use them safely. Children will need to be resourceful with problems that arise and make adaptations as they go.	Children use appropriate materials to create an electrical billboard in response to a design criteria.	Create, follow and adapt a detailed step-by-step plan, producing a suitable list of tool, equipment and materials needed. Select tools and materials precisely to make a Viking longboat.
Evaluate (National Curriculum Element)	Sensory analysis of product to check it meets the design criteria. Consider what changes may be required to be made to improve the product and its overall taste and appearance.	Complete an evaluation to consider how well the children's products have been made, how well they fit, evaluate the materials used and how they fit.	Evaluate their product against a range of existing products, investigating the design of these further and how techniques or design features could be further embedded in their own designs.	Children will refer to their design criteria and specifications to evaluate their completed products through peer assessment.	Analyse the effectiveness of the billboard and identify strengths and areas for development - does it meet the success criteria? Does the product work? What did/did not work? Can the children suggest why? What would they do differently? Why were the materials used selected?	Test and evaluate their boat - does it float? Is the sail functional? What are the strengths and areas for development? As a consequence, is it fit for purpose? In what ways could the ship be improved?

Technical Knowledge (National Curriculum Element)	Draw on research to influence design. Explore how different ingredients may affect the overall product. Research variety of recipes to inform creation process. Importance of working safely. How to work in a kitchen. Equipment identification and use. Application of food safety and hygiene requirements. Food can be fresh, pre-cooked and packaged.	Use individual needs, wants and requirements for design. Make design choices regarding resources and select these materials carefully. Children make modifications as they go, ensuring they have selected appropriate materials that are fit for purpose. Children consider the aesthetics of their product, explaining their choices fully. Identify strengths and areas of development when evaluating, suggesting ways their product could be improved. Children will consider how different resources may have affected the product.	Draw on research and knowledge of industrial developments to influence design. Explore how mechanical systems create movement and why this is important in their design. Consider how the materials that will be used can be used to create useful characteristics of an effective product.	Understand how pulleys, gears and CAMs can be used to produce different types of movement and change the direction of the movement. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].	Properties of materials. How electrical systems can be integrated into basic design concepts. Identify features of a design that will appeal to the intended user. Select materials carefully, considering the intended use of the product and its functionality. Clearly explain how parts of their design will work and how they are fit for purpose.	Understand how to use learning from maths to help design and make products that work. Learn how to make strong, stiff structures and to reinforce and strengthen a 3D framework.
Suggested Sequence	1) Identify foods available and research common recipes to set own design criteria and recipe. 2) Create a cultural dish. 3) Analyse the product against design criteria, making suggestions of improvement and considering what worked well.	1) Research Viking design and identify products they have created to influence and finalise their design. 2) Identify the materials that will be used to form the products and the types of stitches that will be applied. 3) In groups, agree on design and begin to make product. 4) Evaluate product using a fashion show and peer assessment/feedback.	1) Undertake product research and consider how their design could be used to solve a problem. 2) Begin to design a product, using a series of cross-sectional drawings and annotated sketches. 3) Evaluate their chosen product against real-life products and consider how their design could be improved.	1) Select tools and materials appropriate to fulfil the design brief. 2) Make the entertainment box. 3) Evaluate, considering the design brief and whether the product is fit for purpose.	1) Use research to understand what a billboard is and how it works. 2) Design a billboard, suggesting what materials may be used and why. 3) Create an electrical billboard. 4) Evaluate the effectiveness of the billboard.	1) Research Viking longboats, the different types of ship structures, and the principles of longship design. 2) Build a longboat. 3) Test and evaluate longboats using class-designed criteria.
Vocab	Seasonal, texture, flavour	Fasten, fabric, design, knot, properties, running-stitch, sew, seam, target audience, target customer, thread, unique	Assembly diagram, cam, pulley, linkage, mechanism, component, follower	Assembly diagram, axle, bench hook, cam, clamp, component, dowel, drill bit, follower, frame, mechanism, set square, linkage, mark out, function	Insulator, circuit, conductor, electricity, flow, electrons	Stiffen, strengthen, reinforce, triangulation, stability, structure, apparatus, design brief, innovation, prototype, drawings, diagrams, functionality
Suggested ATL	Self-Management Skills	Research Skills Thinking Skills Social Skills	Communication Skills	Social Skills Thinking Skills	Research Skills Thinking Skills	Thinking Skills
Useful Links					Billboard design for a futuristic world.	
	Ongoing					
Year 5 Skills	Design	Make	Evaluate			
	Begin to use research to support the design of products Make design decisions considering time and resources	Create and follow a detailed step by step plan Select from and use a wider range of tools, equipment, materials and components, thinking about their purpose and functionality Perform practical tasks with mainly accuracy	Test and evaluate the final product Evaluate and discuss existing products			
	Ongoing					
Year 6 Skills	Design	Make	Evaluate			
	Design innovative, functional and appealing products when an intended audience in mind Develop simple design specifications to guide their thinking	Create, follow and adapt detailed step by step plans Select from and use a wider range of tools, equipment, materials and components, thinking about their purpose, functionality and aesthetic qualities Perform practical tasks accurately, using techniques that involves a number a steps	Test and evaluate their ideas and products against their original design specifications Complete thorough evaluations of existing products			
Extra Curricular	LAT Bake Off Primary Engineer Competition					