

Design and Technology Overview

**Food
Technology**

Structures

**Mechanical
Systems**

**Electrical
Systems**

Textiles

	Autumn	Spring	Summer
	EYFS		
Continuous Prevision	Construction kits Lego/wooden blocks Free Design & Using construction cards Complex kits involving screws/bolts/moving parts/den making materials (forest school/ outdoor) <u>Textiles</u> Children to use wooden boards with holes into accommodate different fixings such as hex nuts, screws and nails. Allen keys, stubby screwdrivers and hammers. Children to use soft surfaces such as polystyrene and cork for using hammers and nails (golf tees)		
	Structures	Food	Textiles
	Junk Modelling – Houses 	Food - Make a fruit kebab 	Weaving 
Vocabulary	Build, make, design, tall, short, strong, weak, design, make, evaluate, purpose, structure, fold, join, stick	Cut, apron, make, cook, pour, design, evaluate, healthy, peel	Weave, thread, wool, in, out, up, down, knot
Knowledge and skills to be explored	- Explore making mistakes with structures and how we can amend - Work collaboratively on design and problem-solve. - Have an understanding of risks and how we reduce them e.g a structure falling - Discuss what the user would like/need.	- Develop problem-solving skills and work collaboratively on design - Explore making mistakes with cooking and how we can amend - Be aware of healthy eating and the importance of eating fruit and vegetables. - Have an understanding of risks and how we reduce them e.g wearing an apron - Discuss what the user would like/need and empathise with them e.g. would the user like nuts or chocolate. - Develop manipulation and control using cooking equipment,	- Use a variety of types of paper for children to tear, fold, join, make marks on and print on. - Grasp, hold and explore a range of equipment such as clay, finger paint, spoons, brushes and shells. - Select the appropriate resources to solve tasks - Use large and small motor skills to do things independently - Write about what they have designed and made through captions, labels, simple descriptions and explanations. - Explore a variety of materials and shapes and use all of their senses to investigate.

	• Empathise with users e.g. would the fairy like a pink door or a black one? • Use a variety of materials and equipment to build independently such as small tools to support precision • Develop manipulation and control by using large and small motor skills to do things independently. • Use a variety of materials and equipment to build such as small tools to support precision. • Use a range of simple tools that are used one-handed or two handed competently, safely and with confidence. • Have an understanding of risks and what we do to reduce them.	• Use large and small motor skills to do things independently e.g pour a drink • Play freely with cooking and food objects by stacking them and sorting them. • Explore a range of books linked to food. • Write about what they have designed and made through captions, labels, simple descriptions and explanations. • Have knowledge of recipes and using a method. • Explore and dissemble packaging when discussing existing products.	• Explore existing products. • Explore a range of books linked to textiles. • Encouraged to explore existing products. • Use a wide variety of materials as well as blocks, clay, soft wood, card, off cuts of fabric and materials with different textures for joining using appropriate tools. •			
	Year 1					
Units	Year 1 - Leavers and sliders	Year 1- Structures	Year 1 - Preparing fruit and vegetables			
Outcome	Design and make a moving storybook (Links to Geography topic)	Design and make an enclosure for an animal (Links to Geography topic)	Design and make a fruit/vegetable salad (Links to Science – seasons)			
Vocabulary	slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join pull, push, up, down, straight, curve, forwards, backwards design, make, evaluate, user, purpose, ideas, design criteria, product, function	Cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved metal, wood, plastic circle, triangle, square, rectangle, cuboid, cube, cylinder design, make, evaluate, user, purpose, ideas, design criteria, product, function	Fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria			
	Skills	Knowledge	Skills	Knowledge	Skills	Knowledge
Design	• Learn the importance of a clear design criteria and look at previous designs • Include individual preferences and requirements when designing • Communicate ideas using sketching, modelling, drawing, talk and mock ups/ICT where relevant • Designing a moving story book for a given audience	• Learning that levers and sliders are mechanisms and can make things move • Identifying whether a mechanism is a lever or slider and determining what movement the mechanism will make • Using the vocabulary: up, down, left, right, vertical and horizontal to describe movement	• Learning the importance of a clear design criteria and look at previous designs • Including individual preferences and requirements in a design • Communicate ideas using sketching, modelling, drawing, talk and mock ups/ICT where relevant	• Describing the purpose of structures • Learning how to turn 2D nets into 3D structures • Learning that the shape of materials can be changed to improve the strength and stiffness of structures • Understanding that cylinders/cubes/cuboids are strong types of structure that are often used for designing parks • Developing awareness of different structures for different purposes	Designing fruit salad packaging by-hand. • Learn the importance of a clear design criteria and look at previous designs • Include individual preferences and requirements when designing • Communicate ideas using sketching, modelling, drawing, talk and mock ups/ICT where relevant	• Understanding the difference between fruits and vegetables - Know the names of some fruits and vegetables • Know that fruit and vegetables are healthy • Describing and grouping fruits by texture and taste

	• Creating clearly labelled drawings which illustrate movement					
Make	• Following a design to create moving models that use levers and sliders • Adapting mechanisms • Select and use simple tools and equipment to perform a job e.g. marking out, cutting, joining and finishing; cut, shape and join paper and card. • Select from a range of equipment and materials according to their characteristics to create a chosen product.		• Making stable structures from card, tape and glue • Following instructions to cut and assemble the supporting structure of an enclosure • Making functioning parts which are assembled into a main supporting structure • Select from a range of equipment and materials according to their characteristics to create a chosen product. • Select and use simple utensils, tools and equipment to perform a job		• Chopping fruit and vegetables safely to make a smoothie (peeling fruit, chopping, slicing, grating and squeezing) • Select and use simple utensils, tools and equipment to perform a job • Identifying if a food is a fruit or a vegetable? • Learning where and how fruits and vegetables grow	
Evaluate	• Testing a finished product, seeing whether it moves as planned according to the purpose and if not, explaining why and how it can be fixed • Reviewing the success of a product by testing it with its intended audience against the design criteria, including the intended user		• Evaluating an enclosure according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't • Suggest points for improvements		• Tasting and evaluating different food combinations to determine the intended user's preferences for the product • Describing appearance, smell and taste • Suggesting information to be included on packaging • Evaluate their ideas throughout and finished products against design criteria, including intended user and purpose	
	Year 2					
Units	<u>Year 2 – Mechanical Structures.</u>	<u>Year 2 – Structures</u>			<u>Year 2- Templates and joining techniques</u>	
Outcome	Design and make a vehicle (moon buggy)	Design and make a chair for a special person to sit (King or Queen's throne)			Design and make a hand puppet	

	(Links to History – famous events topic)		(Links to the History – Famous People topic)		(Links to the Geography topic)	
Vocabulary	vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used design, make, evaluate, purpose, user, criteria, functional		cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder design, make, evaluate, user, purpose, ideas, design criteria, product, function		names of existing products, joining and finishing techniques, tools, fabrics and components template, pattern pieces, mark out, join, decorate, finish features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function	
	Skills	Knowledge	Skills	Knowledge	Skills	Knowledge
Design	• Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move • Creating clearly labelled drawings which illustrate movement • Creating a class design criterion for a moving vehicle for a specific audience • Selecting a suitable linkage system to produce the desired motions • Designing a wheel by selecting appropriate materials based on their properties • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through talking, mock-ups, ICT and drawings.	• Using the vocabulary: up, down, left, right, vertical and horizontal to describe movement • Identifying what mechanism makes a toy or vehicle roll forwards • Learning that for a wheel to move it must be attached to an axle • Learning that mechanisms are a collection of moving parts that work together in a machine • Learning that there is an input and output in a mechanism • Identifying mechanisms in everyday objects • Learning that a lever is something that turns on a pivot • Learning that a linkage is a system of levers that are connected by pivots • Exploring wheel mechanisms • Learning how axels help wheels to move a vehicle	• Generating and communicating ideas using sketching, talking, mock-ups, ICT and modelling • Learning about different types of structures found in the natural world and in everyday objects • Generate ideas based on simple design criteria and their own experiences, explaining what they could make	• Identifying natural and man-made structures • Identifying when a structure is more or less stable than another • Knowing that shapes and structures with wide, flat bases or legs are the most stable • Understanding that the shape of a structure affects its strength • Using the vocabulary: strength, stiffness and stability • Knowing that materials can be manipulated to improve strength and stiffness • Building a strong and stiff structure by folding paper	• Create a design template for a puppet • Generate ideas based on simple design criteria and their own experiences, explaining what they could make • Develop, model and communicate their ideas through talking, mock-ups, ICT and drawings for a puppet	• Joining items using fabric glue or stitching. Identifying benefits of these techniques • Threading a needle • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric • Neatly pinning and cutting fabric using a template • Learning different ways in which to join fabrics together: pinning, stapling, gluing
Make	• Adapting mechanisms • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used • Cutting and assembling components neatly • Selecting materials according to their characteristics to perform practical tasks, explaining their choices • Following a design brief		• Making a structure according to design criteria • Creating joints and structures from paper/card and tape. Selecting materials according to their characteristics to perform practical tasks, explaining their choices • Select new and materials, components,		• Cutting fabric neatly with scissors • Using joining methods to decorate a puppet • Sequencing steps for construction • Selecting and cutting fabrics for sewing • Decorating a puppet using fabric glue or running stitch • Selecting materials according to their characteristics to perform practical tasks, explaining their choices • Following a design brief • Use simple finishing techniques suitable for the products they are creating.	

	• Select new and materials, components, reclaimed materials and construction kits to build and create their products. • Use simple finishing techniques suitable for the products they are creating.		- recycled materials and construction kits to build and create their products. • Following a design brief • Use simple finishing techniques suitable for the products they are creating.			
Evaluate	• Evaluating own designs and that of others against design criteria • Using peer feedback to modify a final design • Evaluating different designs • Testing and adapting a design • Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed • Reviewing the success of a product by testing it with its intended audience • Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move		• 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		• Reflecting on a finished product, explaining likes and dislikes. Discuss how well it works in relation to the purpose, the user and whether it meets the original design criteria. • 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	
	Year 3					
Units	<u>Year 3 – Food</u> <u>Design and make a soup</u> <u>(Link to topic and Science - Healthy and varied diet)</u>	<u>Year 3 – Mechanical Systems</u> <u>Design and make a hydraulic character/system</u>	<u>Year 3 – Textiles</u> <u>Design and make a cushion (Ancient Greek style or character)</u>			
Outcome	- To discover when and where fruits, vegetables and herbs are grown and learn about seasonality in the UK. - Children to make a soup	- To create a hydraulic system learning how water is trapped can create a character with moving parts. - Pupils introduced to thumbnail sketches and exploded diagram.	- To design and make a cushion. - Introduce two new skills: cross stitch and applique. Pupils apply their knowledge to the design, decoration and assembly of their own cushions.			

Vocabulary	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet planning, design criteria, purpose, user, annotated sketch, sensory evaluations	components, fixing, attaching, tubing, syringe, plunger, split pin, paper fastener, pneumatic system, input movement, process, output movement, control, compression, pressure, inflate, deflate, pump, seal, air-tight, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, research, evaluate, ideas, constraints, investigate	names of existing products, joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish features, fasten, seam, wadding, hem, pins, needles, thread, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function			
	<u>Skills</u>	<u>Knowledge</u>	<u>Skills</u>	<u>Knowledge</u>	<u>Skills</u>	<u>Knowledge</u>
Design	Creating a healthy and nutritious recipe for a soup using seasonal ingredients, considering the taste, texture, smell and appearance of the dish • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific users • Use annotated sketches, prototypes, final product sketches and pattern pieces; communication technology, such as web-based recipes, to develop and communicate ideas	• Learning that climate affects food growth • Working with cooking equipment safely and hygienically • Learning that imported foods travel from far away and this can negatively impact the environment, • Learning that vegetables and fruit grow in certain seasons • Learning that each fruit and vegetable gives us nutritional benefits • Learning to use, store and clean a knife safely	• Designing an object which uses a hydraulic system • Developing design criteria from a design brief • Generating ideas using thumbnail sketches and exploded diagrams with annotations, prototypes, final product sketches and pattern pieces; communication technology where appropriate • Learning that different types of drawings are used in design to explain ideas clearly • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s.	• Understanding how hydraulic systems work • Learning that mechanisms are a system of parts that work together to create motion • Understanding that hydraulic systems can be used as part of a mechanism • Learning that hydraulic systems force air over a distance to create movement	• Designing and making a template from an existing cushion and applying individual design criteria • Generating ideas using thumbnail sketches and exploded diagrams with annotations, prototypes, final product sketches and pattern pieces; communication technology where appropriate • Learning that different types of drawings are used in design to explain ideas clearly • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific users	• Threading needles with greater independence • Tying knots with greater independence • Sewing cross stitch and appliqué • Understanding the need to count the thread on a piece of even weave fabric in each direction to create uniform size and appearance • Understanding that fabrics can be layered for affect • Understanding that there are different types of fastenings and what they are • Articulating the benefits and disadvantages of different fastening types
Make	• Knowing how to prepare themselves and a workspace to cook safely in, learning the basic rules to avoid food contamination • Following the instructions within a recipe • Select from and use finishing techniques suitable for the product they are creating. • Plan the main stages of making • Select from and use a range of appropriate utensils, tools and equipment with some accuracy related to their product • Select from and use finishing techniques suitable for the product they are creating		• Creating a hydraulic system to create a desired motion • Using syringes to create different types of hydraulic systems to make a functional and appealing product • Selecting materials due to their functional and aesthetic characteristics • Manipulating materials to create different effects by cutting, creasing, folding, weaving, • Select from and use finishing techniques suitable for the product they are creating • Select from and use a range of appropriate utensils, tools and equipment with some accuracy related to their product		• Following design criteria to create a cushion • Selecting and cutting fabrics with ease using fabric scissors • Sewing cross stitch to join fabric (if appropriate) • Decorating fabric using appliqué (if appropriate) • Completing design ideas with stuffing and sewing the edges • Selecting materials due to their functional and aesthetic characteristics • Manipulating materials to create different effects by cutting, creasing, folding, weaving • Select from and use finishing techniques suitable for the product they are creating • Select from and use a range of appropriate utensils, tools and equipment with some accuracy related to their product	

Evaluate	- 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 stew		- 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 - Evaluate the ongoing work and the final product with reference to the design criteria and the views of others		- Identifying aspects of their peers' work that they particularly like and why - Troubleshooting scenarios posed by the teacher - Evaluating the quality of the stitching on others' work - Discussing as a class, the success of their stitching against the success criteria - Evaluating an end product and thinking of other ways in which to create similar items	
	Year 4					
Unit	Year 4 – Textiles <u>Design and make a money container with fastenings</u>		Year 4 – Electrical Systems /Digital World. <u>Simple circuits and switches</u> <u>Design and make a torch</u>		Year 4 – Structures – <u>Design and make food packaging using CAD</u>	
Outcome	-Create a purse with a fasten, to build upon their sewing skills from previous years. Pupils will design a purse with fastenings, selecting the most appropriate for their design that is based on strength and use.		- Create a torch. - Pupils apply their specific understanding of electrical circuits to create a torch made from recycled and reclaimed objects. They design and evaluate their product using a set design criteria.		- Use Computer Aided Design (Word processor) to create their own food packaging design using 2D and 3D shapes. - Explore the structure of different packages, learn about what they are used for and investigate how to create strong and stable structures before designing and creating their own packaging.	
Vocabulary	fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces		series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip control, program, system, input device, output device user, purpose, function, prototype, design criteria, innovative, appealing, design brief		shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype	
	Skills	Knowledge	Skills	Knowledge	Skills	Knowledge
Design	- Designing and making a template from an existing purse and applying individual design criteria such as fastenings - Generate and clarify ideas through discussion with peers to develop design criteria to inform the design of products that are fit for purpose, aimed at	- Understanding that there are different types of fastenings and what they are - Articulating the benefits and disadvantages of different fastening types - Learning to sew blanket stitch to join fabric - Applying blanket stitch so the space between the	- Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas - Generate and clarify ideas through discussion with peers to develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups - Use annotated sketches and appropriate information and communication technology, where appropriate to develop and communicate ideas	- Learning how electrical items (torches) work - Identifying electrical products - Learning what electrical conductors and insulators are - Understanding that a battery contains stored electricity and can be used to power products - Identifying the features of a torch - Understanding how a torch works - Articulating the positives and negatives about different torches	- Designing packaging with key features to appeal to a specific person/purpose - Drawing and labelling a structure design using 2D shapes, labelling: -the 3D shapes that will create the features – materials/colours - Designing and/or decorating packaging on CAD software - Designing a structure that is aesthetically pleasing and selecting materials to create a desired effect - Building frame structures designed to support weight	- Identifying features of a structure - Identifying suitable materials to be selected and used for a structure, considering weight, compression and tension - Extending the knowledge of wide and flat based objects are more stable - Understanding the terminology of strut, tie, span and beam - Understanding the difference between frame and shell structure - Learning what the purpose of different buildings

	particular individuals or groups • Use annotated sketches and appropriate information and communication technology, where appropriate to develop and communicate ideas • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams	stitches are even and regular • Threading needles independently			• Designing and making a template from an existing model and apply design criteria • Generate and clarify ideas through discussion with peers to develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups • Use annotated sketches and appropriate information and communication technology, where appropriate to develop and communicate ideas	• Building on prior knowledge of net structures and broadening knowledge of frame structures • Learning that architects consider light, shadow and patterns when designing • Implementing frame and shell structure knowledge • Considering effective and ineffective designs
Make	• Making and testing a paper template with accuracy and in keeping with the design criteria • Measuring, marking and cutting fabric using a paper template • Selecting a stitch style to join fabric, working neatly sewing small neat stitches • Incorporating fastening to a design • Explain their choice of materials according to functional properties and aesthetic qualities • Select and use appropriate tools to measure, mark out, cut, score, shape and combine with some accuracy related to their products		• 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		• Constructing a range of 3D geometric shapes using nets • Creating special features for individual designs • Making a variety of different shaped and sized structures • Selecting appropriate materials/tools to build a strong structure and explain their choices for choosing according to functional properties and aesthetic qualities. • Reinforcing corners to strengthen a structure • Creating a design in accordance with a plan	
Evaluate	• Testing and evaluating an end product (materials, components and techniques) against the original design criteria/purpose • Deciding how many of the criteria should be met for the product to be considered successful • Suggesting modifications for improvement • Evaluating an end product and thinking of		• Evaluating electrical products • Testing and evaluating the success of a final product and taking inspiration from the work of peers Testing and evaluating an end product (materials, components and techniques) against the original design criteria/purpose the aesthetic of the finished product and in comparison to the original design		Testing and evaluating an end product (materials, components and techniques) against the original design criteria/purpose the aesthetic of the finished product and in comparison to the original design • Suggesting points for modification of the individual designs • Evaluating structures made by the class • Describing what characteristics of a design and construction made it the most effective • Considering effective and ineffective designs • Identify the strengths and areas for improvement in their work.	

	other ways in which to create similar items • Identify the strengths and areas for improvement in their work.					
	Year 5					
Unit	Year 5 – Food Technology.	Year 5 – Electrical Systems More complex switches and circuits.		Year 5 – Mechanical Systems Levers and linkages		
Outcomes	Design and make a stew with two elements. e.g beef stew	Create an electronic greeting card. Explore how circuits can be adapted for different purposes. Explore series of circuits and recreate one, using adhesive copper tape. Apply this knowledge to design and create an electronic Easter card.		Design and create a moving creature using levers and linkages Design a moving creature incorporating a range of functional mechanisms that use levers, sliders, layers and spacers to give the illusion of movement through interaction.		
Vocabulary	ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble, design specification, innovative, research, evaluate, design brief	series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart function, innovative, design specification, design brief, user, purpose		pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor circuit, switch, circuit diagram annotated drawings, exploded diagrams mechanical system, electrical system, input, process, output design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief		
	Skills	Knowledge	Skills	Knowledge	Skills	Knowledge
Design	- 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 - Generate innovative ideas through research including surveys, interviews and questionnaires and discussion with peers to develop a design brief	- Understanding where food comes from - learning that beef is from cattle and how beef is reared and processed - Understanding what constitutes a balanced diet - Learning to adapt a recipe to make it healthier - Comparing two adapted recipes using a nutritional calculator and then identifying the healthier option	- Designing an electrical vehicle with a circuit and components - Creating a labelled circuit diagram showing positive and negative parts in relation to the wires and the battery - Writing design criteria for an electrical vehicle - Compiling a mood board relevant to my chosen theme, purpose and recipient - Generate innovative ideas through research including surveys, interviews and questionnaires and discussion with peers to develop a design brief and criteria for a design specification. - Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. and, where appropriate, computer-aided design	- Learning the key components used to create a functioning circuit - Learning that copper is a conductor and can be used as part of a circuit - Understanding that breaks in a circuit will stop it from working - Explaining how a series circuit will work - Drawing a series circuit diagram and symbols	- Designing a moving creature which uses a mixture of structures and mechanisms. Ensure it's is purposeful, appealing and fit for purpose - Naming each mechanism, input and output accurately - Storyboarding ideas for the creature to add to its purpose and context - Generate innovative ideas through research including surveys, interviews and questionnaires and discussion with peers to develop a design brief and criteria for a design specification. - Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. and, where appropriate, computer-aided design	- Knowing that an input is the motion used to start a mechanism - Knowing that output is the motion that happens as a result of starting the input - Knowing that mechanisms control movement - Describing mechanisms that can be used to change one kind of motion into another

	and criteria for a design specification. • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. and, where appropriate, computer-aided design					
Make	• 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 • Produce detailed lists of equipment and fabrics relevant to their tasks .• Write a step-by-step plan, including a list of resources required. • Select from and use, a range of appropriate utensils, tools and equipment accurately to measure and combine appropriate ingredients, materials and resources		• Making a functional series circuit • Creating an electronic vehicle referring to a design criteria • Mapping out where different components of the circuit will go • Produce detailed lists of equipment and fabrics relevant to their tasks .• Write a step-by-step plan, including a list of resources required. • Select from and use, a range of appropriate utensils, tools and equipment accurately to measure and combine appropriate ingredients, materials and resources		• Following a design brief to make a moving creature, 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 • Produce detailed lists of equipment and fabrics relevant to their tasks .• Write a step-by-step plan, including a list of resources required. • Select from and use, a range of appropriate utensils, tools and equipment accurately to measure and combine appropriate ingredients, materials and resources	
Evaluate	• Identifying the nutritional differences between different products and recipes • Identifying and describing healthy benefits of food groups • Suggesting points for improvement and consider the views of others • Investigate and analyse products linked to their final product. • Compare the final product to the original design specification and record the evaluations. • Test products with intended user and critically evaluate the quality of the design,		• Evaluating a peer’s product against design criteria and suggesting modifications that could be made to improve the reliability or aesthetics of it or to incorporate another type of circuit component • State why electric cars might be used • Analysing and evaluating a range of existing electric vehicles • Suggesting points for improvement and consider the views of others • Investigate and analyse products linked to their final product. • Compare the final product to the original design specification and record the evaluations. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.		• Evaluating, investigate and analyse the work of others and receiving feedback on own work • Suggesting points for improvement and consider the views of others • Investigate and analyse products linked to their final product. • Compare the final product to the original design specification and record the evaluations. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.	

	manufacture, functionality and fitness for purpose.							
	Year 6							
Year 6	Year 6 – Mechanical Systems – Cams	Year 6 – Structures		Year 6 – Textiles		After SATs		
Outcome	<u>Design and make an automata product using CAMs</u> Use woodworking skills, pupils construct an automata: measuring and cutting their materials, assembling the frame, choosing cams and designing the characters that sit on the followers to form an interactive display.	<u>Create a bridge using different woodwork equipment and techniques</u> After learning about various types of bridges and exploring how the strength of structures can be affected by the shapes used, create their own bridge and test its durability – using woodworking tools and techniques.		<u>Design and make an item of clothing/memory sack using fastenings and holders using CAD</u> Create an item of clothing/memory sack (WW2) using computer aided design. Select fabrics, use templates, pins, decorate and stitch materials together to create an item for a person of their choosing. Create or use a pattern template to fit a desired person or item. (E.g. a teddy bear).		<u>Celebrating food and seasonality- Ready. Steady. Cook.</u> Research and prepare a three-course meal and taste test and score their food. Research the journey of their main ingredient from ‘farm to fork’ or write favourite recipe.		
Vocabulary	cam, snail cam, off-centre cam, peg cam, pear shaped cam follower, axle, shaft, crank, handle, housing, framework rotation, rotary motion, oscillating motion, reciprocating motion annotated sketches, exploded diagrams mechanical system, input movement, process, output movement design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief	frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, prototype		seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype		ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll.		
	Skills	Knowledge	Skills	Knowledge	Skills	Knowledge	Skills	Knowledge

Design	•Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement • Understanding how linkages change the direction of a force • Making things move at the same time • Understanding and drawing cross-sectional diagrams to show the inner-workings of the automata • Use research using surveys, interviews, questionnaires and web-based resources. to develop a design specification for a range of functional products. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. • Generate and develop innovative ideas and share and clarify these through discussion.	• Using a bench hook to saw safely and effectively • Exploring cams, learning that different shaped cams produce different follower movements • Exploring types of motions and direction of a motion	• Designing a stable structure that is able to support weight • Creating frame structure with focus on triangulation • Communicate ideas through annotated sketches and pictorial representations Use research using surveys, interviews, questionnaires and web-based resources. to develop a design specification for a range of functional products. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. Generate and develop innovative ideas and share and clarify these through discussion	• Exploring how to create a strong beam. Identifying arch and beam bridges and understanding the terms: compression and tension • Identifying stronger and weaker structures • Finding different ways to reinforce structures • Understanding how triangles can be used to reinforce bridges • Articulating the difference between beam, arch, truss and suspension bridges	• Designing an item of clothing/memory bag in accordance to specification linked to set of design criteria to fit a specific theme • Annotating designs • Designing a stuffed toy considering the main component shapes required and creating an appropriate template • Considering the proportions of individual components Use research using surveys, interviews, questionnaires and web-based resources. to develop a design specification for a range of functional products. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. Generate and develop innovative ideas and share and clarify these through discussion	• Learning to sew blanket stitch to join fabric • Applying blanket stitch so the space between the stitches are even and regular • Threading needles Independently • Learning different decorative stitches • Application and outcome of the individual technique • Sewing accurately with even regularity of stitches	• Writing a recipe, explaining the key steps, method and ingredients • Including facts and drawings from research undertaken Use research using surveys, interviews, questionnaires and web-based resources. to develop a design specification for a range of functional products. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. Generate and develop innovative ideas and share and clarify these through discussion	• Learning how to research a recipe by ingredient • Recording the relevant ingredients and equipment needed for a recipe • Understanding the combinations of food that will complement one another • Understanding where food comes from, describing the process of ‘Farm to Fork’ for a given ingredient
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Make	• Measuring, marking and checking the accuracy of the jelutong and dowel pieces (wooden pieces) required • Measuring, marking and cutting components accurately using a ruler and scissors • Assembling components accurately to make a stable frame • Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles • Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set • Use finishing and decorative techniques suitable for the product they are designing and making.		• Making a range of different shaped beam bridges • Using triangles to create truss bridges that span a given distance and supports 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 saws safely • Identifying where a structure needs reinforcement and using card corners for support • Explaining why selecting appropriating materials is an important part of the design process • Understanding basic wood functional properties • Use finishing and decorative techniques suitable for the product they are designing and making.		• Creating a 3D item from a 2D design • Measuring, marking and cutting fabric accurately and independently • Creating strong and secure item stitches when joining fabric • Using applique to attach pieces of fabric decoration • 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 an item attaching objects using thread and adding a secure fastening		• 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 • Use finishing and decorative techniques suitable for the product they are designing and making.	
Evaluate	• Evaluating the work of others and receiving feedback on own work • Applying points of improvements • Describing changes they would make/do if they were to do the project again - Continually evaluate and modify the working features of the product to match the initial design specification.		• 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 - Continually evaluate and modify the working features of the product to match the initial design specification. • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.		• Testing and evaluating an end product and giving point for further improvements • Evaluating work continually as it is created •Continually evaluate and modify the working features		• 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	

	• Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. • Test the system to demonstrate its effectiveness for the intended user and purpose.		• Test the system to demonstrate its effectiveness for the intended user and purpose.		of the product to match the initial design specification. • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. • Test the system to demonstrate its effectiveness for the intended user and purpose.		• Evaluating health and safety in production to minimise cross contamination Continually evaluate and modify the working features of the product to match the initial design specification. • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. • Test the system to demonstrate its effectiveness for the intended user and purpose.	
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