

Design and Technology Long Term Plan

EYFS

Physical Development

- Progress towards a more fluent style of moving, with developing control and grace.
- 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.

ELG

- Use a range of small tools, including scissors, paintbrushes and cutlery.

Expressive Arts and Design

- Explore, use and refine a variety of artistic effects to express their ideas and feelings.
- Return to and build on their previous learning, refining ideas and developing their ability to represent them.
- Create collaboratively, sharing ideas, resources and skills.

ELG

- 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.

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Autumn 1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	London (Mechanisms)	History of London (Food Technology)	Prehistoric Life (Food Technology)	Riotous Royals (Textiles)	Ring around the Rosie (Food Technology)	We Need You! (Structures)
Big Question	<ul style="list-style-type: none"> What would the world be like without cars? 	<ul style="list-style-type: none"> How does what I eat have an effect on climate change? 	<ul style="list-style-type: none"> Why is organic produce considered to be better than conventionally grown produce? 	<ul style="list-style-type: none"> How does fashion determine how people are perceived by society? 	<ul style="list-style-type: none"> What food choices would reduce my climate footprint? 	<ul style="list-style-type: none"> How do structures create a sense of security?
Skills	<ul style="list-style-type: none"> Can I explore and evaluate a range of existing products? Can I explore and use mechanisms: levers, sliders, wheels and axles? 	<ul style="list-style-type: none"> Can I explain where food comes from? Can I describe what a “hidden sugar” is? Can I show where to find the nutritional information on 	<ul style="list-style-type: none"> Can I understand and apply the principles of a healthy and varied diet? Can I describe seasonality, and know where and how a variety of ingredients are 	<ul style="list-style-type: none"> Can I explain the advantages and disadvantages of each fastening? Can I develop designs through my own reflection and the evaluation of others? 	<ul style="list-style-type: none"> Can I understand and apply the principle of a healthy and varied diet? Can I understand seasonality and know where and how a variety of 	<ul style="list-style-type: none"> Can I research materials used to construct air raid shelters and test their reliability? Can I draw scaled diagrams with increasing use of ratio?



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	<ul style="list-style-type: none"> • Can I describe how wheels need an axle in order to move? • Can I fix a design to allow the wheels to move? • Can I use appropriate vocabulary to describe which parts are moving or not? • Can I make a wheel and axle work? • Can I design a moving vehicle? • Can I label my design using 	<ul style="list-style-type: none"> • a drinks container? • Can I demonstrate that I understand the five food groups? • Can I describe what food falls into which food groups? • Can I experience food through touch and smell? • Can I consider and review food combinations? • Can I show that most ideal ingredients combinations for my wraps 	<ul style="list-style-type: none"> • grown and processed? • Can I use digital devices to research what initiatives have been launched to address environmental issues caused by importing food? • Can I begin to select my own ingredients when cooking or baking? • Can I begin to order the main stages of making a product? • Can I combine several components 	<ul style="list-style-type: none"> • Can I devise a template or pattern for a product? • Can I measure, cut and assemble with accuracy? • Can I create a final design for a product based on initial ideas and revisions, based on existing ideas? • Can I join my fabric by sewing? • Can I use permanent and temporary fastenings to join? 	<ul style="list-style-type: none"> • ingredients are grown? • Can I show what foods make up a balanced diet? • Can I create a recipe that can be adapted to make it healthier? • Can I use keywords to research alternative ingredients for a well-known dish? • Can I use my findings from my research to suggest healthy substitutions and additions to a recipe? 	<ul style="list-style-type: none"> • Have I considered the use of the product when selecting materials? • Can I create separate elements of a model, with improvements where necessary, before combining into the finished article? • Can I discuss whether different resources have improved the product?
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	<p>appropriate vocabulary?</p> <ul style="list-style-type: none"> • Can I make a wheel and axle mechanism? • Can I evaluate my design to make it even better? 	<p>will contain foods from more than one food group?</p> <ul style="list-style-type: none"> • Can I show how to prepare food safely? • Can I review my design whilst creating my wrap? • Can I complete a food quality test? 	<p>together in different ways?</p> <ul style="list-style-type: none"> • Can I weigh in grams? • Can I present food in an appealing way? • Do I understand safe food storage? • Am I willing to make changes if this helps to improve my work? 	<ul style="list-style-type: none"> • Can I join with a greater range of techniques (e.g., staples)? • Can I improve my product using peer feedback? • Can I evaluate others' designs against design specifications? 	<ul style="list-style-type: none"> • Can I use my research to plan my dish? • Can I calculate and compare two adapted recipes? • Can I create a healthier version of my chosen dish? • Can I suggest an alternative recipe to suit others with different dietary requirements? • Can I use equipment safely, including knives, hot pans and hobs? 	<ul style="list-style-type: none"> • Can I attach structures to a base, reinforcing the join where necessary? • Can I critically assess and explain whether it is fit for purpose?
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					<ul style="list-style-type: none"> • Can I avoid cross - contamination? • Can I carefully follow a method to make a recipe? • Can I design an appealing packaging that reflects my recipe? • Can I assess my product with the quality reassurance questionnaire? • Can I complete a taste test on my peers' product? • Can I evaluate my feedback 	
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					<p>and improve on my product?</p> <ul style="list-style-type: none"> Can I explain what steps I would take to improve on my product? 	
Suggested Outcomes	 			 	 	 

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<p>Key Vocabulary</p>	<p>Processes Axle, axle holder, diagram, mechanism, vehicle, wheel, join, cut, attach, select, purpose, shape, 2d/3d.</p>	<p>Food technology Balanced diet, design criteria, ingredients, fruit, protein, vegetables, slice, chop mix, stir, roll, cutting, squeezing.</p>	<p>Food Technology Texture, taste, appearance, smell, savoury, edible, reared, grown, caught, frozen, tinned, harvested, climate, diet, natural, processed, reared, seasons, seasonal, sugar, imported</p>	<p>Textiles Fabric, fastening, fix</p>	<p>Food technology Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herb, fat, sugar, carbohydrates, 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.</p>	<p>Structures Apparatus, cladding, design criteria, equipment, landscape features, playground</p>
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Challenge	<ul style="list-style-type: none"> Can I explain why square wheels are not appropriate for a moving vehicle? 	<ul style="list-style-type: none"> Can I explain the steps to keeping safe when preparing food? 	<ul style="list-style-type: none"> How does changing the amounts of ingredients affect the final product? 	<ul style="list-style-type: none"> Can I create the same design using a different fastening? 	<ul style="list-style-type: none"> Can I explain how to avoid cross-contamination? 	<ul style="list-style-type: none"> Can I explain the dangers of using hazardous materials for cladding?
Autumn 2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	London (Food Technology)	History of London (Mechanisms)	Prehistoric Life (Structures)	Riotous Royals (Structures)	Ring around the Rosie (Electrical Systems)	We Need You! (Textiles)
Big Question	<ul style="list-style-type: none"> What happens if we eat less meat? 	<ul style="list-style-type: none"> How have toys changed over the years? 	<ul style="list-style-type: none"> If bricks did not exist, how could we build structurally safe homes? 	<ul style="list-style-type: none"> How do natural disasters affect the structure of a building? 	<ul style="list-style-type: none"> How are circuits incorporated into our daily lives? 	<ul style="list-style-type: none"> Explore whether gender roles play a part in fashion?
Skills	<ul style="list-style-type: none"> Can I name a number of fruits and vegetables? Can I explain why some foods we call 	<ul style="list-style-type: none"> Can I explore and evaluate a range of existing products? Can I explore and use 	<ul style="list-style-type: none"> Can I describe materials using a range of key vocabulary? Can I work out how to make models stronger? 	<ul style="list-style-type: none"> Can I identify which materials would be best for my structure and give reasons why? 	<ul style="list-style-type: none"> Can I describe the historical development of a personal message exchange? 	<ul style="list-style-type: none"> Can I research and compare designs of waistcoats, giving reasons for which designs may be



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	<p>vegetables are actually fruits?</p> <ul style="list-style-type: none"> • Can I remember how to determine if a food is a fruit or a vegetable? • Can I suggest what fruits/vegetables are in drinks? • Can I taste fruits/vegetables and describe their: appearance, feel, smell and taste? • Can I prepare fruit and vegetables? • Can I use a knife to cut safely? 	<p>mechanisms: levers, sliders, wheels and axles?</p> <ul style="list-style-type: none"> • Can I explore and test numerous materials that would aid me in my planning of creating a fire truck? • Can I assess a range of materials, and choose the suitable ones for my truck? • Can I explain why I have chosen the materials using key vocabulary? 	<ul style="list-style-type: none"> • Can I use what I know about the properties of materials to plan ideas? • Can I use scoring and folding for precision? • Can I prepare for work by assembling components together before joining? • Can I measure, cut and assemble with increasing accuracy? • Can I use a range of techniques to shape and mould materials? 	<ul style="list-style-type: none"> • Can I identify which 3D shapes will provide a strong and stable structure? • Can I experiment with a range of techniques to increase stability in a structure? • Can I make ongoing sketches and annotations and constraints? • Can I measure accurately to build effective structures? 	<ul style="list-style-type: none"> • Can I state what Sir Rowland Hill invented and why it was important for greeting cards? • Can I analyse and evaluate a range of existing greeting cards? Can I write a design criterion for an electronic greeting card? • Can I construct a series circuit? • Can I draw a series circuit diagram and symbols? • Can I explain how a series 	<p>appropriate for my waistcoat?</p> <ul style="list-style-type: none"> • Can I generate and develop ideas using a cross-sectional/ exploded diagram? • Can I consider the audience when choosing textiles? • Can I measure and cut out in precise detail, and make sure that finished products are carefully finished? • Can I use a running stitch to join two pieces of fabric together?
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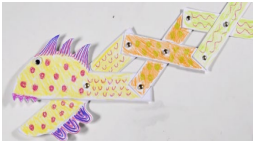




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	<ul style="list-style-type: none">• Can I use a blender with adult support?	<ul style="list-style-type: none">• Can I draw and label a diagram, showing what materials will be used?• Can I make linkages by connecting levers and pivots?• Can I suggest further improvements for my product?	<ul style="list-style-type: none">• Can I alter and adapt materials to make them stronger?• Can I recognise what has gone well, but suggest further improvements for the finished article in relation to its purpose?	<ul style="list-style-type: none">• Can I strengthen joins and corners in a variety of ways?• Can I use finishing techniques, showing an awareness of the audience? (e.g. sanding, varnishing, glazing)• Can I think about ideas as I progress and make changes to improve my work?• Can I create different textural effects with my chosen material?	<p>circuit will work in my card?</p> <ul style="list-style-type: none">• Can I identify the negative and positive leg of LED?• Can I compile a mood board relevant to my chosen theme, purpose and recipient?• Can I generate ideas inspired by research?• Can I annotate design ideas to include key information?• Can I review design ideas against criteria?	<ul style="list-style-type: none">• Can I secure a fastening?• Can I attach objects for decoration using thread?• Can I refine and suggest further improvements to the product?
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				<ul style="list-style-type: none"> • Can I explain how my design could be improved and how the improvement would affect the original outcome? 	<ul style="list-style-type: none"> • Can I construct my series circuit? • Can I draw my series circuit as a diagram? • Can I explain how my series circuit works in my card? • Can I evaluate my final greeting card design? • Can I understand feedback given to me? • Can I show that I can self-reflect? • Can I adapt to my design using 	
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					self-reflection and peer evaluation?	
Suggested Outcomes						
Key Vocabulary	Food technology Fruit, vegetable, seed, texture, taste, small, appearance, peel, cut, half, shape, flesh, skin, pip, core, slicing, peeling, cutting, squeezing.	Mechanisms Assembling, axle, axle holder, body, cab, chassis, cutting, design criteria, finishing, fixed, input, joining, linkage, mechanical, mechanism, moving, pivot,	Structures 2D, 3D, castle, key features, strong, stiff, stable, structure, shell structure, design, net, tab, vertex, edge, face, length, width, breadth, capacity, scoring	Structures 3D shapes, design criteria, innovative, natural, reinforce, structure	Electrical systems Series circuit, fault, connection, switch, battery, battery holder, wire, conductor, crocodile clip, control, program, system, input	Textiles Annotate, decorate, design criteria, fabric, target customer, waistcoat, waterproof

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		shaping, vehicle, wheel			device, output device	
Challenge	<ul style="list-style-type: none"> Can I explain why some fruits are sweet and some are sour? 	<ul style="list-style-type: none"> Can I explain if the thickness of the card makes a difference to how sturdy the linkage was? 	<ul style="list-style-type: none"> Can I use key vocabulary to discuss the transition of a 2D shape to a 3D shape? 	<ul style="list-style-type: none"> Can I design a 3D frame structure for a new jungle gym in our playground? 	<ul style="list-style-type: none"> Can I explain the causes of a faulty series circuit using key vocabulary? 	<ul style="list-style-type: none"> Can I create a pattern with embellishments and attach it to my product?

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Spring 1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	3D Printing (Structures)	Marvellous Map Makers (Structures)	Rotten Romans (Mechanical Systems)	Lost Lands (Food Technology)	Eureka (Structures)	Heavenly Empire (Electrical Systems)
Big Question	<ul style="list-style-type: none"> How has 3D printing changed our lives? 	<ul style="list-style-type: none"> What role do shapes play in architecture? 	<ul style="list-style-type: none"> How have Roman inventions impacted our lives today? 	<ul style="list-style-type: none"> How much impact does dairy have on climate change? 	<ul style="list-style-type: none"> Why are bridges major tourist attractions? 	<ul style="list-style-type: none"> How does sound change our perception of danger?
Skills	<ul style="list-style-type: none"> Can I create a 2D base and transform it into a 3D shape? Can I use slicing to separate 3D objects into thin layers? 	<ul style="list-style-type: none"> Can I describe materials using a range of vocabulary? Can I make a structure using different materials? 	<ul style="list-style-type: none"> Can I analyse a range of pneumatic systems using key vocabulary? Can I use a range of components (e.g. levers, linkages and 	<ul style="list-style-type: none"> Can I identify different techniques used when baking? Can I select my own suitable ingredients when cooking or baking? 	<ul style="list-style-type: none"> Can I identify beam and arch bridges? Can I create a range and arch bridge designs? Can I identify stronger and 	<ul style="list-style-type: none"> Can I gather images and information about previous and existing toys? Can I use a range of information to inform my design?



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	<ul style="list-style-type: none">• Can I create a drawing of my sliced product?• Can I discuss improvements that could be made with my group?	<ul style="list-style-type: none">• Can I cut material using scissors or a knife?• Can I join two materials together with glue?• Can I describe how my product works?	<ul style="list-style-type: none">• pneumatic systems)?• Can I apply what I already know about mechanisms to create movement when planning and designing?• Can I plan my design, using diagrams and labels?• Can I plan the equipment/ tools needed and give reasons why?• Can I make a product which	<ul style="list-style-type: none">• Can I think ahead about the order of my work?• Can I carry out tests before making improvements?• Can I talk about what I like and dislike, giving reasons?• Can I use equipment and tools with increased accuracy and safety?• Can I create a detailed plan	<ul style="list-style-type: none">• weaker structures?• Can I find different ways to reinforce structures?• Can I identify arch, beam and truss bridges?• Can I use triangles to create a truss bridge and test them?• Can I explain how triangles can be used to reinforce bridges?	<ul style="list-style-type: none">• Can I analyse a selection of existing children's toys?• Can I calculate the amount of materials needed and use this to estimate cost?• Can I choose appropriate tools and materials to ensure that the final product will appeal to the audience?• Can I incorporate a switch into the product?
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			<p>uses mechanical components?</p> <ul style="list-style-type: none"> • Can I assess how well my product works in relation to the purpose? • Can I explain how I could change my design to improve it? 	<p>considering the target audience, design criteria and intended purpose?</p> <ul style="list-style-type: none"> • Can I measure accurately using centimetres and grams? • Do I present food in an appealing way? • Can I understand and explain safe food storage? • Can I evaluate food by taste, texture and flavour? 	<ul style="list-style-type: none"> • Can I measure and mark out accurately on wood? • Can I select appropriate tools and equipment for particular tasks? • Can I follow health and safety rules? • Can I explain why selecting appropriate materials is an important part of the design process? 	<ul style="list-style-type: none"> • Can I use key vocabulary to create a manual or handbook? • How well can I test and evaluate the final product?
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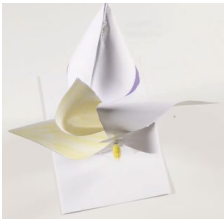






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					<ul style="list-style-type: none">• Can I complete my wooden truss bridge?• Can I use tools to aid me with finishing my products: sander, paint, glue?• Can I compare my final product with my plan?• Can I identify points of weakness?• Can I evaluate my truss bridge against a specification?	
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Suggested Outcomes						
Key Vocabulary	3D Printing 2D, 3D shapes, base, design, layers, slicing.	Freestanding Structures 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, cylinder.	Mechanical Systems Mechanism, lever, pivot, linkage system, pneumatic system, input, output, component, thumbnail sketch, research, adapt, properties, reinforce, motion, slot, linear, rotary	Food Technology Design criteria, research, texture, innovative, aesthetic, measure, cross-contamination, diet, processed, packaging	Structures Accuracy, aesthetics, arch bridge, beam bridge, bench hook/vice, corrugation, evaluate, factors, hardwood, joint, lamination, material properties, mark out, quality of finish, reinforce, rigid, sandpaper/glass paper, softwood, stability, stiffness,	Electrical Systems Assemble, benefit, buzzer, circuit, copper wire, design criteria, electricity, fine motor skills, fit for purpose, form, function, gross motor skills, net, research, stable, tabs, user

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					strength, technique, tenon saw/coping saw, truss bridge, visual appeal, wood file/rasp, wood sourcing.	
Challenge	<ul style="list-style-type: none"> Can I explain how 3D printing could solve a problem at school? 	<ul style="list-style-type: none"> Can I use key vocabulary to discuss the transition of a 2D shape to a 3D shape? 	<ul style="list-style-type: none"> Can I think of a different solution if my toy does not work? 	<ul style="list-style-type: none"> Can I make changes to my recipe for someone who is allergic to dairy products? 	<ul style="list-style-type: none"> Can I use key vocabulary to discuss the transition of a 2D shape to a 3D shape? 	<ul style="list-style-type: none"> Can I explain how I use electrical systems in my daily life?

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Spring 2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	Exciting Explorers (Textiles)	Marvellous Map Makers (Mechanisms)	Invasion, Invasion, Invasion (Textiles)	Lost Lands (Mechanical Systems)	Eureka (Textiles)	Heavenly Empire (Food Technology)
Big Question	<ul style="list-style-type: none"> Where do my clothes come from? 	<ul style="list-style-type: none"> Why are adrenaline based activities so popular? 	<ul style="list-style-type: none"> Why is fast fashion a dangerous concept? 	<ul style="list-style-type: none"> What is the impact of petrol and diesel cars on our environment? 	<ul style="list-style-type: none"> Why is there a stigma around non-branded clothes? 	<ul style="list-style-type: none"> How can agriculture meet the world's growing need for food while doing less environmental harm?
Skills	<ul style="list-style-type: none"> Can I give reasons for why I chose a certain textile? 	<ul style="list-style-type: none"> Can I describe materials using a range of vocabulary? Can I describe how axles help 	<ul style="list-style-type: none"> Can I describe designs using a range of key vocabulary? 	<ul style="list-style-type: none"> Can I collect and use information to generate ideas? Can I consider which materials 	<ul style="list-style-type: none"> Can I give reasons for why I chose a certain textile? 	<ul style="list-style-type: none"> Do I understand why certain traditional meals were prepared in



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	<ul style="list-style-type: none">• Can I join two materials together with a range of media?• Can I measure an amount of a textile and cut it out?• Can I join textiles together to make a product, using techniques such as stitching?• Can I use simple finishing techniques?• Can I use simple terms to discuss my own and others' work?	<p>wheels to move a vehicle?</p> <ul style="list-style-type: none">• Can I evaluate different designs?• Can design and label a working wheel?• Can I build a stable structure?• Can I test elements of my design?• Can I describe how I will make my wheels rotate?• Can I evaluate a wheel mechanism and adapt as necessary?	<ul style="list-style-type: none">• Can I begin to use a range of simple stitches?• Can I choose tools and equipment which are appropriate for the job?• Do I recognise that designs must meet a range of needs?• Can I choose textiles both for their appearance and qualities?• Can I measure and cut out using centimetres?	<p>are fit for purpose and join them appropriately?</p> <ul style="list-style-type: none">• Do I understand how wheels, axles, turning mechanisms, hinges and levers all work together?• Can I make a product which uses mechanical components?• Can I independently manipulate materials using a range of tools and equipment?	<ul style="list-style-type: none">• Can I explore a range of patterns and designs for my stuffed toy?• Can I choose materials that will be suitable for my target audience?• Can I label my diagram explaining what materials I will be using?• Can I label what products I will use to finish off my stuffed toy?	<p>specific weather conditions?</p> <ul style="list-style-type: none">• Can I use market research to inform plans?• Can I keep cost constraints in mind when selecting materials in design?• Can I begin to write my own recipes based on recipes I have previously tried?• Can I make choices/changes to recipes and justify the decision?
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		<ul style="list-style-type: none"> • Can I ensure that my product stays upright whilst being rotated around a fixed point? • Can I describe how my product works? 	<ul style="list-style-type: none"> • Can I use equipment and tools accurately and safely? • Can I join textiles of different types in a range of ways? • Can I make the finished product neat and tidy? • Can I assess how well my product works in relation to the purpose? 	<ul style="list-style-type: none"> • Can I use a range of components (e.g. levers, linkages and pneumatic systems)? • Can I assess how well a product works in relation to the design criteria and the intended purpose? 	<ul style="list-style-type: none"> • Can I label what colours will be used for the product? • Can I create strong and secure stitches? • Can I use applique to attach pieces of fabric decoration? • Can I use stitches to decorate fabric? • Can I use blanket stitch to join pieces of fabric? • Can I stuff my 	<ul style="list-style-type: none"> • Can I work within constraints? • Can I use proportions when cooking extending beyond doubling and halving recipes? • Can I use a range of tools and equipment with good accuracy and effectiveness, within established safety parameters? • Can I evaluate a range of
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					<p>toy carefully, repairing any holes or gaps?</p> <ul style="list-style-type: none"> • Can I evaluate my stuffed toy? 	<p>different sources of information such as advertising and handbooks?</p> <ul style="list-style-type: none"> • Can I receive reviews from peers using a digital survey?
Suggested Outcomes						

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Key Vocabulary	Textiles Design, equipment, glue, inspiration, method, safety pin. technique, template, stitch, needle, pattern place, fabric, fastening, finishing.	Mechanisms Design, design criteria, wheel, ferris wheel, pods, axle, axle holder, frame, pivot, slot, guide, structure, framework, 3D.	Textiles Appliqué, cross-stitch, design, equipment, fabric, knot, patch, running stitch, seam, thread, texture.	Mechanical Systems Air resistance, chassis, design, energy, graphics, kinetic, mechanism, model, research, structure, template.	Textiles Appliqué, cross-stitch, design, fabric, model, running stitch, stuffed toy, template.	Food Technology Bridge method, cookbook, cross-contamination, farm to fork, flavour, equipment, flavours, ingredients, method, preparation, recipe, research, storyboard
Challenge	<ul style="list-style-type: none"> Can I explain what a design specification is? 	<ul style="list-style-type: none"> Can I increase my measurements and design an axle to accommodate them? 	<ul style="list-style-type: none"> Can I sew using cross-stitch and applique independently? 	<ul style="list-style-type: none"> Can I use my knowledge and skills to create a chassis for a bus? 	<ul style="list-style-type: none"> Can I apply a blanket stitch which is neat and consistent? 	<ul style="list-style-type: none"> Can I explain the impact different methods of farming have on the wider world?



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Summer 1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	Travelling around the world (Mechanisms)	Island Life (Textiles)	Invasion, Invasion, Invasion (Electrical Systems)	Vicious Vikings (Electrical Systems)	A World Before (Mechanical Systems)	Crime and Community/ Our Community (Mechanical Systems)
Big Question	<ul style="list-style-type: none">How does transport differ across the world?	<ul style="list-style-type: none">Who decides what is fashionable or not?	<ul style="list-style-type: none">What impact has light pollution had on the globe?	<ul style="list-style-type: none">How can the usage of a range of power sources (solar, wind) be improved?	<ul style="list-style-type: none">How are multi-sensory books inclusive?	<ul style="list-style-type: none">What role does mechanical energy play in toys?
	<ul style="list-style-type: none">Can I evaluate a range of existing products?Can I explore: levers, sliders, wheels and axles?	<ul style="list-style-type: none">Can I describe materials using a range of vocabulary?Can I thread a needle?Can I use neat and evenly	<ul style="list-style-type: none">Can I describe a range of electrical systems using key vocabulary?Can I use digital devices to research types	<ul style="list-style-type: none">Can I identify light sources used in the past?Can I consider the way the product will be	<ul style="list-style-type: none">Can I look at example pop up books and see what materials are used?Can I assess how the	<ul style="list-style-type: none">Can I test and evaluate commercial products, understanding how this information



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Skills	<ul style="list-style-type: none">• Can I design pages by drawing backgrounds, drawing moving parts?• Can I select a range of tools and equipment to perform practical tasks?• Can I use a wide range of materials and components, including construction materials, textiles and ingredients according to their characteristics?	<p>spaced stitches to join a fabric?</p> <ul style="list-style-type: none">• Can I research a range of pouch designs to create my own plan?• Can I sew a neat, even stitch?• Can I tie a knot at either end of the thread?• Can I design decorations for my product?• Can I evaluate ideas and products against the design criteria?	<p>of static electricity?</p> <ul style="list-style-type: none">• Can I identify a design criterion and establish a purpose/ audience for a product?• Do I think about my ideas as I make progress?• Can I alter and adapt original plans following discussion and evaluation?• Can I explain how I could change my design to improve it?	<p>used when planning?</p> <ul style="list-style-type: none">• Do I understand how some properties can be used – e.g. waterproof?• Can I draw an annotated sketch of my design?• Can I use a simple circuit and add components to it?• Can I select and use appropriate equipment and	<p>pictures ‘pop up’ in the book?</p> <ul style="list-style-type: none">• Can I explain mechanism control movement?• Can I investigate and analyse a range of existing products?• Can I explain how to strengthen, stiffen and reinforce my structure?• Can I use paper, card and glue to make my book structure?	<p>supports my own designs?</p> <ul style="list-style-type: none">• Can I measure and cut out in precise detail, and make sure that finished products are carefully finished?• Can I use a range of joining techniques?• Do I use my knowledge of science and art when designing?• Can I create designs
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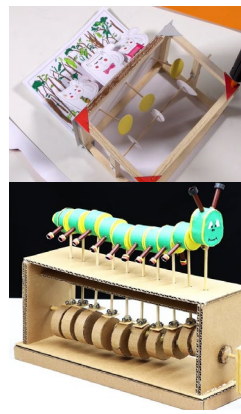
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	<ul style="list-style-type: none"> • Can I review the success of my product by testing it? • Can I evaluate my product against the design criteria? • Can I reflect on my evaluation and make additions? 	<ul style="list-style-type: none"> • Can I join items using fabric glue or stitching? • Can I decorate fabric using different items? • Can I improve on my product using peer feedback? • Can I evaluate others' designs? • Can I improve on my product? 		<p>tools accurately and safely?</p> <ul style="list-style-type: none"> • Can I add electricity to create motion or make light? • Can I make a product which uses both electrical and mechanical components? • Can I recognise what has gone well, but suggest further improvements for the finished article in 	<ul style="list-style-type: none"> • Can I make a mechanism or structure as detailed in my design template by using sliders, pivots and folds to produce movement? • Can I make my book more attractive by using layers using spacers to hide relevant parts of my mechanism? • Can I evaluate ideas and products against their own design 	<p>including gears and levers where appropriate?</p> <ul style="list-style-type: none"> • Can I measure and apply panels to my automata to conceal the inner-workings? • Do I understand that good quality products should be neat, accurate and securely assembled? • Can I describe and explain what would
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				relation to its purpose?	<p>criteria and consider the views of others to improve their work?</p> <ul style="list-style-type: none"> • Can I complete the surface decoration of my pop by adding the story through pictures and captions? • Can I evaluate appearance and function against the original design criteria? 	improve it and why?
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Suggested Outcomes						
Key Vocabulary	Mechanisms Adapt, design criteria, design, input, mechanism, model, sliders, template, pivot, slot, bridge.	Textiles Products, joining, finishing techniques, tools, fabrics, components, template, pattern pieces, mark out, join, decorate finish, features,	Electrical Systems Attract, electricity, electrostatic, innovative, motion, research, repel, stable, template.	Electrical Systems Aesthetics, assemble, battery, bulb, buzzer, circuit, circuit diagram, component, conductor, design, design criteria,	Mechanical Systems Criteria, design, input, mechanism, model, motion, reinforce, research.	Mechanical Systems Accurate, automata, cam, cam profile, client, communication, cross-sectional diagram, customer, designer, evaluation,

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		suitable, quality, mock-up.		diagram, electricity, equipment, evaluation, input, insulator, LED, model, recyclable, packaging, properties, series circuit, shape, sketch, switch, target audience, test, theme.		exploded diagram, flat-pack, follower, follower base, follower topper, housing, inner-workings, measure, mechanism, storefront, verbal, visual.
Challenge	<ul style="list-style-type: none"> Can I explain which part I found tricky to assemble and how I might change it? 	<ul style="list-style-type: none"> Can I accurately replicate my decoration design on my pouch? 	<ul style="list-style-type: none"> Can I create a more difficult version of my static toy? How? 	<ul style="list-style-type: none"> Can you create special features to suit your 'client' and discuss how these components could be used in other products? 	<ul style="list-style-type: none"> Can I modify my product to add a timer? 	<ul style="list-style-type: none"> Can you design how your automata would be used in a storefront display and how it would be flat-packed?



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Summer 2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	Travelling around the world (Structures)	Island Life (Food Technology)	Invasion, Invasion, Invasion (Digital World)	Vicious Vikings (Digital World)	A World Before (Digital World)	Crime and Community/ Our Community (Digital World)
Big Question	<ul style="list-style-type: none">How does a structure become a tourist attraction?	<ul style="list-style-type: none">How can I make a difference on my own?	<ul style="list-style-type: none">How can digital devices be utilised to protect our world?	<ul style="list-style-type: none">How do companies ensure branding appeals to consumers?	<ul style="list-style-type: none">Why is there a need for developments and innovations?	<ul style="list-style-type: none">How is coding and programming influencing the younger generation?
Skills	<ul style="list-style-type: none">Can I describe materials using a range of vocabulary?Can I make a structure using different materials?Can I cut material using scissors or a knife?	<ul style="list-style-type: none">Can I describe the texture of fillings? Can I choose and give reasons for my favourite and least favourite filling?	<ul style="list-style-type: none">Can I identify similarities and differences between a range of smart devices?Can I make increasing use	<ul style="list-style-type: none">Can I explore the features of CAD programs with a learning partner?Do I understand designs must meet a range of criteria?	<ul style="list-style-type: none">Can I research a particular animal's needs?Can I develop a design criteria based on my research?	<ul style="list-style-type: none">Can I explore the features of a BBC Micro: bit and create an annotated sketch?Can I design appealing

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	<ul style="list-style-type: none">• Can I join two materials together with glue?• Can I describe how my product works?	<ul style="list-style-type: none">• Can I order instructions? Can I draw what my final product will look like?• Can I safely use a butter knife? Can I cut my sandwich into a 2D shape?• Can I use the feedback from my peers to plan improvements?	<ul style="list-style-type: none">• of ICT to plan ideas?• Can I debug programs and solve problems by decomposing them into smaller parts?• Can I combine several components together in different ways?• Can I generate and develop ideas using exploded diagrams?• Can I select the most appropriate materials, tools	<ul style="list-style-type: none">• Can I increasingly model ideas before making them?• Can I explain why I have selected materials, tools and techniques to use?• Can I explain the role of a prototype?• Can I construct a structure using a 3D net?• Can I use and manipulate shapes and clipart, using computer-aided	<ul style="list-style-type: none">• Can I describe key development in thermometer history?• Can I (where relevant) survey the target audience and use this to generate ideas?• Can I produce a detailed step-by-step plan for my design method?• Can I suggest some alternative designs and compare the	<ul style="list-style-type: none">• products that are fit for purpose and aimed at particular individuals or groups?• Can I program an N, E, S, W cardinal compass?• Can I explain the key functions in my program, including any additions?• Can I consider materials and
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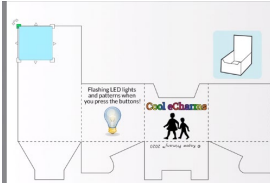

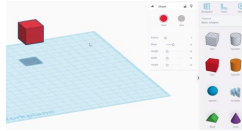
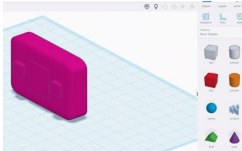
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			<p>and techniques to use?</p> <ul style="list-style-type: none"> • Can I manipulate materials using a range of tools and equipment? • Can I recognise what has gone well, but suggest further improvements for the finished article? 	<p>design, to produce a logo?</p> <ul style="list-style-type: none"> • Can I understand what a logo is and why they are important in the world of design and business? • Can I follow a list of design requirements? • Can I recognise what has gone well, but suggest further improvements for the finished article in relation to its purpose? 	<p>benefits and drawbacks to inform the design process and outcome?</p> <ul style="list-style-type: none"> • Can I use a range of tools and equipment with good accuracy and effectiveness? • Can I critically assess how well the product works in relation to the design criteria and the intended purpose and suggest improvements? • Can I use 	<p>their functional properties?</p> <ul style="list-style-type: none"> • Do I have an awareness of sustainability in design? • Can I develop a product idea through annotated sketches? • Can I identify key industries that utilise 3D CAD modelling and explain why? • Can I place and manoeuvre 3D
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					<p>sketches to show other ways of doing things – and then make choices between designs?</p>	<p>objects, using computer-aided design?</p> <ul style="list-style-type: none"> • Can I demonstrate that my product is strong and fit for purpose? • Can I justify my plan to someone else? • Can I explain if more or different information is needed to improve it further?
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Suggested Outcomes						
Key Vocabulary	Structures Axle, bridge, design, design criteria, model, net, packaging, structure, template, surface, shape, top, side, base, tower, structure.	Food Technology 2D shapes, bread, design criteria, filling, ingredients, sandwich, taste.	Digital World CAD (Computer-aided design), point of sale, display, badge, stand, net, product, design requirements, layers.	Digital World 2D, advantage, assemble, block, brand identity, branding, bug, cheap, clipart, coding, computer-aided design (CAD), criteria, debug, design, develop, disadvantage, ergonomic, evaluate, form, function, instructions, join,	Digital World 3D model, application (Apps), biodegradable, boolean, CAD, cardinal compass, CGI, client, compass, concept, consumables, convince, copy, corrode, design brief, design criteria, duplicate, environmentally	Digital World Application (Apps), boolean, cardinal compass, client, copy, compass, design brief, design criteria, duplicate, equipment, function, GPS tracker, If statement, loop, navigation, pedometer, program, smart, smartphone, tablet,

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				logo, loop, mindfulness, model, net, pause, process, program, prototype, research, sketchpad, template, test, timer, user, variable.	friendly, equipment, finite, function, functional properties, GPS tracker, group, infinite, investment, lightweight, loop, manoeuvre, manufacture, materials, mouldable, navigation, non-recyclable, opaque, pedometer, product lifecycle, product lifespan, program, recyclable, replica, shape properties, smart, smartphone, sustainable, sustainable design, tablet, tinkercad, transparent,	value, variable.
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Design and Technology Long Term Plan

					ungroup, unsustainable design, value, variable, workplane.	
Challenge	<ul style="list-style-type: none"> Can I identify what other products use axles? 	<ul style="list-style-type: none"> Can I consider the amount of ingredients and how they may impact the taste? 	<ul style="list-style-type: none"> Can I describe each stage of creating a CAD using product keys? 	<ul style="list-style-type: none"> Can I explain the steps to debugging a code? 	<ul style="list-style-type: none"> Can I replicate my building brick idea and add extra features directly in Tinkercad by tinkering? 	<ul style="list-style-type: none"> Can I use visual references on my pitch poster to describe and explain my Micro:bit program and 3D CAD model?