

Skill taught and Curriculum link		Application of skills and Knowledge			
		Year 3	Year 4	Year 5	Year 6
Why this? Why now?					<p>KS2 end point:</p> <ul style="list-style-type: none"> *Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups *Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
<p>Design</p> <p>research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</p> <p>generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>KS1: Design (start point – cultural capital) Design purposeful, functional, appealing products for themselves and other users based on design criteria Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p>	Skill	<ul style="list-style-type: none"> analyse everyday packaging Design a package for a purpose aimed at a particular group of their choosing, considering font, colour, size create a prototype using measured squared paper of their design joining techniques for 3D modelling using glues and masking tape Children to consider the main stages in making and testing before assembling high quality products (nightlights, Sandwich's and packaging) 	<ol style="list-style-type: none"> Design a savoury muffin using rationed ingredients. Design a money collectors and design pattern according to target market. Design a pop-up book. <p>Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user.</p> <p>Use annotated sketches and prototypes to develop, model and communicate ideas.</p>	<ul style="list-style-type: none"> Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost. Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams Designing a flapjack for a purpose – who is it for, how will it appeal to its target audience ect. Reviewing and investigating existing products (flapjacks, alarm systems, shelters) to enable them to design their own How to draw cross sections (Bake Off Style!) of their flapjacks to show the internal view of their flapjack Creating prototypes 	<ul style="list-style-type: none"> Investigate manufacture of slippers and methods of construction used (glue, sewing) Generate innovative designs Generate questionnaire to inform design Measuring parts of foot and combining into design Communicate ideas through labelled drawings Investigation of types of slippers, purpose, target audience and materials used. Investigate fairground rides and how movement is produced. Tasting Hot cross buns and investigating Yeast
	Knowledge	<ul style="list-style-type: none"> understanding of 2d nets measurement and units of measure 	<ul style="list-style-type: none"> Know what a target market is. Know how to interview. Know how to sample previous products. 	<ul style="list-style-type: none"> Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment. What different audiences look for in a product and how can the children meet the needs of their audience Why pre-existing products have certain elements/features that the children can incorporate Understanding when it is appropriate to draw a cross-section (when what is on the inside is important) Reflecting on the importance of prototypes for any product Using knowledge of our topic in English to think about what cultural and structural existing examples they have seen – how have they considered these 	<ul style="list-style-type: none"> Creating template for material Creating a design drawing and model of slipper Create a recipe for Hot Cross buns Create a plan for a model fairground driven by a motorised pulley system with a labelled drawing

				<ul style="list-style-type: none"> • what structures are and how they can be made stronger, stiffer and more stable. • Know famous inventors who developed ground-breaking electrical systems and components. • Research key events and individuals relevant to frame structures. 	
<p>Make</p> <p>select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</p> <p>KS1 Make: *select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p> <p>KS3: Make *Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture * select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties</p>	Skill	<ul style="list-style-type: none"> • building and constructing 3D containers using and connecting tabs to secure their structure made from card • paper mache layer techniques and PVA glue • circuits construction 	<ol style="list-style-type: none"> 1. Savoury Muffins – cooking using cookery equipment and specific measures. 2. Money container – make wallet using a variety of materials and practice skill of sewing. 3. Pop-up Book – make a targeted pop-up relevant to their selected story (becoming paper engineers). <p>Plan the main stages of making.</p> <p>Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing.</p> <p>Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.</p> <p>Select from and use appropriate tools with some accuracy to cut, shape and join paper and card.</p> <p>Select from and use finishing techniques suitable for the product they are creating.</p>	<ul style="list-style-type: none"> • Using appropriate ingredients for a flapjack and understanding how to make flapjacks efficiently and effectively in the classroom environment. • Construction materials and how they could find an appropriate alternative to use in the classroom • Using equipment which requires a high level of safety – microwave, saw, scissors 	<ul style="list-style-type: none"> • Construct a pair of slippers that fit • Create a detailed list of tools and materials • Assemble a working fairground model driven by electric pulley system • Bake a tray of Hot Cross buns following a recipe
	Knowledge	<ul style="list-style-type: none"> • opaque, translucent, transparent elements of their structure 	<ul style="list-style-type: none"> • Know how to use certain equipment (and safely). • Know what ingredients work in a wet dough. • Know how to thread a needle. • Know how to un-pick thread. • Know how to tie a knot. • Know which stitch to use. • Know how to fold paper to form a desired shape. • Know how to lay out pages effectively (writing, pictures and pop-up) 	<ul style="list-style-type: none"> • Continually evaluate and modify the working features of the product to match the initial design specification. • How to use kitchen utensils and equipment safely • Most effective and efficient ways of joining materials for their shelters – considering how this would work outside and precautions which would need to take place. • Shaped frames – what and why? 	<ul style="list-style-type: none"> • To select the correct stitch for joining and decorating • Selecting appropriate materials for task • Create a switch that will stop and possibly change movement • Use knowledge of yeast for effective proving • Work hygienically to avoid germs
<p>Evaluate</p> <p>investigate and analyse a range of existing products</p> <p>evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>understand how key events and individuals in design and technology have helped shape the world</p>	Skill	<ul style="list-style-type: none"> • Evaluate their packaging- is it fit for purpose? Is it similar to their initial design, did they need to make changes? Why? • Sandwich testing- peer evaluated taste test against their design criteria. Evaluate aesthetics, taste and design. 	<ul style="list-style-type: none"> • Evaluate WWW and EBI • Children to compare and contrast with peers. • Taste tests and taste diagram. • Colouring in relevant statements, which apply to their product. • Evaluate their own products and ideas against criteria and user needs, as they design and make. 	<ul style="list-style-type: none"> • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. • Reviewing their own products against existing products • Giving feedback to others in the class against the criteria to enable children to receive/give instant feedback for improvements and reflections. 	<ul style="list-style-type: none"> • Evaluate material used in slipper making • Evaluate different Hot Cross buns for taste • Evaluate how a pulley system creates a horizontal or vertical motion

<p>KS1 Evaluate: *explore and evaluate a range of existing products *evaluate their ideas and products against design criteria</p> <p>KS3 Evaluate * analyse the work of past and present professionals and others to develop and broaden their understanding *investigate new and emerging technologies * test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups * understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists</p>	Knowledge		<ul style="list-style-type: none"> • Learn how to be critical. • Think of positively of constructive criticism. • Think of changes that could improve a product for future. • Analytical mind-set. 	<ul style="list-style-type: none"> • Children to self-assess and peer assess on a range of criteria – aesthetic appeal, taste (flapjacks), effectiveness, meeting the needs of its audience • Enabling to take on constructive criticism and incorporating this into future work • Compared to existing products, is it successful? • Research key events and individuals relevant to frame structures. 	<ul style="list-style-type: none"> • Evaluate product against original design • Evaluate functionality and fitness for purpose • Ingredients suitable for use in Hot cross buns • Create model pulley systems and circuits
<p>Technical Knowledge Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] Apply their understanding of computing to program, monitor and control their products</p>	Skill	<p>reinforcing 3D packaging to hold contents</p> <p>layering tissue paper to create desired thickness to create</p>	<ul style="list-style-type: none"> • Sewing • Paper engineers • Cooking 	<ul style="list-style-type: none"> • Use research to develop a design specification for a functional product that responds automatically to changes in the environment. • Take account of constraints including time, resources and cost. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams • Designing a flapjack for a purpose – who is it for, how will it appeal to its target audience ect. • Reviewing and investigating existing products (flapjacks, alarm systems, shelters) to enable them to design their own • How to draw cross sections (Bake Off Style!) of their flapjacks to show the internal view of their flapjack • Creating prototypes 	<ul style="list-style-type: none"> • Sewing a range of stitches • Gluing – use of glue gun • Measuring • cutting • Kneading & proving in baking • Materials that conduct • Electrical circuit construction • How to strengthen structures and materials • Use of glue gun safely • Using copydex glue using correct instructions to maintain strength •
<p>KS1 Technical knowledge: * build structures, exploring how they can be made stronger, stiffer and more stable * explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p> <p>KS3 Technical knowledge: *understand and use the properties of materials and the performance of structural elements to achieve functioning solutions *understand how more advanced mechanical systems used in their products enable changes in movement and force * understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs] * apply computing and use electronics to embed intelligence in products that respond to inputs [for example,</p>	Knowledge	<p>understanding of circuits and flow of electricity</p> <p>Children know the purpose of the battery-powered products that they will be designing and making and who they will be for. How to create a switch for their nightlight to operate their bulb</p>	<ul style="list-style-type: none"> • Different types of levers. • Different types of pop-ups. • Different types of ingredients. • Difference types of stitching and fastening. • Know and use technical vocabulary relevant to the project. 	<ul style="list-style-type: none"> • Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. • Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment. • What different audiences look for in a product and how can the children meet the needs of their audience • Why pre-existing products have certain elements/features that the children can incorporate • Understanding when it is appropriate to draw a cross-section (when what is on the inside is important) • Reflecting on the importance of prototypes for any product • Using knowledge of our topic in English to think about what cultural and structural existing 	<ul style="list-style-type: none"> • Working parts of pulley system and their functions • Using a variety of materials to create a working switch within a circuit. • Use correct glue appropriately and effectively

sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].

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- what structures are and how they can be made stronger, stiffer and more stable.
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