Blackmoor Park Junior School D&T Long Term Plan

Year	Autumn	Spring	Summer
3	**Textiles – 2D to 3D shape** Making a pencil case Designer study: Cath Kidston	**Cooking and Nutrition - Healthy and varied diet** Healthy snack bar Designer study: Warburtons	**Mechanisms and Mechanical Systems** Pop up Card
	National Curriculum	**National Curriculum**	**National Curriculum**
	Designing •Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. • Produce annotated sketches, prototypes, final product sketches and pattern pieces. **Making** • Plan the main stages of making. • Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing. • Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern. **Evaluating** • Investigate a range of 3-D textile products relevant to the project. • Test their product against the original design criteria and with the intended user. • Take into account others' views. • Understand how a key event/individual has influenced the development of the chosen product and/or fabric. **Technical knowledge and understanding** • Know how to strengthen, stiffen and reinforce existing fabrics. • Understand how to securely join two pieces of fabric together.	**Designing** • Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. • Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. **Making** • Plan the main stages of a recipe, listing ingredients, utensils and equipment. • Select and use appropriate utensils and equipment to prepare and combine ingredients. • Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. **Evaluating** • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. **Technical knowledge and understanding** • Know how to use appropriate equipment and utensils to prepare and combine food.	**Designing** • Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. **Making** • Order the main stages of making. • Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. • Select from and use finishing techniques suitable for the product they are creating. **Evaluating** • Investigate and analyse books and, where available, other products with lever and linkage mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make. **Technical knowledge and understanding** • Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project.

	• Understand the need for patterns and seam allowances. • Know and use technical vocabulary relevant to the project.	• Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately.	
	Key vocab Fabric, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam	**Key vocab** Texture, taste, appearance, hygienic, edible, grown, reared, tinned, processed, seasonal, harvested, healthy/varied diet	**Key vocab** Mechanism, lever, linkage, pivot, slot, bridge, guide, linear, rotary, oscillating, reciprocating
	At the end of this unit, children will know Investigate textile products and recognise changes in production over time. Disassemble products and understand patterns including seam allowance. Evaluate fabrics and their purpose based on suitability. Create and use a pattern for a design. Use a range of stitching techniques to combine materials.	**At the end of this unit, children will know** Investigate and evaluate existing products and how ingredients are used in products. How to use appropriate equipment and utensils to prepare and combine food. Understand preparation and cooking techniques. Understand basic food hygiene practices. Understand the purpose of products and complete a design using design criteria.	**At the end of this unit, children will know** Evaluate existing products and why they have used certain mechanisms. Measure accurately and mark out their designs. Cut and combine materials to create working mechanisms. Evaluate the finish and suitability of their finished product.

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4	**Electrical systems: circuits and switches.** Make a Christmas night light. Designer study James Dyson	**Structures: Shell structures** Make a gift box Structure study: Tetra pak	**Food and nutrition - Healthy and varied diet** Make a healthy snack Design own recipe for a purpose/diet
	National Curriculum	**National Curriculum**	**National Curriculum**
	Designing • Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. **Making** • Order the main stages of making. • Select from and use tools and equipment to cut, shape, join and finish with some accuracy. • Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities. **Evaluating** • Investigate and analyse a range of existing battery-powered products. • Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. **Technical knowledge and understanding** • Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.	**Designing** • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. **Making** • Order the main stages of making. • Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. • Explain their choice of materials according to functional properties and aesthetic qualities. • Use finishing techniques suitable for the product they are creating. **Evaluating** • Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. • Test and evaluate their own products against design criteria and the intended user and purpose. **Technical knowledge and understanding**	**Designing** • Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. **Making** • Write/modify a step-by-step recipe, including a list of ingredients, equipment and utensils • Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. • Make, decorate and present the food product appropriately for the intended user and purpose. **Evaluating** • Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. **Technical knowledge and understanding**

	• Apply their understanding of computing to program and control their products. • Know and use technical vocabulary relevant to the project.	• Develop and use knowledge of how to construct strong, stiff shell structures. • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. • Know and use technical vocabulary relevant to the project	• Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary.
	Key vocab Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, insulator, conductor, control, program, input/output device	**Key vocab** Shell structure, three-dimensional, shape, net, length, breadth, width, scoring, shaping, tabs, assemble, joining, corrugating	**Key vocab** Texture, techniques, ingredients, appearance, smell, hygienic, edible, grown, reared, processed, seasonal, harvested, healthy/varied diet
	At the end of this unit, children will know Discuss and investigate existing battery-powered products. Identify main components in simple circuits. Know the dangers of mains electricity. Identify input and output devices in a circuit. Find faults in circuits and fix them. Make a manual switch for a circuit and understand how to avoid short circuits.	**At the end of this unit, children will know** Investigate and evaluate existing shell structures. Investigate and create their own net for a shell structure. Score, cut out and assemble nets. Know how to strengthen and support structures. Use Computer Aided Design (CAD) software to achieve a finish on their product.	**At the end of this unit, children will know** Investigate a range of products including sensory evaluations with existing products. Know how ingredients are grown, harvested, reared, caught, and processed. Select and use utensils to prepare ingredients hygienically and modify an existing recipe based on the user, occasion and healthier cooking techniques. Follow basic food hygiene practices following instructions to reduce risk.

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Year	Autumn	Spring	Summer
5	**Textiles: Combining different fabric shapes** Make a mobile phone bag Designer study: Vivienne Westwood	**Mechanisms and mechanical systems: Making a 'Quadbike'** (link to Storm Breaker). Designer study: Jaguar Land Rover	**Short DT topic: food and nutrition** Making vegetable samosas
	National Curriculum	**National Curriculum**	**National Curriculum**
	Designing • Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. • Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. **Making** • Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. **Evaluating** • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.	**Designing** • 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. • Generate and develop innovative ideas and share and clarify these through discussion. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. **Making** • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. • Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. **Evaluating** • Continually evaluate and modify the working features of the product to match the initial design specification. • Test the system to demonstrate its effectiveness for the intended user and purpose.	**Designing** • Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. • Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. **Making** • Plan the main stages of a recipe, listing ingredients, utensils and equipment. • Select and use appropriate utensils and equipment to prepare and combine ingredients. • Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. **Evaluating** • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. **Technical knowledge and understanding**

	• Consider the views of others to improve their work. **Technical knowledge and understanding** • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate.	• Investigate famous inventors who developed ground-breaking electrical systems and components. **Technical knowledge and understanding** • Understand and use electrical systems in their products. • Know and use technical vocabulary relevant to the project	• Know how to use appropriate equipment and utensils to prepare and combine food. • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately.
	Key vocab Seam, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, fastening, pins, needles, thread	**Key vocab** Pulley, drive belt, gear, rotation, spindle, driver, axle, motor, circuit, switch, mechanical system	**Key vocab** Ingredients, carbohydrate, protein, vitamins, nutrition, gluten, allergy, intolerance, savoury, seasonality, utensils, combine, mix
	At the end of this unit, children will know Investigate, analyse and evaluate existing products focusing on their properties and how they have been constructed. Thread needles and join textiles using stitches. Understand how to make seams and sew curved edges. Create a 2d paper pattern. Use Computer Aided Design (CAD) software to create patterns and design prints that can be used on transfers.	**At the end of this unit, children will know** Recognise gears and pulley systems in existing toys. Construct a gear mechanism and how gear sizes affect movement. Build a circuit that includes a battery, motor and switch. Know how to strip wire to make an electrical connection work. Construct a wooden frame using tools and equipment.	**At the end of this unit, children will know** Use firsthand and second-hand sources to investigate existing products. Know how to find locally sourced ingredients. Understand promoted seasonality, local produce and healthy eating. Follow a basic recipe and produce savoury food. Understand texture, taste, appearance and smell. Change recipes to make alter taste and shape.

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Year	Spring 1	Spring 2	Summer
6	**Cooking & Nutrition: Making pizza** Chef study: Jamie Oliver	**Short DT: Electrical systems** Making a security alarm	**Frame structure: Bird hide** Designer study: Antoni Gaudi
	National Curriculum	**National Curriculum**	**National Curriculum**
	Designing • Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. • Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. **Making** • Plan the main stages of a recipe, listing ingredients, utensils and equipment. • Select and use appropriate utensils and equipment to prepare and combine ingredients. • Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. **Evaluating** • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. **Technical knowledge and understanding** • Know how to use appropriate equipment and utensils to prepare and combine food.	**Designing** • 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. • Generate and develop innovative ideas and share and clarify these through discussion. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. **Making** • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. • 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. **Evaluating** • Continually evaluate and modify the working features of the product to match the initial design specification. • Test the system to demonstrate its effectiveness for the intended user and purpose.	**Designing** • Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. • Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. **Making** • Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. • Use finishing and decorative techniques suitable for the product they are designing and making. **Evaluating** • Investigate and evaluate a range of existing frame structures. • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.

	• Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately.	• Investigate famous inventors who developed ground-breaking electrical systems and components. **Technical knowledge and understanding** • Understand and use electrical systems in their products. • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to the project.	• Research key events and individuals relevant to frame structures. **Technical knowledge and understanding** • Understand how to strengthen, stiffen and reinforce 3-D frameworks. • Know and use technical vocabulary relevant to the project
	Key vocab Yeast, dough, bran, flour, wholemeal, unleavened, fat, sugar, carbohydrate, protein, nutrients, intolerance	**Key vocab** Series circuit, parallel circuit, switches, components, input device, output device, system, monitor, control, program, flowchart	**Key vocab** Frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent
	At the end of this unit, children will know Use firsthand and second-hand sources to investigate existing products including personal/cultural differences. Understand fair trade and organic. Use a range of utensils and equipment to measure out, cut and combine ingredients to make pizza dough. Change a basic recipe to add personal choices to change shape and taste and consider others' views to make it appealing.	**At the end of this unit, children will know** Know how systems use computers aided control in response to changes in the environment. Know how Light dependent resisters work in systems. Use a range of switches for control. Know about Thomas Edison and the invention of the Light Bulb. Create an electrical system using skills developed in circuit making. Write a computer algorithm to control a circuit.	**At the end of this unit, children will know** Investigate, analyse and evaluate portable frame structures. Know about the works of Stephen Sauvestre who designed the Eiffel Tower. Build 2D frameworks and 3D frameworks and know how to strengthen and reinforce them. Create wooden frames using tools and equipment and a range of joining techniques.