Year 3&4

Textiles – 2D shape to 3D product	Food – Healthy and varied diet	Mechanisms – Leavers and linkages	Structures - Shell	Electrical systems - Simple circuits and switches
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** • Select and use a range of appropriate tools with some accuracy. • Select fabrics and fastenings according to their functional characteristics. **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. • 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. • Understand the need for patterns and seam allowances. • Know and use technical vocabulary.	**Designing** • Generate and clarify ideas through discussion to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. • Use annotated sketches and technology to 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 and record sensory evaluations of a variety of ingredients and products • 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. • Know about a range of fresh and processed ingredients and whether they are grown, reared or caught.	**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 and use finishing techniques. **Evaluating** • Investigate and analyse books and 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.	**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, using annotated sketches and prototypes. **Making** • Order the main stages of making. • 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 suitable finishing techniques. **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** • Develop and use knowledge of how to construct strong, stiff shell structures. • Develop and use knowledge of nets of 3-D shapes.	**Designing** • Gather information about needs and wants of a product to inform design. • Generate, develop, model and communicate realistic ideas through discussion, 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 such in their products. • Apply their understanding of computing to program and control their products. • Know and use technical vocabulary relevant to the project.

Year 5&6

Textiles – Combining different fabric shapes	Food – celebrating culture and seasonality	Mechanisms – Pulleys or gears	Structures - Frame	Electrical systems – more complex switches
Designing • Generate innovative ideas by carrying out research. • Develop, model and communicate ideas through talking, drawing, templates, prototypes and computer-aided design. • Design fit for purpose, functional, appealing products for the intended user. **Making** • Produce detailed lists of equipment and fabrics. • Formulate step-by-step plans. • Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. **Evaluating** • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with the intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. **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.	**Designing** • Generate innovative ideas through research and discussion 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. • Use words, annotated sketches and information and communication technology to communicate ideas. **Making** • Write a step-by-step recipe, including a list of ingredients, equipment and utensils • Select and use appropriate utensils and equipment. • Make, decorate and present the food product appropriately. **Evaluating** • Carry out and record sensory evaluations of a range of relevant products and ingredients. • Evaluate the final product with reference back to the design brief and design specification. • Understand how key chefs have influenced eating habits to promote varied, healthy diets. **Technical knowledge and understanding** • Know how to use utensils and equipment including heat sources • Understand about seasonality in relation to food products and the source of different food products.	**Designing** • Generate innovative ideas by carrying out research. • Develop a simple design specification to guide their thinking. • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. **Making** • Produce detailed lists of tools, equipment and materials. • Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. **Evaluating** • 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. • Consider the views of others to improve their work. • Investigate famous manufacturing and engineering companies relevant to the project. **Technical knowledge and understanding** • Understand that mechanical and electrical systems have an input, process and an output. • Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.	**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. • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join. • Use suitable finishing and decorative techniques. **Evaluating** • Investigate and evaluate a range of existing frame structures. • Critically evaluate their products against their design specification, intended user and purpose. • Research key events and individuals relevant to frame structures. **Technical knowledge and understanding** • Understand how to strengthen, stiffen and reinforce 3-D frameworks.	**Designing** • Use research to develop a design specification for a functional product that responds automatically to changes in the environment. • Generate and develop innovative ideas, sharing and classifying them 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. • Create and modify a computer control program to enable an electrical product to work automatically. **Evaluating** • Continually evaluate and modify the working features of the product. • Test the system to demonstrate its effectiveness. • 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.