Progression of skills in Design and Technology

Red = Food and nutrition
Orange = Mechanisms
Green = Textiles
Blue = Structures
Purple = Electrical systems

Year group	Year 1	Year 2	Year 3
Designing	• Use simple design criteria to help develop their ideas • Generate initial ideas and design criteria through investigating a variety of fruit. • Communicate these ideas through talk and drawings. • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through drawings and mock-ups with card and paper. • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through talking, mock-ups and drawings	• Design appealing products for a particular user based on simple design criteria. • Use knowledge of their own experience and existing products to generate ideas. • Describe what their product is for and the suitability for the intended user. • Communicate these ideas orally and using IT. • Generate initial ideas and simple design criteria and their own experiences, explaining what they could make. • Develop and communicate ideas through drawings and mock-ups. • Design a functional and appealing product for a chosen user and purpose based on simple design criteria. • Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups.	• Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance and taste, for an appealing product for a particular user and purpose. • Develop a design criteria in a meaningful context including purpose part of a balanced diet. • 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. • Experience of using different joining, cutting and finishing techniques with paper and card. • A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science. • Familiarity with general purpose software that can be used to draw accurate shapes, such as Microsoft Word, or simple computer-aided design (CAD), such as 2D Primary by Techsoft.
Making	• Use simple utensils and equipment to e.g cut, slice, and chop safely. • With support, select from a range of fruit according to their characteristics e.g. colour, texture and taste to create a chosen product. • Plan by suggesting what to do next with support. • Select and use tools to cut, shape and join paper and card with modelling and support • Use simple finishing techniques suitable for the product they are creating. • Plan by suggesting what to do next. • Select and use tools, skills and techniques, explaining their choices. • Select new and reclaimed materials and construction kits to build their structures. • Use simple finishing techniques suitable for the structure they are creating.	• Choose and use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. • Select from a range of vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. • Select from and use a range of tools and equipment, explaining their choice, to perform practical tasks such as cutting and joining to allow movement and finishing. • Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. • Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. • Select from and use textiles according to their characteristics.	• Plan the main stages of a recipe, listing ingredients, utensils and equipment. • Use given utensils and equipment to prepare and combine ingredients. • 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. • Plan the order of the main stages of making. • Select and use appropriate tools and software 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 computer-generated finishing techniques suitable for the product they are creating.

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Evaluating	• Taste and evaluate a range of fruit to determine the intended user's preferences. • Talk about their design ideas and what they are making. • Explore a range of existing books and everyday products that use simple sliders and levers. • Evaluate their ideas throughout and their products against the simple design criteria. • Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings. • Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.	• Make simple judgements about their product and ideas against design criteria. • Evaluate ideas and finished products against design criteria, including intended user and purpose. • Explore and evaluate a range of products with wheels and axles. • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria. • Explore and evaluate a range of existing textile products relevant to the project being undertaken. • Evaluate their ideas throughout and their final products against original design criteria.	• Carry out sensory (appearance and taste) 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. • Explore and evaluate a range of products with wheels and axles. • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria. • Investigate and evaluate a range of 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	• Know that everyone should eat at least five portions of fruit and vegetables every day. • Understand that all food comes from plants or animals. • Know how to prepare fruit safely and hygienically with support. • Explore and use sliders and levers. • Understand that different mechanisms produce different types of movement with support. • Know and use technical vocabulary relevant slides and levers to the project with modelling. • Know how to make freestanding structures stronger, stiffer and more stable. • Know and use technical vocabulary relevant to freestanding structures.	• Know that food has to be farmed, grown elsewhere (e.g home) or caught. • Know how to prepare simple dishes safely and hygienically, potentially using a heat source. • Know how to name and sort foods into the five main food groups of The eatwell plate. • Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the wheels and axles. • Understand how simple 3-D textile products are made, using a template to create two identical shapes. • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. • Know and use technical vocabulary relevant to templates and joining techniques.	• Know how to use appropriate equipment and utensils to prepare and combine food. • With prompting and support, can say if their ingredients are grown, reared or caught. • Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to levers and linkages. • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. • Develop and use knowledge of how to construct strong, stiff shell structures. • Know and use technical vocabulary relevant to shell structures.

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Year group	Year 4	Year 5	Year 6
Designing	• Develop their own 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. • 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. • 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.	• Generate innovative ideas through discussion with peers and adults to develop a simple design specification to guide their thinking. • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. • Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide their thinking. • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. • 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.	• Carry out research using surveys, interviews, questionnaires and web-based resources to develop their design specification. • Make design decisions, taking account constraints such as time, resources and cost. • Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. • 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. • Develop a design specification for a functional product that responds automatically to changes in the environment. • Generate, develop and communicate ideas through discussion, annotated sketches and pictorial representations of electrical circuits or circuit diagrams.
Making	• Devise an order of the main stages of making, including accurate measurements. • 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. • 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. • Order the main stages of making.	• Write a step-by-step recipe, including a list of ingredients and their measurements, appropriate equipment and utensils suitable for the task. • Use techniques that involve a number of Steps. • Produce detailed lists of tools, equipment and materials. 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 that are accurately assembled and well finished. Work within the constraints of time, resources and cost.	• Select and explain the choice of appropriate utensils and equipment in relation to the skills and techniques they will be using. • Make, decorate and present the food product appropriately for the intended user and purpose. • 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.

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	• 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.	• 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.	• 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 their electrical product to respond to changes in the environment.
Evaluating	• Carry out sensory evaluations of their ingredients and products (appearance, taste, texture and aroma) Record the evaluations using e.g. tables and simple graphs. • Critically evaluate their ideas and the product against their original design criteria. • 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. • 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.	• Identify the strengths and areas for development in their design criteria and product. • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. • Compare the final product to the original design specification. • Test products with the intended user, where safe and practical, 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. • 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. • Research key events and individuals relevant to frame structures.	• 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 how much products cost to make. • Understand how key chefs have influenced eating habits to promote varied and healthy diets. • 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. • Consider the views of others to improve their work. • 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.

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Technical knowledge	• Know technical differences between the equipment and utensils they have used. • 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. • 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 relevant to 2D and 3D textile products. • Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. • Apply their understanding of computing to program and control their products. • Know and use technical vocabulary relevant to simple circuits and switches.	• Understand about seasonality in relation to food products and the source of different food products. • Understand that different food contains different substances – nutrients, water and fibre. • Understand that mechanical systems have an input, process and an output. • Understand how cams can be used to produce different types of movement and change the direction of movement. • Know and use technical vocabulary relevant to Cams • Understand how to strengthen, stiffen and reinforce 3-D frameworks. • Know and use technical vocabulary relevant to frame structures.	• Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand that recipes can be adapted to change the appearance, taste, texture, aroma and to suit specific dietary requirements. • Understand the importance of the technique of kneading. • 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. • Understand and use electrical systems in their products. • Understand the use of computer control systems in products. • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to monitoring and control.