** Design Technology Curriculum Overview**

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| **Y1** | Mechanisms (sliders and levers) | Textiles (templates and joining techniques) | | Cooking & Nutrition (fruit salad) |
| **Y2** | Structures (freestanding structures) | Mechanisms (wheels and axles) | | Cooking & Nutrition (context?) |
| **Y3** | Textiles (2D to 3D product) | Mechanical Systems (levers and linkages or pneumatics) | | Cooking & Nutrition (soup) |
| **Y4** | Electrical Systems (simple circuits and switches)   * *Electrical Systems (simple programming and control)* | * Structures (shell structures) | | Cooking & Nutrition (Easter Fair) |
| **Y5** | Structures (frame structures) | * Textiles (combining different fabrics) | | Cooking & Nutrition (spring rolls) |
| **Y6** | Mechanical Systems (pulleys or gears) combined with Electrical Systems (more complex switches and circuits)   * *Electrical Systems (monitoring and control)* | | Cooking & Nutrition (nutritional snack) | |

** KS1 Design Technology Key Learning**

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|  | **Prior learning** | **Technical knowledge & understanding** | **Designing** | **Making** | **Evaluating** | **Key Vocabulary** |
| **Y1 - Mechanisms** | * Early experiences of working with paper and card to make simple flaps and hinges. * Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape. | * Explore and use sliders and levers. * Understand that different mechanisms produce different types of movement. * Know and use technical vocabulary relevant to the project. | * 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. | * Plan by suggesting what to do next. * Select and use tools, explaining their choices, to cut, shape and join paper and card. * Use simple finishing techniques suitable for the product they are creating. | * Explore a range of existing books and everyday products that use simple sliders and levers. * Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria. | slider, lever, pivot, slot, bridge/guide  card, masking tape, paper fastener, join  pull, push, up, down, straight, curve, forwards, backwards  design, make, evaluate, user, purpose, ideas, design criteria, product, function |
| **Y1 - Textiles** | * Explored and used different fabrics. * Cut and joined fabrics with simple techniques. * Thought about the user and purpose of products. | * 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 the project. | * 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 and information and communication technology. | * 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. | * 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. | names of existing products, joining and finishing techniques, tools, fabrics and components  template, pattern pieces, mark out, join, decorate, finish  features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function |
| **Y2 - Structures** | * Experience of using construction kits to build walls, towers and frameworks. * Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card. * Experience of different methods of joining card and paper. | * Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. * Understand anduse basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of *The eatwell plate*. * Know and use technical and sensory vocabulary relevant to the project. | * 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. | * 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. | * 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. | cut, fold, join, fix  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, cube, cylinder  design, make, evaluate, user, purpose, ideas, design criteria, |
| **Y2 – Mechanisms** | * Assembled vehicles with moving wheels using construction kits. * Explored moving vehicles through play. * Gained some experience of designing, making and evaluating products for a specified user and purpose. * Developed some | * Explore and use wheels, axles and axle holders. * Distinguish between fixed and freely moving axles. * Know and use technical vocabulary relevant to the project. | * Generate initial ideas and simple design criteria through talking and using own experiences. * Develop and communicate ideas through drawings and mock-ups. | * Select from and use a range of tools and equipment 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. | * Explore and evaluate a range of products with wheels and axles. * Evaluate their ideas throughout and their products against original criteria. | vehicle, wheel, axle, axle holder, chassis, body, cab  assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism  names of tools, equipment and materials used  design, make, evaluate, purpose, user, criteria, functional |
| **Y1&2 – Cooking** | * Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell. * Experience of cutting soft fruit and vegetables using appropriate utensils. |  | * Design appealing products for a particular user based on simple design criteria. * Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. * Communicate these ideas through talk and drawings. | * Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. * Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. | * Taste and evaluate a range of fruit and vegetables to determine the intended user’s preferences. * Evaluate ideas and finished products against design criteria, including intended user and purpose. | fruit and vegetable names, names of equipment and utensils  sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard  flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria |

**Y2 Science links to cooking & nutrition - Animals including humans**

* find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

**Science notes and guidance:** Pupils should be introduced to the basic needs of animals for survival, as well as the importance of exercise and nutrition for humans. They should also be introduced to the processes of reproduction and growth in animals.

** LKS2 Design Technology Key Learning**

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|  | **Prior learning** | **Technical knowledge & understanding** | **Designing** | **Making** | **Evaluating** | **Key Vocabulary** |
| **Y3 - Textiles** | * Have joined fabric in simple ways by gluing and stitching. * Have used simple patterns and templates for marking out. * Have evaluated a range of textile products. | * 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 the project. | * 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. | * 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. | * 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. | fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance  user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces |
| **Y3 – Mechanical Systems** | * Explored and used mechanisms such as flaps, sliders and levers. * Gained experience of basic cutting, joining and finishing techniques with paper and card. | * Understand and use lever and linkage mechanisms. * Distinguish between fixed and loose pivots. * Know and use technical vocabulary relevant to the project. | * 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. | * 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. | * 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. | mechanism, lever, linkage, pivot, slot, bridge, guide  system, input, process, output  linear, rotary, oscillating, reciprocating  user, purpose, function  prototype, design criteria, innovative, appealing, design brief |
| **Y4 - Electrical Systems (simple circuits and switches)** | * Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers. * Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue. | * 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 the project. | * 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. | * 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. | * Investigate famous inventors who developed ground-breaking electrical systems and components. * 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. | series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip  control, program, system, input device, output device  user, purpose, function, prototype, design criteria, innovative, appealing, |
| **Y4 – Electrical systems (Simple  programming and control)**  **(2020-2021)** | * Constructed a simple series electrical circuit, using bulbs, batteries, switches and buzzers. * Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue. | * Understand and use computing to program and control products containing electrical systems, such as series circuits incorporating switches, bulbs and buzzers. * Know and use technical vocabulary relevant to the project. | * Gather information about users’ needs and wants, and develop design criteria to inform the design of products that are fit for purpose. * Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. | * Order the main stages of making. * Select from and use tools and equipment to cut, shape, join and finish with some accuracy. * Connect simple electrical components and a battery in a series circuit to achieve a functional outcome. * Program a standalone control box, microcontroller or interface box to enhance the way the product works. | * Investigate and analyse a range of existing battery-powered products, including pre-programmed and programmable products. * Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. | series circuit,fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, light emitting diode (LED), bulb, bulb holder, USB cable,wire, insulator, conductor, crocodile clip  control, program, system, input device, output device, process  user, purpose, function, prototype, design criteria, innovative, appealing, design brief |
| **Y4 – Structures (shell structures) (2020-2021)** | * 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. | * 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. | * 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. | * 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 | * 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. | shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity    marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating  font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype |
| **Y3&4 – Cooking** | * Know some ways to prepare ingredients safely and hygienically. * Have some basic knowledge and understanding about healthy eating and *The eatwell plate.* * Have used some equipment and utensils and prepared and combined ingredients to make a product. | * 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. | * 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. | * 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. | * 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. * Understand how key chefs have influenced eating habits to promote varied and healthy diets. | name of products, names of equipment, utensils, techniques and ingredients  texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury  hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet  planning, design criteria, purpose, user, annotated sketch, sensory |

**Y3 Science links to cooking & nutrition – Animals including humans** identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat

**Science notes and guidance:** Pupils should continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.

******UKS2 Design Technology Key Learning**

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|  | Prior learning | Technical knowledge & understanding | | Designing | | Making | | Evaluating | | Key Vocabulary | |
| **Y5 - Frame Structures** | * Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials. * Basic understanding of what structures are and how they can be made stronger, stiffer and more stable. | * Understand how to strengthen, stiffen and reinforce 3-D frameworks. * Know and use technical vocabulary relevant to the project. | | * 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. | | * 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. | | * 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. | | Frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent  design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional | |
| **Y5 – Textiles (combining different fabrics) (2020-2021)** | * Experience of basic stitching, joining textiles and finishing techniques. * Experience of making and using simple pattern pieces. | * 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. | | * 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. | | * 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. | | * 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. | | seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces  name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper  design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype | |
| **Y6 - Mechanical Systems** | * Experience of axles, axle holders and wheels that are fixed or free moving. * Basic understanding of electrical circuits, simple switches and components. * Experience of cutting and joining techniques with a range of materials including card, plastic and wood. * An understanding of how to strengthen and stiffen structures. | * 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. * Know and use technical vocabulary relevant to the project. | | * 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. | | * 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. | | * 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. | | pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor  circuit, switch, circuit diagram  annotated drawings, exploded diagrams  mechanical system, electrical system, input, process, output  design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief | |
| **Y6 - Electrical Systems** | * Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product. * Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a program to make a light flash on and off. | * 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. | | * 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. | | * 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. | | * 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. * Investigate famous inventors who developed ground-breaking electrical systems and components. | | series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart  function, innovative, design specification, design brief, user, purpose | |
| **Y6 – Electrical systems (monitoring and control) (2020-2021)** | * Initial experience of using computer control software and an interface box, a standalone box or microcontroller, e.g. Crumble. * Some experience of writing and modifying a program to make a light turn on or flash on and off. * Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product. | * 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 the project. | | * 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. | | * 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. | | * 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. | | reed switch, toggle switch, push-to-make switch,push-to-break switch,light dependent resistor(LDR), tilt switch  light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable,wire, insulator, conductor, crocodile clip  control,program, system, input device, output device, series circuit, parallel circuit  function, innovative, design specification, design brief, user, purpose | |
| **Y5&6 – Cooking** | * Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. * Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients. | | * 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. | | * 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. * Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. | | * Write 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. | | * 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. * Understand how key chefs have influenced eating habits to promote varied and healthy diets. | | ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs  fat, sugar, carbohydrate, 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  design specification, innovative, research, evaluate, design brief |

**Y5 Science links to cooking & nutrition - Animals including humans:** Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function

**Science notes and guidance:** Pupils should learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body.