Long Term Plan DT 2021-22

	Autumn	Spring	Summer
Year One Key Vocabulary	Design Plan Product Slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards	Design Plan Product 2-D,3-D, cut, masking tape, paper clip, materials, metal, plastic, PVA glue, wood, structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, circle, triangle, square, rectangle, cuboid, cube, cylinder	Design Plan Product Amount, baking sheet, Ingredients, measure, mixing bowl, peeler, recipe, sieve, wooden spoon, fruit and vegetable names, names of equipment and utensils , skin, seed, pip, core, cutting, squeezing, healthy diet, choosing, ingredients,
Year One Skills	**Mechanisms – Levers/Sliders** Say how their products will work Say how they will make their products suitable for their intended users Use simple design criteria to help develop their ideas Generate ideas by drawing on their own experiences Designing a moving book/picture for a given audience Use knowledge of existing products to help come up with ideas Develop and communicate ideas by talking and drawing **Design purposeful, functional, appealing products for themselves and other users based on design criteria,** **Explore and use mechanisms, in their products** Explaining how to adapt mechanisms, using bridges or guides to control the movement Select from a range of tools and equipment, explaining their choices Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed Reviewing the success of a product by testing it with its intended audience **Explore and evaluate a range of existing products** Using the vocabulary: up, down, left, right, vertical and horizontal to describe movement	**Structures** Generate ideas by drawing on their own experiences Use knowledge of existing products to help come up with ideas Develop and communicate ideas by talking and drawing Talk about their design ideas and what they are making. **Select from a range of tools and equipment, to perform practical tasks** Structures –stronger, more stable – free standing –such as walls or towers. Making stable structures from card, tape and glue. **Build structures, exploring how they can be made stronger, stiffer and more stable** Developing awareness of different structures for different purposes Learning how to turn 2D nets into 3D structures Learning that the shape of materials can be changed to improve the strength and stiffness of structures Testing whether the structure is strong and stable and altering it if it isn't. Suggest points for improvements **Evaluate their ideas and products against design criteria**	**Cooking Nutrition** Understanding the difference between fruits and vegetables Describing and grouping fruits by texture and taste All food comes from plants or animals That everyone should eat at least five portions of fruit and vegetables every day How to prepare simple dishes safely and hygienically, without using a heat source **Use the basic principles of a healthy and varied diet to prepare dishes**
Year One	**Toys** Moving storybook/picture using simple mechanisms.	**Castles** 3D structures – Castle Free standing structure – walls and towers.	**A World of Animals** Healthy dish, no heat source
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Year Two Key Vocabulary	Design Plan Product 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 Plan Product Joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish, needle, pin, stitch, thread	Design Plan Product Chopping Board, method, knead, measuring jug, measuring spoons scales, weigh, slice, grater, peeling sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, healthy diet, choosing, ingredients.
Year Two Skills	**Mechanisms Axles/Wheels** The correct technical vocabulary for the projects they are undertaking State what products they are designing and making **Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and where appropriate, information and communication technology**. Creating clearly labelled drawings which illustrate movement Following a design brief Learning that mechanisms are a collection of moving parts that work together Learning how axels help wheels to move a vehicle machine **Explore and use mechanisms, in their products** Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move **Select from and use a wide range of materials and components, including construction materials, according to their characteristics** Mechanisms – Wheels and axles Cutting and assembling components neatly Selecting materials according to their characteristics **Explore and evaluate a range of existing products** Suggest how their products could be improved by testing and adapting a design Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move Troubleshooting scenarios posed by teacher	**Textiles** Say how they will make their products suitable for their intended users Use simple design criteria to help develop their ideas **Select from and use a wide range of materials and components, including textiles, according to their characteristics** Textiles – cutting, joining, shaping, finishing. Cutting fabric neatly with scissors Sequencing steps for construction Selecting and cutting fabrics for sewing Sewing running stitch, with evenly spaced, neat, even stitches to join fabric Threading needles with greater independence Tying knots with greater independence Neatly pinning and cutting fabric using a template Decorating using fabric glue or running stitch Discussing as a class, **evaluate their ideas and products against design criteria** Evaluating the quality of the stitching on others' Work Identifying aspects of their peers' work that they particularly like and why	**Cooking Nutrition** That food has to be farmed, grown or caught **Understand where food comes from** How to prepare simple dishes safely and hygienically, without using a heat source That food ingredients should be combined according to their sensory characteristics How to name and sort foods into the five groups in The eatwell plate Slicing food safely using the bridge or claw grip
Year Two	**Great Fire of London** Early Fire Engine	**Great Explorers - Aviation** Cut and shape materials to make a parachute.	**Africa - Kenya** Food- Chapati, Ngwashe, Mango Ice cream
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Year Three Key Vocabulary	Design Brief Criteria Requirements **Evaluate** Health and safety Fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance, running stitch	Design Brief Criteria Requirements **Evaluate** Health and safety Mechanism, lever, pivot, slot, guide system, input, process, output, rotary, oscillating, reciprocating, gear, rotation, spindle, driver, follower, ratio, axle	Design Brief Criteria Requirements **Evaluate** Health and safety 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
Year Three Skills	**Textiles** Describe the purpose of their products Gather information about the needs and wants of particular individuals and groups focusing on the needs of the user Developing design criteria from a design brief Learning that different types of drawings are used in design to explain ideas clearly Refer to their design criteria as they design and make. Designing and making a template from an existing template **Generate, develop, model and communicate their ideas through discussion, annotated sketches and pattern pieces.** **Select from and use a wider range of materials and components, including textiles, according to their functional properties and aesthetic qualities** That a 3D textiles product can be made from a combination of fabric shapes. That a single fabric shape can be used to make a 3D textiles product Threading needles with greater independence Tying knots with greater independence Textiles – joining techniques Evaluating an end product and thinking of other ways in which to create similar items Suggesting modifications for improvement **Investigate and analyse a range of existing products**	**Mechanisms –Gears** Generate realistic ideas, focusing on the needs of the user Developing design criteria from a design brief The correct technical vocabulary for the projects they are undertaking **Generate, develop, model and communicate their ideas through discussion, annotated sketches and computer aided design** How mechanical systems such as gears create movement **Understand and use mechanical systems in their products** Mechanical systems - Gears create movement – Lego Wedo Control **Select from and use a wider range of tools and equipment to perform practical tasks, accurately** Apply a range of finishing techniques, including those from art and design, with some accuracy Using the views of others to improve designs Testing and modifying the outcome, suggesting improvements **Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work** **Understand how key events and individuals in design technology have helped shape the world**	**Cooking Nutrition** **Understand and apply the principles of a healthy and varied diet** That food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world That a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination **Prepare and cook a variety of predominantly savoury dishes using range of cooking techniques** Following the instructions within a recipe
Year Three	**Out of the Darkness** **Textiles:**Design and make a dolls outfit that supports road safety	**Nottingham** Mechanisms –Gears –bike(Raleigh) or fairground ride(Goose Fair) Merry Go Round –Lego WeDo	**Humans and Animals** **Food technology:** Design, make and evaluate a healthy meal Eatwell guide
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Year Four Key Vocabulary	Design Brief Criteria Requirements **Evaluate** Health and safety Shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, recycle, font, lettering, text, graphics, decision, cross-sectional, exploded diagrams, prototype	Design Brief Criteria Requirements **Evaluate** Health and safety series circuit, fault, connection, switch, battery, battery holder, buzzer, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device	Design Brief Criteria Requirements **Evaluate** Health and safety 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
Year Four Skills	**Structures** Develop their own design criteria and use these to inform their ideas Describe the purpose of their products Indicate the design features of their products that will appeal to intended users Share and clarify ideas through discussion Model their ideas using prototypes and pattern pieces Make design decisions that take account of the availability of resources Designing a stable structure that is aesthetically pleasing and selecting materials to create a desired effect **Generate, develop, model and communicate their ideas through discussion, cross-sectional and exploded diagrams and prototypes.** **Select from and use a wider range of tools and equipment to perform practical tasks, accurately** Explain their choice of tools and equipment in relation to the skills and techniques they will be using **Select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities** Measure, mark out, cut and shape materials and components with some accuracy Assemble, join and combine materials and components with some accuracy Apply a range of finishing techniques, including those from art and design, with some accuracy Structures – stiffen, reinforce more complex structures. These can include shell structures which have an outer skin to provide strength (e.g. packaging) **Apply their understanding of how to strengthen, stiffen and reinforce more complex structures** Evaluating structures made by the class Describing what characteristics of a design and construction made it the most effective and taking inspiration from the work of peers **Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work**	**Electrical Systems** Indicate the design features of their products that will appeal to intended users Explain how particular parts of their products work Develop their own design criteria and use these to inform their ideas Use **computer-aided design** to develop and communicate their ideas Make design decisions that take account of the availability of resources Designing an eco bot, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. Order the main stages of making Electrical Systems - Simple series circuits –switches bulbs buzzers and motors and components can be used to create functional products **Understand and use electrical systems in their products** How simple electrical circuits and components can be used to create functional products Learning what electrical conductors and insulators are Understanding that a battery contains stored electricity and can be used to power products Use their design criteria to evaluate their completed products. Considering effective and ineffective designs	**Cooking Nutrition** Make design decisions that take account of the availability of resources Consider the views of others, including intended users, to improve their work That food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world That to be active and healthy, food and drink are needed to provide energy for the body **Prepare and cook a variety of predominantly savoury dishes using range of cooking techniques** such as peeling, chopping, slicing, grating Cooking safely, following basic hygiene rules Adapting a recipe to make it healthy
Year Four	**Potions** Making packaging for different potions. Strengthening structures.	**Eco Heroes** Eco bot with simple circuit using a buzzer	**Anglo Saxons** To make a Saxon Stew –source ingredients from local places – allotment at school

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Year Five Key Vocabulary	Construct Criteria **Evaluate** Health and safety Requirements Designing eg sequence, annotated diagram, sketch, decision, choice, prototype, model, communicate , assemble, accurate, saw, mark out., cam, mechanism, movement, linear motion, rotary motion, pivot, off-centre, axle, force, framework, follower, guide, offset, shaft, input, output.	Construct Criteria **Evaluate** Health and safety Requirements Yeast, dough, flour, wholemeal, unleavened, 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	Construct Criteria **Evaluate** Health and safety Requirements 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
Year Five Skills	**Mechanisms –Cams** Indicate the design features of their products that will appeal to intended users Explain how particular parts of their products work Carry out research, using surveys, interviews, questionnaires and web-based resources Generate innovative ideas, drawing on research After experimenting with a range of cams, creating a design for an longship based on a choice of cam to create a desired movement Produce appropriate lists of tools, equipment and materials that they need **Select from and use a wider range of tools and equipment to perform practical tasks, accurately** How mechanical systems such as cams create movement **Understand and use mechanical systems in their products** Exploring cams, learning that different shaped cams produce different follower movements. Knowing that an input is the motion used to start a mechanism Knowing that output is the motion that happens as a result of starting the input Accurately apply a range of finishing techniques, including those from art and design Use techniques that involve a number of steps Demonstrate resourcefulness when tackling practical problems **Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work** Suggesting points for improvement	**Cooking Nutrition** Select tools and equipment suitable for the task Explain their choice of tools and equipment in relation to the skills and techniques they will be using That a recipe can be adapted by adding or substituting one or more ingredients **Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed** That recipes can be adapted to change the appearance, taste, texture and aroma Using seasonality and foods from different sources design, make and evaluate a 2 course meal. Farm to Fork **Prepare and cook a variety of predominantly savoury dishes using range of cooking techniques** Cutting and preparing vegetables safely To use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking Using equipment safely, including knives, hot pans and hobs Knowing how to avoid cross contamination Following a step by step method carefully to make a recipe	**Electrical Systems** Indicate the design features of their products that will appeal to intended users Explain how particular parts of their products work **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.** Designing an electronic lamp with a complex electrical circuit Creating a labelled design showing positive and negative parts in relation to the LED and the battery **Select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities** Electrical Systems – More complex circuits can be used to create functional products.. How do number of bulbs affect the brightness of the bulb? Investigate number of cells. **Understand and use electrical systems in their products** How more complex electrical circuits and components can be used to create functional products Learning the key components used to create a functioning circuit Learning the difference between series and parallel circuits Evaluating a completed product against the original design sheet and looking at modifications that could be made to improve the reliability or aesthetics of it or to incorporate another type of electronic device, **Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work** **Understand how key events and individuals in design technology have helped shape the world**
Year Five	**The Vikings** Longships with cams	**Magnificent Mayans** Mayan Feast (Using the seasonality and foods from different sources design, make and evaluate a 2 course meal) Preserve food	**Magnificent Architecture(Industrial Revolution)** Victorian Lamp –complex electrical circuit
Bold – The National Curriculum Attainment Targets			

Year Six Key Vocabulary	Construct Criteria **Evaluate** Health and safety Requirements Frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent	Construct Criteria **Evaluate** Health and safety Requirements 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	Construct Criteria **Evaluate** Health and safety Requirements Series circuit, parallel circuit, input/output devices, control boxes, monitoring systems, timed system, flow chart
Year Six Skills	**Structures** Develop a simple design specification to guide their thinking Share and clarify ideas through discussion Model their ideas using prototypes and pattern pieces Designing a gallows featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs .Formulate step-by-step plans as a guide to making accurately measure, mark out, cut and shape materials and components **Generate, develop, model and communicate their ideas through cross-sectional and exploded diagrams, prototypes and computer aided design** Accurately assemble, join and combine materials and components Measuring, marking and cutting wood to create a range of structures Using a range of materials to reinforce and add decoration to structures Using the correct techniques to use saws safely Identifying where a structure needs reinforcement and using card corners for support **Apply their understanding of how to strengthen, stiffen and reinforce more complex structures** Understanding man made and natural structures Knowing that structures can be strengthened by manipulating materials and shapes Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. Improving a design plan based on peer evaluation Testing and adapting a design to improve it as it is developed	**Cooking Nutrition** Identify the needs, wants, preferences and values of particular individuals and groups Make design decisions, taking account of constraints such as time, resources and cost Formulate step-by-step plans as a guide to making **Prepare and cook a variety of predominantly savoury dishes using range of cooking techniques** Testing and adapting a design to improve it as it is Developed **Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed** That food ingredients can be fresh, pre-cooked and processed How food is processed into ingredients that can be eaten or used in cooking for example grain is milled to produce flour, oil is pressed from olives, butter is made from milk. That different food and drink contain different substances – nutrients, water and fibre – that are needed for health Using seasonality and foods from different sources design, make and evaluate a 3 course meal for a family or group of people. Work out the cost for the meal. Understanding the combinations of food that will complement one another Following a recipe, including using the correct quantities of each ingredient Adapting a recipe based on research Working to a given timescale Working safely and hygienically with independence	**Control** Develop a simple design specification to guide their thinking Formulate step-by-step plans as a guide to making Control – **apply their understanding of computing to program, monitor and control their products.** Link to environment. Lego WeDo how to program a computer to monitor changes in the environment and control their products They design an algorithm, perhaps drawing a set of labelled diagrams or storyboard of what the product will do. They then use their algorithm to create an on-screen prototype**.** Make a 3D product to house the control element. Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make **Understand how key events and individuals in design technology have helped shape the world**
Year Six	**Crime and Punishment** Building a gallows	**Meet the Greeks** Create a 3 course meal Come dine with me? Evaluate each course	**Mountains and Rivers** Control a product that links to measuring the environment. Scratch?
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