Curriculum plan- Design and Technology

	Autumn	Spring	Summer
Year 1 and 2 Cycle A	**Mechanisms (movement of simple levers, sliders, wheels and axels)** Can you make a moving picture? Progression of Skills: -State the purpose of the design and the intended user -Explore materials, make templates and mock ups e.g. moving picture / lighthouse -Understand about the simple working characteristics of materials and components -Understand about the movement of simple mechanisms including levers, sliders (Year 1) wheels and axles (Year 2) -Measure, mark out, cut out and shape materials and components -Assemble, join and combine materials and components -Use simple fixing materials e.g. temporary – paper clips tape and permanent – glue, staples Skills from the NC: <u>Design</u> -design purposeful, functional, appealing products for themselves and other users based on design criteria -generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology <u>Make</u> -select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] -select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics <u>Evaluate</u> -explore and evaluate a range of existing products -evaluate their ideas and products against design criteria	**Cooking and nutrition** Can you design and make a healthy recipe? Progression of skills: - Understand that food ingredients should be combined according to their sensory characteristics - Know where food comes from - Use appropriate equipment to weigh and measure ingredients -Prepare simple dishes safely and hygienically, without using a heat sources -Use techniques such as cutting Name and sort foods into the five groups of the 'eat well' plate -Know that everyone should eat at least five portions of fruit and vegetables every day Skills from the NC: -use the basic principles of a healthy and varied diet to prepare dishes -understand where food comes from	**Structures** Can you make a free standing structure that is strong and stable? Progression of skills: - State the purpose of the design and the intended user - Select from a range of materials and components according to their characteristics - Follow procedures for safety - Measure, mark out, cut out and shape materials and components - Assemble, join and combine materials and components - Understand how freestanding structures can be made stronger, stiffer and more stable Skills from the NC: <u>Design</u> -design purposeful, functional, appealing products for themselves and other users based on design criteria -generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology <u>Make</u> -select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] -select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics <u>Evaluate</u> -explore and evaluate a range of existing products -evaluate their ideas and products against design criteria

Year 1 and 2 Cycle B	**Mechanisms** Can you make a moving toy vehicle? Progression of skills: -State the purpose of the design and the intended user -Explore materials, make templates and mock ups e.g. moving picture / lighthouse -Understand about the simple working characteristics of materials and components -Understand about the movement of simple mechanisms including levers, sliders (Year 1) wheels and axles (Year 2) -Measure, mark out, cut out and shape materials and components -Assemble, join and combine materials and components -Use simple fixing materials e.g. temporary – paper clips tape and permanent – glue, staples Skills from NC: Design -design purposeful, functional, appealing products for themselves and other users based on design criteria -generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make -select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] -select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate -explore and evaluate a range of existing products -evaluate their ideas and products against design criteria	**Textiles** Can you make a 3D product using fabric shapes? Progression of skills: -State the purpose of the design and the intended user -Explore materials, make templates and mock ups -Follow procedures for safety -Use and make own templates -Measure, mark out, cut out and shape materials and components -Use finishing techniques, including those from art and design -investigate - what products are, who they are for, how they are made and what materials are used Skills from NC: Design -design purposeful, functional, appealing products for themselves and other users based on design criteria -generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make -select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] -select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate -explore and evaluate a range of existing products -evaluate their ideas and products against design criteria	**Cooking and nutrition** Can you make some tasty snacks? (e.g. dips and dippers) Progression of skills: -- Understand that food ingredients should be combined according to their sensory characteristics - Know where food comes from - Use appropriate equipment to weigh and measure ingredients -Prepare simple dishes safely and hygienically, without using a heat sources -Use techniques such as cutting Name and sort foods into the five groups of the 'eat well' plate -Know that everyone should eat at least five portions of fruit and vegetables every day Skills from NC: -use the basic principles of a healthy and varied diet to prepare dishes -understand where food comes from

Year 3 and 4 Cycle A	**Cooking and nutrition** How do you make the perfect loaf of bread? **Textiles- Christmas unit** Progression of skills: - Understand how food is processed into ingredients that can be eaten or used in cooking - How to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source - How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking - Measure using grams - Follow a recipe -Produce detailed lists of tools, equipment and materials that they need Skills from NC: -understand and apply the principles of a healthy and varied diet -prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques -understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	**Structures- shell structures** Design and make a package for a fragile product Progression of skills: - Model their ideas using prototypes and pattern pieces -Explain their choice of materials and components according to functional properties and aesthetic qualities -Assemble, join and combine materials and components with some accuracy apply a range of finishing techniques, include those from art and design, with some accuracy -Investigate - how well products have been designed, how well products have been made, why materials have been chosen, what methods of construction have been used, how well products work, how well products achieve their purposes and how well products meet user needs and wants -Know how to make strong, stiff shell structures Skills from NC: <u>Design</u> -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 -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design <u>Make</u> -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities <u>Evaluate</u>	**Mechanisms (levers and linkages)** How do we find a happy balance between our online and offline activities? Progression of skills: -Understand how levers and linkages or pneumatic systems create movement -Understand how to use learning from science and maths to help design and make products that work -Know that mechanical and electrical systems have an input, process and output Skills from NC: <u>Design</u> -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 -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design <u>Make</u> -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities <u>Evaluate</u> -investigate and analyse a range of existing products -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 and technology have helped shape the world <u>Technical knowledge</u>

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	Autumn	Spring	Summer
Year 3 and 4 Cycle B	**Textiles** How do we make a 3D product using 2D fabric shapes? Progression of skills: -Order the main stages of making -Use a wider range of materials and components, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components -Follow procedures for safety -Assemble, join and combine materials and components with some accuracy apply a range of finishing techniques, include those from art and design, with some accuracy -Know that a single fabric shape can be used to make a 3D textiles product Skills from NC: Design -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 -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate -investigate and analyse a range of existing products	**Cooking and nutrition** What makes a healthy and balanced diet? Progression of skills: -Know that food ingredients can be fresh, pre-cooked and processed -Know 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 -Know that seasons may affect the food available -How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking -Know that a healthy diet is made up from a variety and balance of different foods and drinks, as depicted in the 'eat well' plate -Know that to be active and healthy, food is needed to provide energy for the body Skills from NC: -understand and apply the principles of a healthy and varied diet -prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques -understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	**Electrical systems** How does a battery powered night-light work? Progression of skills: -Understand how simple electrical circuits and components can be used to create functional products -Know that mechanical and electrical systems have an input, process and output -Understand how to use learning from science and maths to help design and make products that work -Use a wider range of materials and components, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components Skills from NC: Design -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 -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate -investigate and analyse a range of existing products

	-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 and technology have helped shape the world		-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 and technology have helped shape the world <u>Technical knowledge</u> - understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

Year 5 and 6 Cycle A	**Textiles** Can you make a 3D product from a combination of fabric 2D shapes? Progression of skills: -Accurately apply a range of finishing techniques, including those from art and design -Know that a 3D textiles product can be made from a combination of fabric shapes Skills from NC: Design -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 -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate -investigate and analyse a range of existing products -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 and technology have helped shape the world	**Mechanisms** How do gears and pulleys create movements? Progression of skills: -Understand how cams, pulleys and gears create movement -Know that mechanical and electrical systems have an input, process and output -Accurately assemble, join and combine materials/ components Skills from NC: Design -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 -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate -investigate and analyse a range of existing products -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 and technology have helped shape the world Technical knowledge -understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]	**Cooking and nutrition** Can you adapt and change a recipe to suit you? Progression of skills: -Know that a recipe can be adapted a by adding or substituting one or more ingredients -Know that recipes can be adapted to change the appearance, taste, texture and aroma -Know that different foods contain different substances - nutrients, water and fibre - that are needed for health -Measure accurately -Work out ratios in recipes Skills from NC: -understand and apply the principles of a healthy and varied diet -prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques -understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Year 5 and 6 Cycle B	**3D structures** Can you design and make a safe den or habitat for an animal? Progression of skills: -Know how to reinforce/strengthen a 3D framework -Accurately measure to nearest mm, mark out, cut and shape materials and components -Accurately assemble, join and combine materials/ components -Select materials and components suitable for the task Skills from NC: Design -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 -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate -investigate and analyse a range of existing products -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 and technology have helped shape the world Technical knowledge -apply their understanding of how to strengthen, stiffen and reinforce more complex structures	**Computer control** How are sensors used when making a burglar alarm? Progression of skills: -Understand how to program a computer to monitor changes in the environment / control their products -Use the correct technical vocabulary for the projects they are undertaking Skills from NC: Design -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 -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate -investigate and analyse a range of existing products -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 and technology have helped shape the world Technical knowledge - apply their understanding of computing to program, monitor and control their products.	**Electrical systems** How are switches used in more complex circuits? Progression of skills: -Understand how to use learning from science and maths to help design and make products that work -Know that mechanical and electrical systems have an input, process and output -Use the correct technical vocabulary for the projects they are undertaking -Understand how more complex electrical circuits and components can be used to create functional products Skills from NC: Design -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 -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate -investigate and analyse a range of existing products -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 and technology have helped shape the world

			Technical knowledge - understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]