Design and Technology Medium Term Plan

Intent	Children across The Federation of Wellington Community Primary School and Marlborough Infant School will use creativity and imagination to design and make products that solve real and relevant problems within a variety of contexts. Through the evaluation of past and present design technology, they will develop a critical understanding of its impact of daily life and the wider world. Our curriculum covers: design, construction, cooking and nutrition, use of tools, exploring mechanisms, electrical systems and computing.					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	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 To analyse existing products (puppets) To revisit threading beads before progressing to large needles To understand how to successfully thread a needle: To explore whipstitch and how to use this stitch to join two pieces of fabric To design a purposeful puppet, considering the functionality and aesthetics To select from a range of tools to successfully cut, shape, join and finish a puppet To create a puppet (Potentially, embellish puppet with features to make their character) To use specific topic vocabulary to evaluate and critique their own product, beginning to recognise the strengths and weaknesses of the product. Sewing – Puppets **Key vocabulary:** design, needle, prototype, puppet, puppeteer, puppetry, sew, sewing, template, thread, whipstitch, join, evaluate.		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 & Nutrition: • use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from. To analyse existing products (fruit salads) To understand how hygiene approaches to food have changed over time To explain how to be hygienic when preparing food To use a knife safely to cut and why To identify and name the different food groups and give some examples, understanding the importance of these different food groups (could also be linked to **seasons**) To design and plan their product, selecting from a range ingredients To follow a recipe to prepare a dish (fruit salad) To use specific topic vocabulary to evaluate and critique their own product, beginning to recognise the strengths and weaknesses of the product. Cooking & Nutrition – Fruit Salads - DT Day **Key vocabulary:** carbohydrate, chop, chopping board, chopping, clean, cut, dairy, diet, fruit, healthy, hygiene, hygienic, hygienically, protein, safe, salt, sugar, treat, vegetable, water	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 Technical knowledge: • build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. To explore how to make a leaver and a slider To design a junk model, selecting appropriate 'junk' for outcome To cut safety using, cutting, folding, and shaping and explore ways to strengthen joins To strengthen joins on their product To make a prototype and understand how a designer uses this then make the best product possible To remake product, based on prototype evaluation To use specific topic vocabulary to evaluate and critique their own product, beginning to recognise the strengths and weaknesses of the product. Construction - Junk model with sliders and levers **Key vocabulary:** cut, fold, strong, stronger, strength, strengthen, leaver, slider, join, joint	

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 2	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 & Nutrition: • use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from. To analyse existing products (could look at supermarket wraps etc.) To begin to understand where food comes from (ground – root, plant, tree, bush / result of combined ingredients like bread/pasta / change of state – cheese) To understand how to cut, peel & grate safely and hygienically (build on learning from Year 1) To understand and discuss what a healthy & varied diet looks like (revisit food groups) To design and plan their product (healthy wrap), taking into consideration the balanced diet discussed previously To make a healthy wrap by selecting the appropriate tools, equipment and ingredients To use specific topic vocabulary to evaluate and critique their own product, beginning to recognise the strengths and weaknesses of the product and begin to offer feedback/listen to others' views. Cooking & Nutrition – Healthy Wraps - DT Day **Key vocabulary:** cut, peel, grate, knife, peeler, grater, chop, chopping board, grow, grown, growing, harvested, harvest, baker, butcher, farmer, green grocer, hygiene, hygienically, healthy, diet, varied		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 To analyse existing products (Anne Kelly & Andy Goldsworthy) To revisit and consolidate whipstitch (Year 1) To understand and select which stitch is best suited to outcome (a mixed media collage) To develop knowledge of and apply large running stitch To discuss the positive and negatives of running stitch as opposed to whip stitch. To design and plan their collage, selecting appropriate tools, equipment and resources To make final product - children understand you can join a range of two pieces of material together, felt, sequins, sticks, and leaves etc. to make a collage of local environment. To use specific topic vocabulary to evaluate and critique their own product, beginning to recognise the strengths and weaknesses of the product and begin to offer feedback/listen to others' views. Sewing – Mixed media sewing collage (linked to Art) **Key vocabulary:** attach, attached, contrast, evaluate, jagged, join, manufactured, materials, natural, pattern, prototype, purpose, rough, running stitch, rural, secure, sew, shade, smooth, soft, template, texture, thread, urban	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 Technical knowledge: • build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. To explore how to make a leaver and a slider To design a junk model, selecting appropriate 'junk' for outcome To safely cut, fold and shape materials and introduce joining wheels & axels To investigate and explore ways to join paper/card To design a purposeful and functional product To make a prototype and understand how a designer uses this then make the best product possible To improve product and remake based on feedback and self-evaluation from prototype To test whether the product is fit for purpose To use specific topic vocabulary to evaluate and critique their own product, beginning to recognise the strengths and weaknesses of the product. Construction – 3D model aeroplane with wheels & axels **Key vocabulary:** 3D, adhesive, attach, coil, contact, fold, predict, strong, stronger, weak, weaker, axel, wheels, join, prototype

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	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 & Nutrition: • Understand and apply the principles of a healthy and varied diet. • Understand seasonality and know where and how a variety of ingredients are grown Cooking and nutrition – Cous cous salad LO: To understand different food cultures LO: To understand food sustainability choices LO: To plan, make and evaluate a healthy dish **Key vocabulary:** cut, peel, grate, knife, peeler, grater, chop, chopping board, grow, grown, growing, harvested, harvest, baker, butcher, farmer, green grocer, hygiene, hygienically, healthy, diet, varied		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 Sewing – Egyptian Headdress LO: To begin to analyse an existing product LO: To compare running and basting stitches LO: To begin to understand the design brief to meet the needs of the project LO: To make an Egyptian headdress choosing an appropriate fabric LO: To begin to evaluate the success of my product **Key vocabulary:** Running stitch, basting stitch, hieroglyphics, textiles, sew, thread, needle, stitch, binca.	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 Technical Knowledge: • understand and use mechanical systems in their products [levers and linkages] Design and make – levers and linkages - moving pollinators LO: To begin to analyse an existing product LO: To compare different lever and linkage systems LO: To begin to understand the design brief to meet the needs of the project LO: To make a lever and linkage system choosing an appropriate material LO: To begin to evaluate the success of my product **Key vocabulary:** Mechanism, system, lever, linkage, slot, guide/bridge, loose pivot, fixed pivot	

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 4	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 Technical Knowledge: • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] Scuttle bugs - Electrical mechanism LO: To design purposeful, functional and appealing products through exploring materials, talking and drawing. LO: To use a range of tools and equipment to perform practical tasks and to explore and use mechanisms. LO: To evaluate designs and products against a design **Key vocabulary:** Mechanism, structure, material, construct, join, design, sturdy, motor, current		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 & Nutrition: • Understand and apply the principles of a healthy and varied diet. • Understand seasonality and know where and how a variety of ingredients are grown Cooking and nutrition – Healthy living – survival bars LO: To apply my understanding of a healthy lifestyle when creating a seasonally-appropriate savoury dish. LO: To evaluate existing products. LO: To design and create a healthy product. LO: To evaluate the final product against design criteria. **Key vocabulary:** cut, peel, grate, knife, peeler, grater, chop, chopping board, grow, grown, growing, harvested, harvest, baker, butcher, farmer, green grocer, hygiene, hygienically, healthy, diet, varied		Design • Use research and develop collaboratively a design criteria for an appealing product which is fit for a purpose and users needs are focused upon. • Generate, develop and communicate ideas through discussions, annotated sketches, exploded diagrams, computer aided technology and prototypes. Make • Select and use a wider range of tools for practical tasks of cutting, joining, shaping and finishing. • Select from and use a wider range of materials and components including construction materials, textiles and ingredients for functional properties and aesthetic purposes. Evaluate • Investigate and begin to analyse existing products • Evaluate their own products and ideas against criteria and user needs, as they design and make identifying strengths and improvements. Technical knowledge • Research key events and individuals relevant to frame structures and develop and use knowledge of how to construct strong, stiff shell structures (structures). Structures – bird hides LO: To analyse and research existing products LO: To design and make a bird hide LO: To build, test and evaluate a bird hide **Key vocabulary**: Structure, strong, stiff, prototype, machan, function, dowel, lolly sticks, paper, batton, fabric, straws, waterproof	

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 5	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 Technical Knowledge: • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] Space Buggies – Electric powered pulley system LO: To explore and investigate existing products LO: To design and make a moving vehicle fit for purpose. LO: To evaluate the final product against the design criteria **Key vocabulary:** Jig, terrain, chamfer, alignment, friction, thrust, traction, axle, parallel, chassis, mechanism, structure, sturdy, streamline.		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 Sewing – Space Toy LO: To analyse an existing product LO: To compare a range of stitches LO: To understand and create a design brief LO: To use shape to make a space toy LO: To use a range of fabrics to decorate LO: To evaluate the success of the product **Key vocabulary:** Textile, stitch, sew, running stitch, thread, needle, backstitch, fraying, over stitch, blanket stitch, cross stitch, satin stitch, satin, long and short stitch, fishbone stitch, French knot, seam, hem, wadding, reinforce, yarn, cotton, nylon.	Design • Use research to develop a design criteria which focuses on aesthetics, purpose and functionality. • Generate, develop, model and communicate ideas through discussions, annotated sketches, cross-sectional and exploded diagrams and pattern pieces. Make • Competently select from and use appropriate tools to measure, mark out, cut, shape and join materials together. • Competently use a wide range of materials according to their functional properties and aesthetic qualities Evaluate • Investigate and evaluate a range of existing products • Continually evaluate and modify the working features of the product to match the initial design specification Cooking and nutrition • Prepare and cook a savoury food whilst applying the principles of a healthy and varied diet. Healthy living – bread LO: To analyse existing products LO: To design a product and explain why ingredients were chosen LO: To make a savoury considering the components of a healthy, balance diet. LO: To evaluate the strength and weaknesses of the product. **Key Vocabulary:** Ingredients, kneading, proving, quantities, bacteria, dough, food poisoning, mould, yeast.	

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 6	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 Technical Knowledge: • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] Fairground rides with a lever system LO: To research the fairground rides. L.O: To understand and use a mechanical, electrical system in preparation for a product. L.O: To select from a range of materials, tools and equipment L.O: To accurately assemble, join and combine materials and components. L.O: To design a functional and appealing product that will be fit for purpose. L.O: To measure, mark-out, cut and shape materials and components. L.O: To evaluate my fairground ride. **Key vocabulary:** Prototype, circuit, switch, cell, electricity, wires, power, component, motor, conductor, insulator, short circuit, cam, rod, wheel.		Design: • Use research to develop a design criteria which focuses on aesthetics, purpose and functionality. • Generate, develop, model and communicate ideas through discussions, annotated sketches, cross-sectional and exploded diagrams and pattern pieces. Make: • Competently select from and use appropriate tools to measure, mark out, cut, shape and join materials together. • Competently use a wide range of materials according to their functional properties and aesthetic qualities Evaluate: • Investigate and evaluate a range of existing products • Continually evaluate and modify the working features of the product to match the initial design specification Cooking and nutrition: • Prepare and cook a savoury food whilst applying the principles of a healthy and varied diet. Healthy living – pizza LO: To analyse existing products LO: To design a product and explain why ingredients were chosen LO: To make a savoury considering the components of a healthy, balance diet. LO: To evaluate the strength and weaknesses of the product. **Key Vocabulary:** ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, kneading, bacteria, proving, at, 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.		Design: • Use research and develop a design criteria of an innovative, functional and appealing product which is fit for purpose and aimed at particular individuals or groups. • Generate, develop, model and analyse ideas discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes and computer aided designs. Make: • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join materials together. • Select from and competently use a wider range of materials and components focusing on the functional properties, aesthetic qualities and the intended users. Evaluate: • Investigate and evaluate a range of existing products • Understand how key events and individuals in design and technology have helped shape the world • Continually evaluate and modify the working features of the product to match the initial design specification and take into accounts others' views Technical knowledge: • Apply knowledge of computing to program, monitor and control their product. • Apply knowledge of leavers and linkages to choose an appropriate mechanism for their product. Design and make – Micro Bits LO: To analyse products that use programmed movement LO: To design a product that uses programmed movement LO: To connect a servo to a Micro Bit and program it LO: To make a painting that can move using a lever and linkage mechanism LO: To evaluate my product **Key Vocabulary**: Input, output, algorithms, Micro Bit, coding, iteration, programming, hardware, LED, loops, software, string.	