MTP Nevill Road Junior School Design and Technology Progression of Knowledge and Skills

Year Group	Focus	Project Title	Iterative Process	Key Vocabulary
3 CC History Bronze Age	Wheels and Axles Measuring drawing lines, folding techniques, accurate cutting, use a glue gun safely, joining techniques.	LO: I can design, make and evaluate a Bronze Age carriage prototype (product) for a Lego person (user) to take items to trade (purpose).	 Investigate: Identify and explore wheeled products in the outside world, then in the Bronze Age. Describe the size, number, position and methods of fixing wheels and movement. Understand how key events and individuals have helped shaped technology in the world. Practise: Measure and draw straight lines, folding techniques and accurate cutting. Use a glue gun safely. Identify any Health and Safety risks. Plan: Identify the product, user and purpose. Develop a design brief with the teacher, so they understand if their design and product is successful. Draw and label the product they will be creating. Identify resources required. Identify any Health and Safety risks. Make: Acquire resources. Assemble components, ensure axles run freely, join materials Evaluate: Using design criteria, evaluate their own and others products. Test products. Identify any improvements they would make. 	Mechanical systems, axle, axle holder, chassis, dowel, wheels, glue gun, folding, joining product, user, purpose, investigate, practise, plan, make, evaluate

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5 CC History Britain before 1066	Cams Understand and choose most appropriate Cams products. Use a hacksaw and bench hook/ clamps safely, Use a hand drill correctly,	LO: I can design, make and evaluate a Viking Boat prototype (product) for a child (user) to re-tell a story (purpose).	 Investigate: Identify and explore Cams products in the outside world. Investigate famous manufacturing and engineering companies relevant to the product. Describe the different types of movement: rotation, oscillating, reciprocating and the parts: follower, lever, slider, guide, spacer, Understand how key events and individuals have helped shaped technology in the world. Practise: Using pre-cut Cams, mount different ones on a wooden board and observe their movement with a follower. Measure accurately to make an off centre Cam and observe how the Cam lifts the follower. Identify any Health and Safety risks. Plan: Children generate innovative ideas by carrying out research using: surveys, interviews or questionnaires. Develop a simple design specification, considering their intended user. Develop and communicate ideas, through discussion, annotated drawings and drawings from different views. Identify any Health and Safety risks. Make: Produce a detailed list of tools, equipment and materials required. Formulate step by step plans. Select from and use a range of tools. Ensure the product is well assembled and rotates freely. Evaluate: Using design specification, evaluate their own and others products. Test products with the intended user in mind. Evaluate the quality of the design, manufacture, functionality and fitness for purpose. Identify any improvements they would make. 	Mechanical systems, motions (rotation, oscillating, reciprocating), Cam (egg, off- centre, peg, snail), follower, lever, slider, guide, spacer, hacksaw, hand drill, bench hook, clamps product, user, purpose, investigate, practise, plan, make, evaluate

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4	Shell Structures using CAD Nets- Microsoft Word CC RE and Festivals - Christmas Making nets/ patterns using CAD Joining flat faces to make 3D shapes Scoring Assembling techniques	LO: I can design, make and evaluate a Gift Box (product) for a friend (user) to put a small present in (purpose).	 Investigate: Identify and explore different types of packaging, in the outside world, and which safely protects products. Use questions to develop understanding around the following areas: purpose, material, construction, attraction of the design. Understand how key events and individuals have helped shaped technology in the world. Practise: Using Microsoft Word, open existing shapes and manipulate them and then draw nets of their own. Ensure there are tabs added to the net. Use different font tools to achieved the desire appearance for the outside of their product. Making a net out of card, joining flat faces with masking tape and cellotape, to create 3D shapes. Use scoring, cutting and assembling techniques. Identify any Health and Safety risks. Plan: Identify the product, user and purpose. Develop a design brief with the teacher, so they understand if their design and product is successful. Draw and label the pattern and product they will be creating. Identify resources required and the order of tasks. Print out their chosen net and print on or attach to card. Score, cut and assemble the net. Check the product opens easily. Measure and cut a window in the product. Secure acetate to create a window. Focus on the outside packaging and the attraction of the design. Evaluate: Using the design brief, evaluate your own and others products. Test products with the intended user in mind. Identify any improvements they would make, drawing on the original design criteria. 	Shell structures, Computer Aided Design, shell structure, font, net, 3D, tabs, marking out, scoring, masking tape, cellotape tape, acetate sheets, user, purpose, investigate, practise, plan, make evaluate

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6 Sti and reii con str CC Fes Chr Cre spe Cre inn pro Ted to i stif pro Cut acc	d d nforcing a nplex a ructures E RE and a stivals - ristmas g eate design C ecifications E	O: I can design, make and evaluate a Christmas Eve Box product) for a child (user) to use for difts on Christmas Eve purpose)	 Investigate: identify and explore different types of portable and permanent frame structures in the outside world. Use questions to develop understanding around the following areas: user's needs, materials chosen, construction methods, framework strengthening and reinforcement, innovation. Understand how key events and individuals have helped shaped technology in the world. Practise: Reinforce square card frameworks using diagonals. Understand how triangulation adds strength and rigidity. Develop skills and techniques to practise cutting wood safely, using junior hacksaws, clamps, bench hooks. Identify any Health and Safety risks. Plan: Children generate innovative ideas by carrying out research using: surveys, interviews or questionnaires. Develop a simple design specification, considering their intended user, time constraints, resources and costs. Develop and communicate ideas, through discussion, annotated drawings and drawings from different views. Identify any Health and Safety risks. Make: Produce a detailed list of tools, equipment and materials required. Formulate step by step plans. Select from and use a range of tools. Ensure the product is well assembled and is a rigid, reinforced 3D structure. Evaluate: Critically evaluate their products against their design specification, intended user and purpose. Carry out appropriate tests. Identify strengths and areas for development. 	Complex structures, Modelling, compression, strut, tension, tie, diagonal, horizontal, vertical, triangulation, frame structure innovative product, user, purpose, investigate, practise, plan, make, evaluate

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4	Use simple electrical systems CC Geography 3D map Europe/ Science- electricity Select appropriate materials Create circuits which light signs up. Select appropriate switches.	LO: I can design, make and evaluate a light up 3D map (product) for a child (user) to identify the countries in Europe (purpose).	 Investigate: Investigate commercial examples of different battery powered products in the outside world. Use questions to develop understanding around the following areas: Where and why used? How it works? Key features and components. How does the switch work? What materials used and why? How does it suit its intended user and purpose? Remind children about dangers involving electricity. Practise: Recap or conduct simple series circuits with batteries and different types of switches and buzzers. Discuss components in a circuit and input and output devices. Demonstrate how to find a fault in a simple circuit and correct it giving children opportunities to practise. Children use a variety of materials (i.e. card, plastic, foil, paper clips, paper fastener) to make different switches (i.e. ones that you press, turn, slide from side to side.) Identify any Health and Safety risks. Plan: Identify the product, user and purpose. Develop a design brief with the teacher, so they understand if their design and product is successful. Draw and label the circuit and product they will be creating. Identify resources required. Identify any Health and Safety risks. Make: With the teachers help, identify resources required and the order of tasks. Produce a detailed list of tools, equipment and materials required. Formulate step by step plans. Make and use a range of switches (toggle, push to make, push to break.) Children to ensure they have tested their product before making and finally assembly on the 3D map. Evaluate: Using the design brief, evaluate your own and others products. Test products with the intended user in mind. Identify any improvements you would make, drawing on the original design criteria. 	Electrical systems, Series, circuit, fault, connection, switches (toggle, push to break) battery, battery holder, bulb, bulb holder, wire, insulator, output devices, input devices- crocodile clip product, user, purpose investigate plan, evaluate

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6 CC Computing /History South America	Programming Create a prototype (carnival float) Select, attach appropriate materials which will allow the prototype to light up/move Create a program to control the prototype	LO: I can design, make and evaluate a Carnival Float prototype (product) for a Lego person (user) to test that a computer program works automatically in response to changes in the environment (purpose).	 Investigate: Investigate commercial examples in the outside world, of products that respond to changes in the environment using a computer control program. Use questions to develop understanding around the following areas: Why is the computer control program used to operate the product? What are the advantages of having computer control? What input devices (switches) and output devices (bulbs, buzzers, motors etc.) have been used? Who have the products been designed for and for what purpose? Remind children about dangers involving electricity. Practise: Using a model circuit, enable children to practise using different input and output devices. Allow them to practise methods for making secure electrical connections, using different switches. Drawing on related computing activities ensure that children can write and modify computer control programs that include: inputs, outputs and decision making. Test out the programs using electrical components connected to microcontrollers, interface boxes or standalone boxes. Identify any Health and Safety risks. Plan: Children generate innovative ideas by carrying out research using: surveys, interviews or questionnaires. Develop an authentic design specification, considering their intended user, time constraints, resources and costs. Develop and communicate ideas, through discussion, circuit diagrams, including the microcontroller, interface box or standalone box to be used. Indicate the design decisions made, including the location of the electrical components, the control program and how it works as a system with an input, process and output. Identify any Health and Safety risks. Make: Create and modify a computer program to enable the product to work automatically in response to changes in the environment. Create a cardboard carnival float prototype. Input the USB to the Crumble and connect input/output devices. Evaluate: Critically evaluate throughout and the final product, comparing it to the original d	Programming to control a product, Switches (reed, toggle, push-to- make, push-to- break, tilt) light dependent resistor (LDR), light emitting diode (LED), motor, bulb, battery, battery holder, USB cable wire, insulator, conductor, crocodile clip Control, program crumble, system, input device, series circuit, parallel circuit, design specification, design brief, product, user, purpose, investigate plan, evaluate

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3 Cc History Ancient Egypt	Textiles Create paper patterns Pinning pattern onto fabrics Cutting accurately Thread needles Sewing techniques for joining fabrics Select and add a fastening to fabric Using applique for decoration	LO: I can design, make and evaluate a hieroglyphics pencil case (product) for a child (user) to use to carry stationery (purpose).	 Investigate: Children investigate examples of different textile products, in the outside world, that have a selection of stiches, joins, fabrics, finishing techniques, fastenings and purposes. Use questions to develop understanding around the following areas: What is its purpose? What properties/characteristics does the fabric have? Why was this fabric chosen? How has the fabric been joined together? How effective are its fastenings? How has it been decorated? What would the 2D pattern look like? Remind children about dangers involved in sewing. Practise: Take apart a product and create a paper pattern, identify the need for a seam allowance, using 2D shapes. Children to learn how to pin a pattern on to fabric and cutting techniques. Develop skills in threading needles. Practise a range of sewing techniques to join fabrics together (back, running, over sew, blanket) allow children to practise sewing 2 small pieces of fabric together using these techniques. Identify any Health and Safety risks. Plan: Identify the product, user and purpose. Develop a design brief with the teacher, so they understand if their design and product is successful. Draw and label the pattern and product they will be creating. Identify resources required. Identify any Health and Safety risks. Make: Select and add a fabric and fastening (zip, button, Velcro) according to their functional characteristics. Using your pattern cut out the fabric, allowing a seam allowance. Join the fabric together using one of the recommended techniques (back, running, over sew, blanket). Decorate the pencil case (product) with Egyptian Hieroglyphics using applique. Evaluate: Using the design brief, evaluate your own and others products. Test products with the intended user in mind. Identify any improvements you would make. 	Textiles, fabric, needle, thread, pin, fastenings (zip, button, Velcro), techniques for joining stiches (back, running, over sew, blanket), decorative techniques, templates, seam, seam allowance, pattern, pattern pieces, applique product, user, purpose investigate plan, evaluate

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CC RE Ch and dif Festivals- rel Christmas fal Crive van ter shu St fir rov sti ne Us of de sti Im co /a wh fal At wa sti	extiles hoosing ifferent/ elevant abrics reating a ariety of emplate hapes tart and inish off a bw of tiches eatly se a range f ecorative tiches mprove bonsistency appearance hen joining abrics ttach adding or tiffening ccurately	LO: I can design, make and evaluate a fabric advent calendar (product) for a child (user) to use in December (Advent) (purpose).	 Investigate: Investigate commercial examples in the outside world, of fabric advent calendars. Use questions to develop understanding around the following areas: What is its purpose? Who is the user? What properties/characteristics does the fabric have? Why was this fabric chosen? How has the fabric been joined together? What design decisions have been made? To what extent is the design innovative? Practise: Create a different template pattern shapes (i.e. heart, semi-circle etc) from different fabrics. Learn how to start and finish off a row of stitches neatly. Practise new decorative stitches (stem, satin, chain, lazy daisy). Build on earlier experiencing of stitching i.e. improve consistency, appearance, when joining to a squared piece of fabric. Learn how to attach wadding or stiffening to strengthen the product. Identify any Health and Safety risks. Plan: Children generate innovative ideas by carrying out research using: surveys, interviews or questionnaires. Develop an authentic design specification, considering their intended user, time constraints, resources and costs. Develop and communicate ideas, through discussion and drawings should indicate the design decisions made, the methods of strengthening, the types of fabric used and the types of stiches to be incorporated. Identify any Health and Safety risks. Make: Select and use a combination of pattern shapes and different appropriate fabrics. Use different stiches to decorate your product (stem, satin, chain, lazy daisy). Join the fabric together using one of the recommended techniques previously learnt. Ensure that the advent calendar (product) is strengthened, accurately assembled and well finished. Evaluate: Critically evaluate throughout and the final product, comparing it to the original design specification. Modify if required. Test the product to demonstrate its effectiveness 	pins, needles, thread, seam, seam allowance, pattern, wadding, reinforce, right side, wrong side, hem, template pattern pieces name of textiles used, dressmaking shears (scissors), decorative stiches (stem, satin, chain, lazy daisy) product, user, purpose investigate plan, evaluate

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3 CC Geography UK/ science	Nutrition and Cookery Beginning to grate food Spread margarine/ butter cracking eggs mixing/ whisking weighing/ measuring presenting food observing the use of an oven heat source and H & S	LO: I can design, make and evaluate a healthy afternoon tea (e.g. sandwiches/ wraps/ cupcakes/ fruit kebabs) (products) for a parent/carer (user) to eat when attending our 'UK afternoon tea Fantastic Finish' (purpose).	 Investigate: Identify any food allergies/intolerances/religious preferences- can other products be considered for these children? Investigate a range of fresh food and processed ingredients in an afternoon tea. i.e. sandwiches, wraps with different fillings and different types of cakes, different fruit kebabs and different cold drinks. Use questions to develop understanding around the following areas: What is the name of the food? How is the food presented? Who has eaten this before? What is its purpose of the food? How ulle the user? Is the food fresh or processed? Is the food grown, reared or caught or an where? Link to the principles of a varied and healthy diet: What ingredients have been used? Which food groups do they belong to? Carry out sensory evaluations on some of the contents of the food? How is a table. Use appropriate words to describe the taste/smell/texture and appearance. Practise: Identify any Health and Safety risks and food allergies/intolerances. Remind of previous learning for food hygiene practises and use. Practise a variety of techniques for making sandwiches/wraps i.e. cutting techniques (bridge and claw) grating techniques, spreading techniques. Add other ingredients, cracking eggs, mixing, Adult to bake using a heat source (oven), children to observe. Plan: Identify the products, user and purpose. Children generate innovative ideas by reviewing the research undertaken in the investigation and practise, so they understand if their product is successful. Develop a design brief with the teacher which considers: the products they will be creating, food hygiene practises and food allergies/intolerances. Using previously learnt food hygiene practises and food allergies/intolerances. Using previously learnt food hygiene practises and the instructions they have created, select and use appropriate utensils and methods to prepare and combine ingredients. Focus on techniques: cutting, spreading, grating, mixing, making food look a	Healthy eatwell plate food names, grown, reared, caught, food hygiene practices, sensory vocabulary, ingredients, equipment, utensils (knives, chopping boards, weighing scales, measuring jugs, grater bowls, baking trays) food bridge/claw techniques presentation, texture, bake product, user purpose investigate plan, evaluate

Year Group	Focus	Project Title	Iterative Process	Key Vocabulary
4 CC History Romans/ Italy	Nutrition and Cookery Beginning to following a recipe Beginning to weigh and measure ingredients Beginning to mix, rest, knead, proof dough Grating and peeling Improve cutting techniques Using a food processor with supervision Beginning to present food attractively using an oven heat source with supervision	LO: I can design, make and evaluate a healthy savoury Italian dish (e.g. pizza) (product) for a parent/carer (user) to eat when attending our 'Roman Fantastic Finish' (purpose).	 Investigate: Identify any food allergies/intolerances/religious preferences- can other products be considered for these children? Investigate a range of fresh food and processed ingredients in pizzas, focusing on culture and seasonality i.e. with different toppings/ingredients for different seasons. Use questions to develop understanding around the following areas: What is the name of the food? How is the food presented? Who has eaten this before? What is its purpose of the food? Who will be the user? Is the food fresh or processed? Is the food grown, reared or caught or and where? Link to the principles of a varied and healthy diet: What ingredients have been used? Which food groups do they belong to? What are the toppings? Why these? Could the toppings be different in different seasons? Carry out sensory evaluations on some of the contents of the food and record results using a table. Use appropriate words to describe the taste/smell/texture and appearance. Practise: Identify any Health and Safety risks and food allergies/intolerances. Remind of previous learning for food hygiene practises and use. Practise a variety of techniques for making pizza dough eg. following a recipe, weighing, measuring ingredients, mixing, resting, kneading and proofing. Practise combining ingredients, using a food processor to make a sauce. Practise cutting techniques, grating, to make different toppings. Use a heat source (oven) with adult supervision. Plan: Identify the products, user and purpose. Children generate innovative ideas by reviewing the research undertaken in the investigation and practise, so they understand if their product is successful. Develop a design brief with the teacher which considers: the products they will be creating, food hygiene practises, ingredients, costs, utensils required and any recipes/instructions, the 'Healthy Eatwell Plate' and presentation of the food. Make: Identify any Health and Safety risks and fo	Healthy eatwell plate, Seasonal foods, foods from different cultures, Food Preparation, Food Hygiene, Pizza Yeast, flour, water, dough, resting, proofing, kneading Cutting techniques seasonal vegetables, sauce, base, ingredients seasoning equipment, utensils (Food processor, baking trays) pizza

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5 CC North America	Nutrition and Cookery following a recipe weighing, measuring ingredients, mixing, kneading and resting, rolling dough. Seasoning- spices Using a food processor frying-using a heat source (hob) with adult supervision Using appealing food presentation techniques	LO: I can design, make and evaluate healthy savoury Mexican dishes (e.g. fajitas, guacamole, salsa) (products) for a parent/carer (user) to eat when attending our North American 'Fantastic Finish' (purpose).	 Investigate: Identify any food allergies/intolerances/religious preferences- can other products be considered for these children? Investigate a range of fresh food and processed ingredients in quesadilla, guacamole, salsa, focusing on culture and seasonality i.e. with different fillings/ingredients for different seasons. Use questions to develop understanding around the following areas: What is the name of the food? How will be the user? Is the food fresh or processed? Is the food grown, reared or caught or and where? Link to the principles of a varied and healthy diet: What ingredients have been used? Which food groups do they belong to? What are the fillings? Why these? Could the fillings be different in different seasons? Carry out sensory evaluations on some of the contents of the food and record results using a table. Use appropriate words to describe the taste/smell/texture and appearance. Practise: Identify any Health and Safety risks and food allergies/intolerances. Remind of previous learning for food hygiene practises and use. Practise a variety of techniques for making tortillas e.g. following a recipe, weighing, measuring ingredients, mixing, kneading and resting, rolling dough. Practise using a heat source (hob) with adult supervision. Consider how to mix and add spices to fillings. Practise cutting, grating techniques, combining ingredients and using a food processor to make different dips. e.g. guacamole, salsa. Plan: Identify the products, user and purpose. Children generate innovative ideas by reviewing the research undertaken in the investigation and practise, so they will be creating, food hygiene practises, ingredients, costs, utensils required and any recipes/instructions, the 'Healthy Eatwell Plate' and presentation of the food. Make: Identify any Health and Safety risks and food allergies/intolerances. Using previously learnt food hygiene practises, ingredients, costs, utensils required and any reci	Healthy eatwell plate, Seasonal foods, foods from different cultures, Food Preparation, Food Hygiene, fajitas, guacamole, salsa Yeast, flour, water, dough, kneading, resting Cutting techniques seasonal vegetables, ingredients, dips seasoning equipment, utensils (Rolling pin, Food processor, frying pan, spatula)
			graphs. Identify if/how the products could be improved.	

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6 CC History World Wars	Nutrition and CookeryIndependently: Following a recipe, weighing, measuring ingredients peeling, mashing, making breadcrumbs using a food processor using a rubbing technique using a greasing technique using hob and oven with adult supervision, Using appealing food presentation techniques	LO: I can design, make and evaluate savoury English War dishes (e.g. Carrot Scones, Cheese and Marmite rolls, Corned Beef Fritters) (products) for a parent/ carer (user) to eat when attending our 'VE Day Party- Fantastic Finish' (purpose).	 Investigate: Identify any food allergies/intolerances/religious preferences- can other products be considered for these children? Investigate a range of fresh food ingredients in World War II VE day party food, focus on seasonality/availability of products. Use questions to develop understanding around the following areas: What is the name of the food? How is the food presented? Who has eaten this before? What is the propose of the food? How will be the user? Is the food fresh or processed? Is the food grown, reared or caught or and where? Link to the principles of a varied and healthy diet: What ingredients have been used? Which food groups do they belong to? What type of food? Why these? Could the food be different in different seasons? Carry out sensory evaluations on some of the contents of the food and record results using a table. Use appropriate words to describe the taste/smell/texture and appearance. Practise: Identify any Health and Safety risks and food allergies/intolerances. Remind of previous learning for food hygiene practises and use. Consider the availability of products in war time. Practise a variety of techniques for making scones and fritters. e.g. following a recipe, weighing, measuring ingredients, peeling, mixing, kneading and resting, rolling dough, making breadcrumbs, frying on a hob. Practise using a heat source (hob) with adult supervision. Plan: Identify the products, user and purpose. Children generate innovative ideas by reviewing the research undertaken in the investigation and practise, so they understand if their product is successful. Develop a design brief which considers: the products they will be creating, food hygiene practises, ingredients, costs, utensils required and any recipes/instructions, the 'Healthy Eatwell Plate' and presentation of the food. Make: Identify any Health and Safety risks and food allergies/intolerances. Using previously learnt food hygiene practises and the instructions they have creat	 Vocabulary Healthy eatwell plate, Seasonal foods, foods from different cultures, Food Preparation, Food Hygiene, Breadcrumbs mashing, herbs, Utensils: Food processor sieve, wooder spoon, greasing trays, Bowls, cooling rack, grater, frying, Ingredients,