Coit Design and Technology Long Term Plan 2023-2024

	Autumn	Spring	Summer
	SIX INTER-RELATED PRINCIPLES OF DT THREAD THROUGH EACH UNIT **User Purpose Functionality Design Decisions Innovation Authenticity**		
FS	**Creating with materials Early Learning Goal:** ● Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function ● Share their creations, explaining the process they have used ● Make use of props and materials when role playing characters in narratives and stories. **Being Imaginative and Expressive Early Learning Goal:** ● Invent, adapt and recount narratives and stories with peers and their teacher ● Sing a range of well-known nursery rhymes and songs; Perform songs, rhymes, poems and stories with others, and – when appropriate – try to move in time with music. **All skills will be explicitly taught, modelled and embedded through both adult led and child initiated activities in provision.**		
	SPRING 1: **Food- changes of state** **Developing skills (investigate and explore):** ● Researching and investigating a range of healthy smoothies ● Making choices about equipment ● Handling tools and equipment safely and with control ● Cutting fruits ● Observing and discussing changes **Applying skills (designing and making):** ● cutting fruit - smoothies ● melting chocolate - rice crispie cakes	**SPRING 2:** **Technique - combining media and materials** **To explore ways of joining materials in the most effective way to create 3D models.** **To explore strengthening and stiffening materials** **Developing skills (investigate and explore):** ● Designing toys and puppets, making choices about materials ● Observing how materials are joined together ● Experimenting joining materials together in different ways ● Considering an object's surface, size and shape when choosing a method of joining **Applying skills (designing and making):** ● junk model toys ● moving puppets	**SUMMER 2:** **Combining media and materials for a planned effect** **Explore hinges and fastening** **Developing skills (investigate and explore):** ● Designing models to achieve a desired effect ● Combining media and materials ● Joining materials together effectively ● Adapting models to improve ● Weaving to create dream catchers **Applying skills (designing and making):** ● junk modelling ● weaving dream catchers

	Evaluation: Ongoing throughout the year linked to communication and language and characteristics of effective learning when exploring in provision and adult led activities. Staff use open ended questioning to extend children's work and support them in their evaluation of their process and final products.

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Y1	**Textiles** **To design and make a puppet to retell a traditional tale to parents** –links to English texts **Skill retrieval from previous years**: Weaving, joining fabric **NC: select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]** **Investigate, disassembly, evaluate** • Provide opportunities for children to examine a selection of hand puppets and finger puppets made from a variety of materials. • Take the puppets apart and investigate the materials used Research puppets from around the world **Focus Practical tasks:** • Practice basic sewing techniques (running stitch and back stitch) • Practice using a template to mark out identical pieces of fabric • Compare joining techniques **Design** **Design a puppet to retell a traditional tale** • Identify simple design criteria Model their ideas by making a paper mock-up • Draw a simple diagram and label • Develop their design ideas applying findings from their earlier research **Make** **Make a puppet** • To mark out, cut and join fabric pieces to make the main part of their puppet • ·Use appropriate finishing techniques and make decisions around these • Make appropriate de4sign decisions throughout to support the purpose **Evaluate** • Evaluate their products as they are developed, identifying strengths and possible changes they might make Evaluate their product by asking questions about what they have made and how they have gone about it.	**Mechanisms** **To design and make a vehicle to transport children around the local high street**-link to high street topic (history) and English text-The Highstreet-Alice Melvin **NC: explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.** **Skill retrieval from previous years**: Joining skills, strengthening, hinges **Investigate, disassembly, evaluate:** • Look at variety of different vehicles and their purposes See how axles and wheels work by disassembling a vehicle • Investigate whether thin or thick wheels work best on a muddy surface • Explore objects and designs to identify likes and dislikes. Explore how products have been created. **Focus Practical tasks:** • Name and label parts of a car. Inverting boxes to create a base for our vehicles • Investigate variety of ways of holding wheels and axles together and compare their functionality and possible purpose • Investigate number of wheels on vehicles and compare their functionality **Design**: • **Design a car for someone travelling on the local high street - what does it need? e.g. to go through a high street/cobbled street** • Draw on their own experience to help generate ideas Suggest ideas and explain what they are going to do • Identify a target group for what they intend to design and make • Model their ideas in card and paper • Draw a simple diagram and label • Develop their design ideas applying findings from their earlier research **Make** **Make the car** • Make their design using appropriate techniques • Make appropriate design decisions to support creation of a vehicle which is fit for purpose • With help measure, mark out, cut and shape a range of materials	**Food** **To plan and make soda bread**-link to Little Red Hen English text and Geography food topic **NC: use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from.** **Skill retrieval from previous years**: prepare and tear food, basic food hygiene **Investigate, disassembly, evaluate:** • Understand where food comes from. Group familiar food products e.g. fruit and vegetables. • Investigate different breads and their ingredients Consider packaging and what makes it appealing • Investigatebakers chefs from UK **Focus Practical tasks:** • Sample a range of different breads and evaluate them • Discuss hygiene and devise hygiene poster • Cut/prepare ingredients safely • Mix/spoon ingredients • Investigate measuring and weighing of ingredients • Practice following instructions • Practice reading recipes **Design**: **Plan to make soda bread for the Little Red Hen** • Draw on their own experience to help generate ideas • Suggest ideas and explain what they are going to do • Identify a target group for what they intend to design and make • Develop their design ideas applying findings from their earlier research • Draw on their own experience to help generate ideas **Make** **Make a snack for The Little Red Hen to eat** • Cut ingredients safely. Prepare simple dishes-safely and hygienically-without using a heat source. • Select and use appropriate ingredients, processes and tools • Use basic food handling, hygienic practices and personal hygiene

		• Use tools e.g. scissors and a hole punch safely • Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape • Use simple finishing techniques to improve the appearance of their product **Evaluate** • Test the car down a bumpy track and evaluate its effectiveness • Evaluate their product by discussing how well it works in relation to the purpose • Evaluate their products as they are developed, identifying strengths and possible changes they might make • Evaluate their product by asking questions about what they have made and how they have gone about it.	• Use simple finishing techniques to improve the appearance of their product **Evaluate** • Evaluate their product by discussing how well it works in relation to the purpose • Evaluate their products as they are developed, identifying strengths and possible changes they might make Evaluate their product by asking questions about what they have made and how they have gone about it.
Y2	**Mechanisms:** **To design and make a moving picture for a Y2 child to retell a story.** **Skill retrieval from previous years**: Hinges and catches, strengthening and stiffening, joining fabrics **NC: Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.** **Investigate, disassembly, evaluate:** • Look at moving picture books with sliders and levers • Research/investigate how they move and the movements they make. • Investigate how different sliders move and how they create a mechanism. **Focus Practical tasks** • Practise making different sliders using different material and compare their functionality • Investigate what happens when split pins/mechanisms are moved into different positions Use materials to review gluing to strengthen products • Cut materials safely using tools provided.	**Structures** **To design and make a strong chair for baby bear.** **Skill retrieval from previous years**: Hinges, strengthening and stiffening **NC: Build structures, exploring how they can be made stronger, stiffer and more stable** **Investigate, disassembly, evaluate:** • Explore the features of a stable structure. • Explore and compare existing structures and their shapes. • Investigate the strength of materials, features and think about their purpose • Explore how products have been created. • Research furniture designers and the approach they took **Focus Practical tasks:** • Explore the properties of different materials and think about which ones are suitable for each section of their stable structure.	**Food** **To design and make a healthy, nutritious meal for a soldier.** **Skill retrieval from previous years**: segment, peel, crush, mix/stir, cut **NC: Use the basic principles of a healthy and varied diet to prepare dishes.** **Investigate, disassembly, evaluate:** • Research/investigate what nutritious food are and how they help to provide a healthy and varied diet. • Look at a selection of foods, fruits and vegetables. • Find out where they originate from and how they are used within cooking • Research chefs from UK and across the world **Focus Practical tasks:** • Children to look closely at a variety of different fruits and vegetables. • Use their senses to describe the different features of the fruits and vegetables as well as their sense of taste. • Discuss safety and hygiene in relation to food.

	• Demonstrate a range of cutting and shaping techniques such as tearing, cutting, folding and curling. **Design** **Design their own moving picture** • Generate ideas by drawing on their own and other people's experiences • Develop their design ideas through discussion, observation , drawing and modelling • Identify a purpose for what they intend to design and make • Identify simple design criteria Make simple drawings and label parts **Make -** **Children to follow their designs to create their moving picture.** • Begin to select tools and materials; use vocab' to name and describe them Measure, cut and score with some accuracy • Use hand tools safely and appropriately • Choose appropriate mechanisms to support their design • Assemble, join and combine materials in order to make a product • Cut, shape and join fabric to make a simple garment. Choose and use appropriate finishing technique **Evaluate** **Children evaluate their own moving pictures and say what they think and feel about them** children identify what they have done well and suggest how they could make improvements • Children give their opinion about the work of other children and give positive feedback	Think about strength, stability, malleability and other features. • Investigate the properties and characteristics of materials Explore how materials can be made stronger and stiffer **Design**: **Children to design their own Tudor building, thinking about which materials to use based on the investigations carried out.** • Generate ideas by drawing on their own and other people's experiences • Develop their design ideas through discussion, observation , drawing and modelling • Identify a purpose for what they intend to design and make • Identify simple design criteria • Make simple drawings and label parts **Make** **Children will follow their own design plans and use the resources provided to build their own stable structures. They will develop their fine motor skills, concentration and perseverance as they draw, cut and stick with precision.** • Begin to select tools and materials; use vocab' to name and describe them • Measure, cut and score with some accuracy • Use hand tools safely and appropriately • Assemble, join and combine materials in order to make a product • Cut, shape and join fabric to make a simple garment. • Use basic sewing techniques • Choose and use appropriate finishing techniques **Evaluate** **Children will look at different criteria and assess whether their structures are successful. They will think about features including the stability and firmness of their structure as well as features specific to their own design criteria.** • Evaluate against their design criteria	• Practice using different tools for cutting and chopping safely, using the appropriate language associated with food preparation. • Group foods into the five groups in The Eatwell Plate. • Cut, grate or peel ingredients safely. • Measure or weigh using cups or electronic scales. **Design**: **Children will be challenged to design a new recipe using healthy and nutritious ingredients making sure they are colourful, tasty and healthy.** • Generate ideas by drawing on their own and other people's experiences • Develop their design ideas through discussion, observation , drawing and modelling • Identify a purpose for what they intend to design and make • Identify simple design criteria **Make** **Children will make their recipe designs making sure they are being safe and hygienic.** Prepare simple dishes-safely and hygienically-without using a heat source. Measure, cut with some accuracy Use hand tools safely and appropriately Cut using the bridge position, tear, peel Follow safe procedures for food safety and hygiene **Evaluate** **Children to evaluate their finished products and say what they think and feel about them**? • Evaluate against their design criteria • Evaluate their products as they are developed, identifying strengths and possible changes they might make

		• Evaluate their products as they are developed, identifying strengths and possible changes they might make • Talk about their ideas, saying what they like and dislike about them	• Talk about their ideas, saying what they like and dislike about them
Y3	**Mechanisms:** **To design and make a moving animal.** **Skill retrieval from previous years**: Hinges, levers and Sliders, Strengthening and stiffening, free standing structures **NC: Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]** **Investigate, disassembly, evaluate** • Investigate a variety of familiar objects that use air to make them work. • Examine, sketch, label and/or describe a variety of these kinds of objects. • Disassemble products to understand how they work. • Improve on existing designs, giving reasons for choices. • Identify some of the great designers in different areas of study to generate ideas from their designs. **Focus Practical tasks:** • Make a variety of simple pneumatic systems using basic equipment. Learn about pulleys and learn how to make a simple pulley. • Compare pneumatic systems with other mechanisms taught previously (hinges, levers, sliders) **Design** **Children will use their knowledge of mechanisms to design an animal with moving parts.** • Generate ideas for an item, considering its purpose and the user/s	**Food/Nutrition** **To design and make a pizza dish for Year 3 parents.** **NC:** Understand and apply the principles of a healthy and varied diet. **Investigate, disassembly, evaluate** • Children investigate a range of food products e.g. the content of their lunchboxes over a week, a selection of foods provided for them, food from a visit to a local shop. Link to the principles of a varied and healthy diet using The Eatwell Guide • Carry out sensory evaluations on the contents of the food from • Record results, for example using a table. Use appropriate words to describe the taste/smell/texture/appearance e.g. How do the sensory characteristics affect your liking for the food? • Gather information about existing products available relating to your product. Visit a local supermarket and/or use the internet. • Find out how a variety of ingredients used in products are grown and harvested, reared, caught and processed **Focus Practical tasks:** • Cutting and slicing different food • Tasting different food stuff Investigating a healthy diet - that a healthy diet is made up from a variety of different food and drink, as depicted in The Eatwell Plate. Measure and weigh ingredients appropriately. Follow a recipe. Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, chopping,	**Structure** **To design and make a structure to protect a plant to withstand heavy rainfall and high winds.** **Skill retrieval from previous years**: strengthening and stiffening, free standing structures **NC: Apply their understanding of how to strengthen, stiffen and reinforce more complex structures** **Investigate, disassembly, evaluate** • Investigate greenhouses and other structures which can be used as shelter • Investigate structures and how they are made stable. **Focus Practical tasks:** • Explore nets of shape and the 3D shapes it creates • Compare the strength and stability of different structures • Explore the properties of different materials and think about which ones are suitable for each section of their structure. • Think about strength, stability, malleability and other features in this exploration lesson. • Explore how materials can be made stronger and stiffer. **Design** **Children will use their previously learnt skills to draw and a design to protect a plant.** • Generate ideas for an item, considering its purpose and the user/s

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	• Identify a purpose and establish criteria for a successful product. • Plan the order of their work before starting • Explore, develop and communicate design proposals by modelling ideas • Make drawings with labels when designing **Make** • Children will create an animal with at least one moving part. • Utilise mechanisms to ensure at least one part is moving • Make appropriate design decisions to ensure their product is fit for purpose • Measure, mark out, cut, score and assemble components with more accuracy • Think about their ideas as they make progress and be willing change things if this helps them improve their work • Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT **Evaluate** • Children will demonstrate their finished moving models, then evaluate both their process and their finished product. • Children will identify successful areas of their finished products. Children will identify areas that could be improved upon. • Children will describe what they would do differently if they were to make their moving crocodile again? • Evaluate their product against original design criteria e.g. how well it meets its intended purpose	grating, slicing etc) Children will measure, mark out and assemble components with more accuracy. • Practise kneading, ready for bread making using playdough. • Food preparation and cooking techniques practised by making a food product using an existing recipe. • Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. What should we do before we work with food? Why is following instructions important? **Design** **Children will design their own pizza, considering the order of working** • Generate ideas for an item, considering its purpose and the user/s • Identify a purpose and establish criteria for a successful product. • Plan the order of their work before starting • Make drawings with labels when designing • Design purposeful, functional, appealing products for themselves and parents based on design criteria in the context of designing a traditional Greek dip. **Make** • Children to prepare a dish in the context of following a recipe • Cut materials accurately and safely by selecting appropriate tools. • know that a healthy diet is made up from a variety of different food and drink, as depicted in The Eatwell Plate.	• Identify a purpose and establish criteria for a successful product. • Plan the order of their work before starting • Explore, develop and communicate design proposals by modelling ideas **Make** **Children will follow their designs to create their structure, using the skills they have previously learnt. They will need to also consider building safely and solving problems that may occur.** • Measure, mark out, cut, score and assemble components with more accuracy • Think about their ideas as they make progress and be willing change things if this helps them improve their work • Measure, tape or pin, cut and join fabric with some accuracy • Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT **Evaluate** • Children will evaluate their own design process as well as their finished product. • Children will suggest ways in which they would change their design if they were to make their product again.. • Children will assess how well their finished product meets the original design criteria?

		• Measure and weigh ingredients appropriately. • Follow a recipe **Evaluate** **Children will evaluate their dip against original design criteria. Did it meet the criteria of being part of a healthy and varied diet? Children will also request feedback from parents. Children will consider what was successful and if they would change anything in future recipes.** Evaluate their product against original design criteria e.g. how well it meets its intended purpose	

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Y4	**Mechanisms**	**Electrical**	**Textile**
	To design and make an interactive Christmas card for children to give to their parents/carers **NC- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]** **Skill retrieval from previous years**: Levers, sliders, strengthening and stiffening, hinges **Investigate, disassembly, evaluate:** • Children investigate, analyse and evaluate books, cards and other products which have a range of lever and linkage mechanisms • Use questions to develop children's understanding e.g. Who might it be for? What is its purpose? What do you think will move? How will you make it move? What part moved and how did it move? How do you think the mechanism works? What materials have been used? How effective do you think it is and why? What else could move? **Focus Practical tasks:** • Experiment with a range of lever and linkage mechanisms to the children • Compare different levers functionality and purpose Experiment with strengthening and stiffening techniques • Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques.	**To design a torch for a child to use to help them see in the dark.** **NC: understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors** **Investigate, disassembly, evaluate:** **Skill retrieval from previous years**: Free standing structures, strengthening and stiffening **Investigate, disassembly, evaluate:** • Look at a variety of light up equipment. How does it work? • Investigate torches. Disassemble different examples to look at it's component parts Discuss purposes of lights and investigate different types/styles of lights/torches • Research Thomas Edison and the invention of the lightbulb • Discuss collaborative approach to invention (Alessandro Volta, Humphrey Davy and Joseph Swan played a critical role in the development of this technology.) **Focus Practical tasks:** • Label parts of a torch and name them • Recreate a simple, series and parallel circuit following a given plan • Look at and identify scientific representation of circuit components • Make a simple switch using metal components	**To Design a PE bag to contain a PE kit for a Y4 child** **NC: apply their understanding of how to strengthen, stiffen and reinforce more complex structures** **Skill retrieval from previous years:** Patterns and templates, running stitch, back stitch, whip stitch joining fabrics **Investigate, disassembly, evaluate:** • Investigate a variety of textile bags for all purposes. • Disassemble bags and create patterns from them • Investigate panels/nets used to create different shapes. • Improve on existing designs, giving reasons for choices. Identify some of the great designers in different areas of study to generate ideas from their designs • Investigate different fastenings and their uses. **Focus Practical tasks** • Create patterns using nets of shapes, compare the strength and structure of patters • Try out a variety of different stitching techniques (review and addition of back stitch, over sew stitch, blanket stitch, cross stitch • Compare different fabrics for different purposes before selecting fabric for their project

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	Design **Design a Christmas card with at least one interactive element** • Generate ideas, considering the purposes for which they are designing • Make labelled drawings from different views showing specific features **Make** • Make appropriate design decisions throughout the making • Utilise the range of mechanisms learnt and make appropriate adjustments • Select appropriate tools, materials, components and techniques • Make modifications as they go along **Evaluate** • Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate against their original criteria and suggest ways that their product could be improved	**Design**: **Children to design the electronic components and outside structure of their torch, using their IDEAs to support** • Communicate their ideas through detailed labelled drawings • Develop a design specification **Make** Select appropriate tools, materials, components and techniques • Make modifications as they go along • Utilise component parts to make a circuit fit for purpose **Evaluate** • How effective is our torch in the dark? • Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate against their original criteria and suggest ways that their product could be improved	• investigate and select an appropriate fastening device/technique for their project • Measure and mark out to the nearest mm. **Design**: **Children to create a labelled design of their PE bags.** • Generate ideas, considering the purposes for which they are designing • Make labelled drawings from different views showing specific features Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail **Make** Utilise different stitching techniques, making design decisions as they proceed Select appropriate tools, materials, components and techniques Make modifications as they go along Select appropriate tools and techniques for making their product Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques Join and combine materials and components accurately in temporary and permanent ways Sew using a range of different stitches, weave and **Evaluate** • Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate against their original criteria and suggest ways that their product could be improved

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Y5	**Computer Control** **To design and make a celebration card with a light-up element which can be controlled via a computer.** **NC: understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products.** **Skill retrieval from previous years**: Simple, parallel and series circuit, levers and sliders, strengthening and stiffening **Investigate, disassembly, evaluate:** • Look at the range and styles of cards available which light up and are moveable • Investigate design elements such as embossing/cutting etc **Focus Practical tasks:** • Investigate programming a crumble controller to light up the LED Sparkle https://www.youtube.com/watch?v=T8U_5Fxqtis&feature=youtu.be • Create circuits that employ a number of components (such as LEDs, resistors and transistors). **Design**: • Generate ideas through brainstorming and identify a purpose for their product • Draw up a specification for their design • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail	**Structure** **Design and make a bird hide for our school garden** **NC: apply their understanding of how to strengthen, stiffen and reinforce more complex structures** **Skill retrieval from previous years:** Free standing structures, shell structures, Levers and sliders **Investigate, disassembly, evaluate:** • Investigate and research purpose of bird boxes • Children research key events and individuals related to their study of frame structures e.g. Stephen Sauvestre – a designer of the Eiffel Tower; Thomas Farnolls Pritchard – designer of the Iron Bridge. They also learn about locally important design and technology activity related to their project. • Children investigate and make annotated drawings of a range of portable and permanent frame structures, **Focus Practical tasks:** • Use a construction kit consisting of plastic strips and paper fasteners to build 2-D and 3D frameworks. Compare the strength of square frameworks with triangular frameworks. • Demonstrate how paper tubes can be made from rolling sheets of newspaper diagonally around pieces of e.g. dowel. Ask children to use these tubes and masking tape or paper straws with pipe cleaners to build 3-D frameworks such as cubes, cuboids and pyramids. *How*	**Mechanisms** – levers/cams and followers, gears **To design and make a moving toy for a child.** **NC: understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]** **Skill retrieval from previous years:** Wheels and axles, pulleys, pneumatics, shell structures, frame structures **Investigate, disassembly, evaluate:** • Look at a variety of different toys/ structures which use Cams, gears, wheels and other mechanisms • Research investors and designers Linked to toy making **Focus Practical tasks:** • Investigate the shape of cams and the difference this has on the movement. Make a simple Cam to control movement within an object. • Investigate how gears support movements • Compare different mechanisms and their functionality • Investigate how to join materials using appropriate methods. Use a hand drill to drill tight and loose fit holes. **Design** **Use what they have learnt to design a moving toy** • Communicate their ideas through detailed labelled drawings

	Make • Using techniques learn, children to make their electrical celebration card which can be controlled via scratch • Select appropriate materials, tools and techniques Use skills in using different tools and • Cut and join with accuracy to ensure a good-quality finish to the product • Create circuits that employ a number of components (such as LEDs, resistors and transistors). **Evaluate** • Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate against their original criteria and suggest ways that their product could be improved	*could each of the frameworks be reinforced and strengthened?* • Develop skills and techniques using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames, as appropriate. • Demonstrate skills and techniques for accurately joining framework materials together e.g. Creating frame structures using paper straws, square sectioned wood. Test the strength and functionality of different frame structures Compare frame structures with free standing structures and shell structures **Design:** • Children should be encouraged to generate innovative ideas, drawing on their research. Ask children to develop a simple design specification to guide their thinking. • Children should produce a detailed, step-by-step plan, listing tools and materials. • Children's sketches should be annotated with notes to help develop and communicate their ideas. **Make** Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frames.	• Generate ideas through brainstorming and identify a purpose for their product • Draw up a specification for their design • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail • Use results of investigations, information sources, including ICT when developing design ideas **Make** • Make a moving toy for a child • Make appropriate design decisions throughout the making • Utilise different mechanisms to ensure the product is fit for purpose • Select appropriate tools, materials, components and technique • Assemble components make working models • Make modifications as they go along • Use skills in using different tools and equipment safely and accurately **Evaluate** • Evaluate a product against the original design specification • Evaluate it personally and seek evaluation from others against the original criteria and suggest ways it can be improved.

		• Use finishing and decorative techniques suitable for the product they are designing and making **Evaluate** • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.	
Y6	**Electrical** **Design and produce an alarm system which alerts when a charity collection box is removed.** **NC Technical Knowledge: understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]** **Skill retrieval from previous years:** Series, parallel, simple circuits, switches, Structures (free standing, shell), strengthening and stiffening, levers and sliders **Investigate, disassembly, evaluate:** • Explore and investigate everyday appliances that use electricity • Investigate alarms for different uses • Investigate use of different circuits **Focus Practical tasks:**	**Computer Control** **Design and make an automated night light for a younger child.** **NC Technical Knowledge: apply their understanding of computing to program, monitor and control their products.** **Skill retrieval from previous years:** Series, parallel, simple circuits, switches, structures, strengthening and stiffening, levers and sliders, computer control **Investigate, disassembly, evaluate:** • Explore and investigate everyday appliances that use electricity • Investigate programmable toys and gadgets **Focus Practical tasks:** • Make simple series circuits	**Food/Nutrition** **To design and make a healthy meal which is under 500 calories for a member of staff.** **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.** **Skill retrieval from previous years:** **Investigate, disassembly, evaluate:** • Classify and group foodstuff • Analyse appearance, smell, taste, texture, how grown, how produced, how eaten, cost, weight of food **Focus Practical tasks:** • Weigh and measure accurately

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	• Make simple series circuits • Explore and develop electrical circuits including those using switches • Investigate switches for different purposes **Design**: • Use a comprehensive labelled diagram to design their own alarm system which works through an electronic circuit • Communicate their ideas through detailed labelled drawings • Develop a design specification **Make** • Using at least one electronic circuit, children to make a working alarm. • Make modifications as they go along **Evaluate** • Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate against their original criteria and suggest ways that their product could be improved	• Explore and develop electrical circuits including those using switches • Investigate switches for different purposes • Investigate computer control programs using crumble kits **Design**: • Design a program using Scratch which supports designed nightlight using Crumble kits • Communicate their ideas through detailed labelled drawings • xplore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways using algorithms **Make** • Create the circuit and other aesthetic parts to case a night light which can be controlled remotely, Select appropriate tools, materials, components and techniques Make modifications as they go along **Evaluate** • Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate against their original criteria and suggest ways that their product could be improved	• Prepare food - peel, cut, slice, grate • Combine food from different food groups to create healthy products **Design**: • Design a menu for an adult which is under 500 calories, planning the order of working. • Plan the order of work choosing appropriate materials, tools and techniques **Make** **Make a healthy meal for an adult which consists of less than 500 calories using good food hygiene techniques.** • Weigh and measure accurately • Peal, spread, cut food ingredients • Apply the rules of basic food hygiene and other safe practices **Evaluate** • Evaluate the product against the original criteria and suggest ways it can be improved. • Gather other people's views
