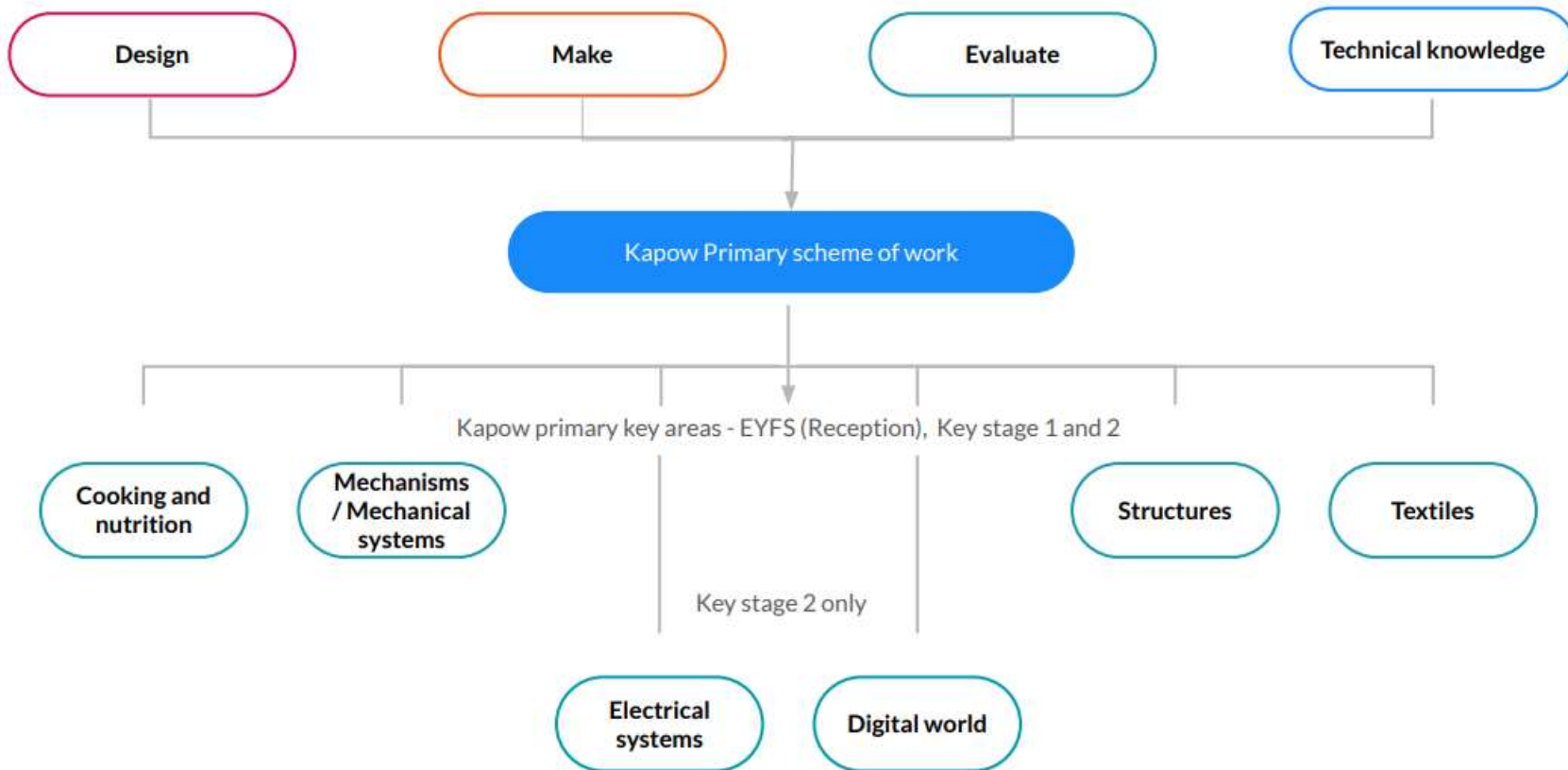


How is the Design and technology scheme of work organised?



DT forms part of the learning within Understanding the World as well as Expressive Arts & Design ELG: Creating with Materials. Design and technology in EYFS enables learners to make sense of the 'made world' in which they live (UTW). By making, changing and modifying (or designing) things for themselves, learners come not simply to a greater understanding of their world, but to a sense of agency - of being able to change and modify their environment (UTW/PSED). DT enables learners to gain knowledge and understanding of their world (UTW/PSED). Design is not just about drawing, but about thinking, involving some experience, some imagination and a willingness to change and modify ideas (C&L/EAD). Technology, on the other hand, is about doing - making something for a purpose, involving putting ideas into practice and having an awareness of the possibilities and limitations of different materials, including making mistakes (PD/PSED).

<u>Development Matters</u>	<u>Early Learning Goal</u>	<u>How this is achieved in Nursery</u>	<u>By the end of EYFS learners will know</u>
<p><u>Expressive Arts and Design</u> Explore different materials freely, to develop their ideas about how to use them and what to make.</p> <p>Develop their own ideas and then decide which materials to use to express them.</p> <p>Join different materials and explore different textures.</p>	<p>Expressive Arts & Design: Creating with Materials</p> <ul style="list-style-type: none"> ● Safely use & explore a variety of materials, tools & techniques, experimenting with colour, design, texture, form & function ● Share their creations, explaining the process they used <p>Communication & Language: Speaking</p> <ul style="list-style-type: none"> ● Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary ● Offer explanations for why things might happen <p>PSED: Managing Self</p> <ul style="list-style-type: none"> ● Be confident to try new activities and show independence, resilience and perseverance in the face of challenge <p>PSED: Building Relationships</p> <ul style="list-style-type: none"> ● Work and play cooperatively and take turns with others <p>Physical Development: Fine Motor</p> <ul style="list-style-type: none"> ● Use a range of small tools, including scissors, paint brushes and cutlery ● Begin to show accuracy and care when drawing <p>UW: The Natural World</p> <ul style="list-style-type: none"> ● Understand some important processes and changes in the natural world around them 	<p>A range of everyday resources available within the classroom & outside for learners to access both independently & with an adult:</p> <ul style="list-style-type: none"> -self-select a range of tools & materials within CP -learn by experimenting with tools such as scissors, cutters, playdoh tweezers & hole punches -fix & join materials using sellotape, string, pipe cleaners, glue, etc. -through questions are encouraged to talk about what they like about their work & others' designs & how they would improve -help to design & make small worlds & construction kits 	<ul style="list-style-type: none"> ● I know how to use scissors safely ● I can cut along a straight line ● I can cut along a wavy line ● I can cut around corners ● I can join two items using tape ● I can use glue to fix items together ● With support I can draw a plan ● I know I can adapt & change something I have made ● I can work with a friend & share ideas ● I know that some materials are better for building than others ● I can talk about what I have made & say why

Progression of skills and knowledge

Structures

Reception-Junk Modelling

<u>Skills</u>	Design	<ul style="list-style-type: none"> • Making verbal plans and material choices • Developing a junk model
	Make	<ul style="list-style-type: none"> • Improving fine motor skills/scissor skills with a variety of materials • Joining materials in a variety of ways (temporary and permanent) • Joining different materials together • Describing their junk model and how they intend to put it together
	Evaluate	<ul style="list-style-type: none"> • Giving a verbal evaluation of their own and others' junk models with adult support • Checking to see if their model matches their plan • Considering what they would do differently if they were to do it again • Describing their favourite and least favourite part of their model
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that there are a range of different materials that can be used to make a model and that they are all slightly different • Making simple suggestions to fix their junk model
	Additional	

Year 2-Baby Bear's chair

<u>Skills</u>	Design	<ul style="list-style-type: none"> • Generating and communicating ideas using sketching and modelling • Learning about different types of structures found in the natural world and in everyday objects
	Make	<ul style="list-style-type: none"> • Making a structure according to a design criteria • Creating joints and structures from paper/card and tape • Building a strong and stiff structure by folding paper
	Evaluate	<ul style="list-style-type: none"> • Exploring the features of structures • Comparing the stability of different shapes • Testing the strength of own structures • Identifying the weakest part of a structure • Evaluating the strength, stiffness and stability of own structure
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that shapes and structures with wide, flat bases or legs are the most stable

		<ul style="list-style-type: none"> • To understand that the shape of a structure affects its strength • To know that materials can be manipulated to improve strength and stiffness • To know that a structure is something that has been made or formed from parts • To know that a 'stable' structure is one which is firmly fixed and is unlikely to change or move • To know that a 'strong' structure is one which does not break easily • To know that a 'stiff' structure or material is one which does not bend easily.
	Additional	<ul style="list-style-type: none"> • To know that natural structures are those found in nature • To know that man-made structures are those made by people

Year 3-Constructing a Castle

<u>Skills</u>	Design	<ul style="list-style-type: none"> • Designing a castle with key features to appeal to a specific person/purpose • Drawing and labelling a castle with 2D shapes, labelling:the 3D shapes that will create the features, materials needed and colours • Designing and/or decorating a castle tower on CAD software
	Make	<ul style="list-style-type: none"> • Constructing a range of 3D geometric shapes using nets • Creating special features for individual designs • Making facades from a range of recycled materials
	Evaluate	<ul style="list-style-type: none"> • Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design • Suggesting points for modification of the individual designs
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To understand that wide and flat based objects are more stable • To understand the importance of strength and stiffness in structures
	Additional	<ul style="list-style-type: none"> • To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse: and their purpose • To know that a façade is the front of a structure

		<ul style="list-style-type: none"> • To understand that a castle needed to be strong and stable to withstand enemy attack • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled • To know that a design specification is a list of success criteria for a product
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<u>Year 4 Pavilions</u>		
<u>Skills</u>	Design	<ul style="list-style-type: none"> • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect • Building frame structures designed to support weight
	Make	<ul style="list-style-type: none"> • Creating a range of different shaped frame structures • Making a variety of free standing frame structures of different shapes and sizes • Selecting appropriate materials to build a strong structure and cladding • Reinforcing corners to strengthen a structure • Creating a design in accordance with a plan • Learning to create different textural effects with materials
	Evaluate	<ul style="list-style-type: none"> • Evaluating structures made by the class • Describing what characteristics of a design and construction made it the most effective • Considering effective and ineffective designs
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To understand what a frame structure is • To know that a 'free standing' structure is one which can stand on its own
	Additional	<ul style="list-style-type: none"> • To know that a pavilion is a decorative building or structure for leisure activities • To know that cladding can be applied to structures for different effects • To know that aesthetics are how a product looks

		<ul style="list-style-type: none"> • To know that a products function means its purpose • To understand that the target audience means the person or group of people the product is designed for • To know that architects consider light, shadow and patterns when designing
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Cooking and Nutrition

<u>Reception-Soup</u>		
<u>Skills</u>	Design	<ul style="list-style-type: none"> • Designing a soup recipe as a class • Designing soup packaging
	Make	<ul style="list-style-type: none"> • Chopping plasticine safely • Chopping vegetables with support
	Evaluate	<ul style="list-style-type: none"> • Tasting the soup and giving opinions

		<ul style="list-style-type: none"> • Describing some of the following when tasting food: look, feel, smell and taste • Choosing their favourite packaging design and explaining why
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that soup is ingredients(usually vegetables and liquid) blended together • To know that vegetables are grown • To recognise and name some common vegetables • To know that different vegetables taste different • To know that eating vegetables is good for us • To discuss why different packages might be used for different food
	Additional	
<u>Year 1-Smoothies</u>		
<u>Skills</u>	Design	<ul style="list-style-type: none"> • Designing smoothie carton packaging by hand
	Make	<ul style="list-style-type: none"> • Chopping fruit and vegetables safely to make a smoothie • Juicing fruits safely to make a smoothie
	Evaluate	<ul style="list-style-type: none"> • Tasting and evaluating different food combinations • Describing appearance, smell and taste • Suggesting information to be included on packaging • Comparing their own smoothie with <i>someone else's</i>
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that a blender is a machine which mixes ingredients together to form a smooth liquid • To know that a fruit has seeds • To know that fruits grow on trees or vines • To know that vegetables can grow either above or below the ground • To know that a vegetable is any edible part of a plant (eg roots: potatoes, leaves: lettuce, fruit: cucumber)
	Additional	

<u>Year 2-Balanced diet</u>		
<u>Skills</u>	Design	<ul style="list-style-type: none"> • Designing three wrap ideas based on a food combination which work well together
	Make	<ul style="list-style-type: none"> • Chopping foods safely to make a wrap

		<ul style="list-style-type: none"> • Constructing a wrap that meets a design brief • Grating foods to make a wrap • Snipping smaller foods instead of cutting
	Evaluate	<ul style="list-style-type: none"> • Describing the taste, texture and smell of fruit and vegetables • Taste testing food combinations and final products • Describing the information that should be included on a label • Evaluating food by giving a score
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that 'diet' means the food and drink that a person or animal usually eats • To understand what makes a balanced diet • To know that the five main food groups are: carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group • To know that 'ingredients' means the items in a mixture or recipe
	Additional	

Year 4-Adapting a recipe

<u>Skills</u>	Design	<ul style="list-style-type: none"> • Designing a biscuit within a given budget. • Conducting market research.
	Make	<ul style="list-style-type: none"> • Following a baking recipe. • Understanding safety and hygiene rules. • Adapting a recipe.
	Evaluate	<ul style="list-style-type: none"> • Evaluating an adapted recipe. • Evaluating and comparing a range of products. • Suggesting modifications
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that the amount of an ingredient in a recipe is known as the 'quantity.' • To know that safety and hygiene are important when cooking. • To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping.

		<ul style="list-style-type: none"> • To know the importance of budgeting while planning ingredients for a recipe. • To know that products often have a target audience.
	Additional	

Year 5-Developing a recipe

<u>Skills</u>	Design	<ul style="list-style-type: none"> • Researching existing recipes. • Suggesting alternative ingredients. • Designing a jar label.
	Make	<ul style="list-style-type: none"> • Writing an alternative recipe. • Understanding cross-contamination. • Using preparation skills. • Making a developed recipe.
	Evaluate	<ul style="list-style-type: none"> • Explaining the farm to fork process. • Analysing nutritional content.
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that beef comes from cows reared on farms. • To know that recipes can be adapted to suit nutritional needs and dietary requirements. • To know that nutritional information is found on food packaging. • To know that coloured chopping boards can prevent cross-contamination. • To know that food packaging serves many purposes.
	Additional	

Textiles

Reception-Bookmarks

<u>Skills</u>	Design	<ul style="list-style-type: none"> • Discussing what a good design needs. • Designing a simple pattern with paper. • Designing a bookmark. • Choosing from available materials.
	Make	<ul style="list-style-type: none"> • Developing fine motor/cutting skills with scissors.

		<ul style="list-style-type: none"> • Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. • Using a prepared needle and wool to practise threading.
	Evaluate	<ul style="list-style-type: none"> • Reflecting on a finished product and comparing to their design
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that a design is a way of planning our idea before we start. • To know that threading is putting one material through an object.
	Additional	

Year 1-Puppets

<u>Skills</u>	Design	<ul style="list-style-type: none"> • Using a template to create a design for a puppet.
	Make	<ul style="list-style-type: none"> • Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing steps for construction.
	Evaluate	<ul style="list-style-type: none"> • Reflecting on a finished product, explaining likes and dislikes.
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that 'joining technique' means connecting two pieces of material together. • To know that there are various temporary methods of joining fabric by using staples, glue or pins. • To understand that different techniques for joining materials can be used for different purposes. • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • To know that drawing a design idea is useful to see how an idea will look.
	Additional	

Year 2-Pouches

<u>Skills</u>	Design	<ul style="list-style-type: none"> • Designing a pouch
	Make	<ul style="list-style-type: none"> • Selecting and cutting fabrics for sewing. • Decorating a pouch using fabric glue or running stitch.

		<ul style="list-style-type: none"> • Threading a needle. • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric. • Neatly pinning and cutting fabric using a template.
	Evaluate	<ul style="list-style-type: none"> • Troubleshooting scenarios posed by teacher. • <i>Evaluating the quality of the stitching on others' work.</i> • Discussing as a class, the success of their stitching against the success criteria. • <i>Identifying aspects of their peers' work that they particularly like and why.</i>
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that sewing is a method of joining fabric. • To know that different stitches can be used when sewing. • To understand the importance of tying a knot after sewing the final stitch. • To know that a thimble can be used to protect my fingers when sewing.
	Additional	

Year 3-Cross stitch and applique

<u>Skills</u>	Design	<ul style="list-style-type: none"> • Designing and making a template from an existing cushion and applying individual design criteria.
	Make	<ul style="list-style-type: none"> • Following design criteria to create a cushion or Egyptian collar. • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles with greater independence. • Tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Completing design ideas with stuffing and sewing the edges.
	Evaluate	<ul style="list-style-type: none"> • Evaluating an end product and thinking of other ways in which to create similar items.
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. • To know that when two edges of fabric have been joined together it is called a seam.

		<ul style="list-style-type: none"> • To know that it is important to leave space on the fabric for the seam. • To understand that some products are turned inside out after sewing so the stitching is hidden.
	Additional	

<u>Year 6-Bags</u>		
<u>Skills</u>	Design	<ul style="list-style-type: none"> • Developing annotated sketches to communicate design ideas. • Creating pattern pieces to use in design.
	Make	<ul style="list-style-type: none"> • Using a ruler to accurately measure and draw lines and marks. • Using nets to create 3D objects.
	Evaluate	<ul style="list-style-type: none"> • Reflecting on the functionality and aesthetics of products. • Discussing reasons for design choices.
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • Using pins effectively to secure a template to fabric without creases or bulges. • Threading needles independently. • Tying knots at the end of thread to secure it. • Selecting textiles and buttons to improve aesthetics and function. • Attaching objects like buttons using thread.
	Additional	<ul style="list-style-type: none"> • To know that nets can be folded to create 3D shapes. • To know that pattern pieces are like nets/templates. • To know how designers use pattern pieces when creating textiles products • To know that products are sometimes made in parts that are sewn together • To know that safety pins can hold fabric in place before sewing. • To know that there are different types of stitches. • To know what a running stitch is. • To know that aesthetics is how something looks. • To know that consistently sized stitches improve the aesthetic of a product. • To know that the shape of an object can affect both its aesthetics And function.

Mechanisms/Mechanical systems

Year 1-Matching sliders game

<p><u>Skills</u></p>	<p>Design</p>	<ul style="list-style-type: none"> • Thinking about what others might want from a design. • Beginning to recognise how products and designs in the world around us solve certain needs. • Considering who they are designing for – by identifying the user. • Stating what they intend to make and why – by identifying the purpose. • Talking about ideas with purpose and user in mind. • Talking about existing products when generating ideas. • Creating mock-ups to communicate designs.
	<p>Make</p>	<ul style="list-style-type: none"> • Planning more than one step ahead.

		<ul style="list-style-type: none"> • Choosing between a small number of materials, ingredients or components. • Explaining their choices based on personal experiences. • Requesting equipment appropriate to the purpose. (e.g. scissors for cutting, glue for joining). • Explaining in simple terms why certain tools must be handled carefully. • Following and recalling simple safety instructions. • Beginning to use objects with a fixed width or length to create even spacing of markings or cuts. (e.g. a lolly stick). • Refining their grip to cut competently and confidently. • Cutting straight lines and evenly spaced lines. • Beginning to cut large shapes and thicker materials like card. • Puncturing holes. • Applying masking tape to fix something in place or join to edges. • Using tools, like scissors, to create shapes. • Beginning to cut large shapes and thicker materials like card.
	Evaluate	<ul style="list-style-type: none"> • Discussing existing products, saying what they like about them. • Discussing how their products could be improved based on personal preferences. • <i>Saying what they like about their peers' designs and products.</i> • Accepting feedback and understanding it is meant to improve their work.
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • Recognising and exploring everyday objects that have mechanisms. • Recognising everyday objects that use a slider mechanism (eg. drawers, sliding doors, paper trimmer).
	Additional	<ul style="list-style-type: none"> • To know that the 'user' is the person who will use the product. • To know that different users may want different things from a design. • To know that designers usually design and make something to solve a problem. <ul style="list-style-type: none"> • To know that who they are designing for makes a difference to what they design. • To know that the purpose is what something is for. • To know that a mock-up is a model of how something works. • To know that choosing different materials or components will have an effect on what their product does or looks like.

		<ul style="list-style-type: none"> ● To know that different equipment does different things. ● To know the names of common pieces of equipment. ● To know that some tools are sharp like scissors and knives. ● To know that following instructions helps with safety. <p>To know that cutting in a straight line can be helpful when making.</p> <ul style="list-style-type: none"> ● To know that some products will be better than others. ● To know that their ideas or products can be made better. ● To know that many things that move have parts inside to help them work. ● To know that mechanisms usually limit unwanted movement. ● To know that a slider mechanism moves an object in a straight line (eg. left/right, up/down). ● To know that sliding mechanisms are designed to keep movement in one direction (eg. using guides/rails etc).
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<u>Year 3-Pneumatic toys</u>		
<u>Skills</u>	Design	<ul style="list-style-type: none"> ● Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences. ● Taking part in structured idea blasting sessions. ● Coming up with more ideas and considering the feasibility of their ideas in the classroom. ● Developing drawing and sketching skills with a focus on clarity and simplicity. ● Developing designs by adding detail and justifications about materials, tools, methods. ● Beginning to recognise the benefit of a range of diagram types or prototypes to communicate ideas. (eg. sketches, cross-sectional diagram, thumbnail sketches and exploded diagrams).
	Make	<ul style="list-style-type: none"> ● Selecting equipment required for a series of tasks based on the plan. Explain why each piece is suitable for each stage. ● Suggesting simple safety rules based on their understanding of tool dangers.

		<ul style="list-style-type: none"> • Participating in discussions about classroom safety procedures. • Cutting out more complex shapes accurately. • Handle different sizes and types of scissors with confidence. • Using PVA glue to join corrugated card and light wood (e.g. balsa wood). • Choosing shapes to suit the function of a product. • Painting or colouring precisely to improve the finish. • Making facades from a range of materials. • Sealing edges with tape to cover gaps in joins.
	Evaluate	<ul style="list-style-type: none"> • Analysing why specific products, designers or inventors are successful. • Evaluating their designs by comparing them against design criteria and considering feedback from peers to suggest improvements. • Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements. • Reflecting on feedback to decide if and how it could be used to improve future iterations.
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • Beginning to understand how mechanisms work. • Recognising pneumatic systems in everyday objects (e.g. car boot, adjustable chair.)
	Additional	<ul style="list-style-type: none"> • To know that a problem or need is something that a designer can help to solve. • To know that extra information on drawings or diagrams can help the user understand a design or idea. • To know that thumbnail sketches are less detailed quick sketches. • To know that a cross-sectional diagram shows the inside of a product. • To know that an exploded diagram shows how the parts of a product fit together. • To know that different pieces of equipment will be used at different stages in a plan. • To know that different tools and equipment have different dangers. • To know that scissors are useful for cutting out complex shapes, • To know that designers and inventors create products. • To know that choices of materials and equipment can affect the final product.

		<ul style="list-style-type: none"> • To know that feedback is ideas and suggestions from other people that can help improve their work. • To know that they can choose to use feedback or not. • To understand that a mechanical system can allow us to move something more easily. • To know that mechanical systems have more than one mechanism that moves to make them work. • To know that mechanical systems are often hidden in products to make them look more appealing. • To know that pushing air can be used to move a mechanism. • To know that pivots can be used to create more movement in the mechanical system. • To know that a combination of mechanisms can improve a product.
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<u>Year 5-Pop-up books</u>		
<u>Skills</u>	Design	<ul style="list-style-type: none"> • Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book.
	Make	<ul style="list-style-type: none"> • Following a design brief to make a pop up book, neatly and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.
	Evaluate	<ul style="list-style-type: none"> • Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement.
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms.
	Additional	<ul style="list-style-type: none"> • To know that a design brief is a description of what I am going to design and make.

		<ul style="list-style-type: none"> To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.
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<u>Year 6-Automata toys</u>		
<u>Skills</u>	Design	<ul style="list-style-type: none"> Noticing wider-reaching problems or needs in the community. Coming up with a broader range of ideas and deeper innovation, <i>requiring pupils to think critically about their ideas' practicality and originality.</i> Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design.
	Make	<ul style="list-style-type: none"> Producing lists of equipment, materials and tools that they need for a task. Selecting materials, components or ingredients based on research or user needs. Explaining their choices, referring to their research. Considering which equipment will work well together. Choosing from the known range of equipment available to them with little guidance. Assessing risks associated with different tools and equipment. Understanding and explaining the importance of each safety rule. Consistently apply safety instructions. Cutting jelutong or other harder wood with a coping saw or a tenon saw in small groups. Cutting in a back-and-forth sawing motion where appropriate. In supervised groups, using hot glue guns safely. Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly.
	Evaluate	<ul style="list-style-type: none"> Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost Providing feedback that is helpful, specific and encouraging. Incorporating feedback from peers or users to improve their product further, explaining the changes they made and the impact they had.

<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that the mechanism in an automata uses a system of cams, axles and followers. • To know that different shaped cams produce different outputs. • To know which mechanisms are working together to make a mechanical system. • To know that there are different directions of movement. • To know that mechanisms can change one type of movement to another.
	Additional	<ul style="list-style-type: none"> • To know that an automata is a hand powered mechanical toy. • To know that a cross-sectional diagram shows the inner workings of a product.

Digital World

Year 4-Mindful Moments Timers

<u>Skills</u>	Design	<ul style="list-style-type: none"> • Writing design criteria for a programmed timer (Micro:bit). • Exploring different mindfulness strategies. • Applying the results of my research to further inform my design criteria. • Developing a prototype case for my mindful moment timer. • Using and manipulating shapes and clipart by using computer-aided design (CAD), to produce a logo. • Following a list of design requirements.
	Make	<ul style="list-style-type: none"> • Developing a prototype case for my mindful moment timer. • Creating 3D structures using modelling materials. • Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press.
	Evaluate	<ul style="list-style-type: none"> • Investigating and analysing a range of timers by identifying and comparing their advantages and disadvantages. • Evaluating my Micro:bit program against points on my design criteria and amending them to include any changes I made. • Documenting and evaluating my project. • Understanding what a logo is and why they are important in the world of design and business. • Testing my program for bugs (errors in the code).

		<ul style="list-style-type: none"> • Finding and fixing the bugs (debug) in my code. • Using an exhibition to gather feedback. • Gathering feedback from the user to make suggested improvements to a product.
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To understand what variables are in programming. • To know some of the features of a Micro:bit. • To know that an algorithm is a set of instructions to be followed by the computer. • To know that it is important to check my code for errors (bugs). • To know that a simulator can be used as a way of checking your code works before installing it onto an electronic device.
	Additional	<ul style="list-style-type: none"> • To understand the terms 'ergonomic' and 'aesthetic'. • To know that a prototype is a 3D model made out of cheap materials, that allows us to test design ideas and make better decisions about size, shape and materials. • To know that an exhibition is a way for companies to showcase products, meet potential new customers and gather feedback from users.

Year 5-Monitoring Devices

<u>Skills</u>	Design	<ul style="list-style-type: none"> • <i>Researching (books, internet) for a particular (user's) animal's needs.</i> • Developing design criteria based on research. • Generating multiple housing ideas using building bricks. • Understanding what a virtual model is and the pros and cons of traditional and CAD modelling. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of, or combining one or more 3D objects, using CAD.
	Make	<ul style="list-style-type: none"> • Understanding the functional and aesthetic properties of plastics. • Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range
	Evaluate	<ul style="list-style-type: none"> • Stating an event or fact from the last 100 years of plastic history.

		<ul style="list-style-type: none"> • Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices. • Explaining key functions in my program (audible alert, visuals). • Explaining how my product would be useful for an animal carer including programmed features.
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record. • To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose. • To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.
	Additional	<ul style="list-style-type: none"> • To understand key developments in thermometer history. • To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future. • To know the 6Rs of sustainability. • To understand what a virtual model is and the pros and cons of traditional vs CAD modelling.

Electrical systems

Year 6-Steady hand games

<u>Skills</u>	Design	<ul style="list-style-type: none"> • Designing a steady hand game - identifying and naming the components required. • Drawing a design from three different perspectives. • Generating ideas through sketching and discussion. • Modelling ideas through prototypes. • Understanding the purpose of products (toys), including what is meant by <i>'fit for purpose'</i> and <i>'form over function'</i>.
	Make	<ul style="list-style-type: none"> • Constructing a stable base for a game. • Accurately cutting, folding and assembling a net. • Decorating the base of the game to a high quality finish. • Making and testing a circuit. • Incorporating a circuit into a base.
	Evaluate	<ul style="list-style-type: none"> • Testing own and others finished games, identifying what went well and making suggestions for improvement. • Gathering <i>images and information about existing children's toys</i>. • <i>Analysing a selection of existing children's toys</i>.
<u>Knowledge</u>	Technical	<ul style="list-style-type: none"> • To know that batteries contain acid, which can be dangerous if they leak. • To know the names of the components in a basic series circuit, including a buzzer.
	Additional	<ul style="list-style-type: none"> • To know that <i>'form'</i> means the shape and appearance of an object. • To know the difference between <i>'form'</i> and <i>'function'</i>.

		<ul style="list-style-type: none">• To understand that 'fit for purpose' means that a product works how it should and is easy to use.• To know that form over purpose means that a product looks good but does not work very well.• To <i>know the importance of 'form follows function' when designing</i>: the product must be designed primarily with the function in mind.• To understand the diagram perspectives 'top view', 'side view' and 'back'.
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