

DT Overview

Class	Autumn		Spring		Summer	
	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Class 1	Structures: Junk Modelling <u>Skills</u> Making verbal plans and material choices. Developing a junk model. Improving fine motor/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. 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.		Cooking and Nutrition: Soup <u>Skills:</u> Designing a soup recipe as a class. Designing soup packaging. Chopping plasticine safely. Chopping vegetables with support. Tasting the soup and giving opinions. Describing some of the following when tasting food: look, feel, smell and taste. Choosing their favourite packaging design and explaining why. <u>Knowledge:</u> 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.		Textiles: Bookmarks <u>Skills:</u> Discussing what a good design needs. Designing a simple pattern with paper. Designing a bookmark. Choosing from available materials. Developing fine motor/cutting skills with scissors. Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. Using a prepared needle and wool to practise threading. Reflecting on a finished product and comparing to their design. <u>Knowledge:</u>	

	Describing their favourite and least favourite part of their model. <u>Knowledge:</u> To know there are a range to 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.	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 foods.	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.
Class 2 CYCLE A	Mechanisms: Making a moving storybook <u>Skills:</u> Explaining how to adapt mechanisms, using bridges or guides to control the movement. Designing a moving storybook for a given audience. Following a design to create moving models that use levers and sliders. Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed.	Textiles: Puppets <u>Skills:</u> Using a template to create a design for a puppet. Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. Sequencing steps for construction. Reflecting on a finished product, explaining likes and dislikes. <u>Knowledge:</u> To know that 'joining technique' means connecting two pieces of material together.	Cooking and Nutrition: Smoothies <u>Skills:</u> Designing smoothie carton packaging by hand. Chopping fruit and vegetables safely to make a smoothie. Juicing fruits to make a smoothie. Identifying if a food is a fruit. Learning where and how fruits and vegetables grow.

	Reviewing the success of a product by testing it with its intended audience. Knowledge: A mechanism is the parts of an object that move together. A slider mechanism moves an object from side to side or up and down. A slider mechanism has a slider, slots, guides and an object. Bridges and guides are bits of card that purposefully restrict the movement of the slider.	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.	Tasting and evaluating different foods. Describing appearance, smell and taste. Suggesting information to be included on packaging. Knowledge: That a blender is a machine which mixes ingredients together into a smooth liquid. That a fruit has seeds and a vegetable does not. That fruits grow on trees or vines. That vegetables can grow either above or below ground. That vegetables are any edible part of a plant.
Class 2 CYCLE B	Cooking and Nutrition: Balanced Diet Skills: Chopping foods safely to make a wrap. Grating foods to make a wrap. Snipping smaller foods instead of cutting.	Structures: Baby Bear's Chair Skills: Generating and communicating ideas using sketching and modelling. Learning about different types of structures, found in the natural world and in everyday objects.	Textiles: Pouches Skills: Designing a pouch. Selecting and cutting fabrics for sewing. Decorating a pouch using fabric glue or running stitch.

Spreading soft foods to make a wrap. Identifying the five food groups. Learning about a balanced diet. Tasting and evaluating different food combinations. Describing appearance, smell and taste. Designing three wrap ideas. <u>Knowledge:</u> That 'diet' means the food and drink that a person or animal usually eats. What makes a balanced diet. That the five main food groups are: carbohydrates, fruits and vegetables, protein, dairy and oils and spreads. That I should eat a range of different foods from each food group, and roughly how much of each food group. That 'ingredients' means the items in a mixture or recipe.	Making a structure according to design criteria. Creating joints and structures from paper/card and tape. Building a strong and stiff structure by folding paper. Exploring the features of structures. Comparing the stability of different shapes. Testing the strength of their own structures. Identifying the weakest part of a structure. Evaluating the strength, stiffness and stability of their own structure. <u>Knowledge:</u> To know that shapes and structures with wide, flat bases or legs are the most stable. 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 which has been formed or made from parts.	Threading a needle. Sewing running stitch, with evenly spaced, neat, even stitches to join fabric. Neatly pinning and cutting fabric using a template. Troubleshooting scenarios posed by teacher. Evaluating the quality of the stitching on others' work. Discussing as a class, the success of their stitching against the success criteria. Identifying aspects of their peers' work that they particularly like and why. <u>Knowledge:</u> 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.
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	How to cut, grate, snip and spread to prepare foods. How to review and give a score to evaluate.	To know that a 'stable' structure is one which is firmly fixed and 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.	
Class 3 CYCLE A	Structures: Pavilions Skills: Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. Building frame structures designed to support weight. 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 for the cladding. Reinforcing corners to strengthen a structure. Creating a design in accordance with a plan.	Electrical systems: Electric poster Skills: Carrying out research based on a given topic (for example, The Romans) to develop a range of initial ideas. Generating a final design for the electric poster with consideration for the client's needs and design criteria. Planning the positioning of the bulb (circuit component) and its purpose. Mounting the poster onto corrugated card to improve its strength and withstand the weight of the circuit on the rear. Measuring and marking materials out using a template or ruler. Fitting an electrical component (bulb).	Mechanisms: Mechanical cars Skills: Design Taking part in structured idea generation sessions. Developing drawing and sketching skills with a focus on clarity and simplicity. Beginning to recognise the benefit of a range of diagram types or prototypes to communicate ideas. (e.g. sketches, cross-sectional diagrams, thumbnail sketches and exploded diagrams). Creating prototypes using materials with similar properties to their final design. Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.

	Learning to create different textural effects with materials. Knowledge: To understand what a frame structure is. To know that a 'free-standing' structure is one that can stand on its own. 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.	Learning ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge). Learning to give and accept constructive criticism on their work and the work of others. Testing the success of initial ideas against the design criteria and justifying opinions. Revisiting the requirements of the client to review developing design ideas and check they fulfil their needs. Knowledge: To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. To understand common features of an electric product (switch, battery or plug, dials, buttons, etc.) To list examples of common electric products (kettle, remote control, etc.) To understand that an electric product uses an electrical system to work (function).	Developing designs by adding details and justifications about materials, tools and methods. Make Following detailed safety instructions. Using a ruler as a measuring tool with increasing accuracy by creating spaced marks using millimetres and measuring lengths of objects. Handle different sizes and types of scissors with confidence. With close supervision, using a hot glue gun to join wooden materials (e.g. lolly sticks). Selecting equipment required for a series of tasks based on the plan and explaining why each piece is suitable for each stage. Evaluate 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.
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		To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.	Investigating and analysing a range of existing products by looking at their functionality and appeal. 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. Evaluating how effective their chosen materials and tools were in fulfilling the design brief. <u>Knowledge:</u> Design Extra information on drawings or diagrams can help the user understand a design or idea. An exploded diagram shows how the parts of a product fit together. A prototype is a detailed model that helps users understand how a product will work. A problem or need is something that a designer can help to solve.
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			A target audience is a group of people that might like the idea. Make Different tools and equipment have different dangers. A ruler can be used to measure length. Scissors are useful for cutting out complex shapes. A hot glue gun can be used to join materials. Different pieces of equipment will be used at different stages in a plan. Evaluate The better the suggestions, the better the feedback. They can choose to use feedback or not. Some products are more successful than others because of their function. Designers and inventors create products. Choices of materials and equipment can affect the final product.
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			Feedback is ideas and suggestions from other people that can help improve their work. Technical A mechanical system can allow us to move something more easily. Mechanical systems have more than one mechanism that moves to make them work. Mechanical systems are often hidden in products to make them look more appealing.
Class 3 CYCLE B	Cooking and Nutrition: Eating Seasonally <u>Skills:</u> Describing how climate affects where foods grow. Identifying seasonal ingredients from the UK. Tasting seasonal ingredients. Describing the texture and flavour of ingredients. Peeling foods by hand or with a peeler. Cutting ingredients safely. Choosing ingredients based on a design brief.	Textiles: Egyptian collars <u>Skills:</u> Designing and making a template for an Egyptian collar and applying individual design criteria. Following their design criteria to create an Egyptian collar. Selecting and cutting fabrics with ease using fabric scissors. Threading needles with greater independence. Tying knots with greater independence.	Digital World: Mindful Moments timer <u>Skills:</u> Writing design criteria for a programmed timer (micro:bit). Exploring different mindfulness strategies. Applying the results of research to further inform my design criteria. Developing a prototype case for a mindful moment timer.

	Following the instructions within a recipe. Describing the benefits of seasonal fruits and vegetables and their impact on the environment. <u>Knowledge:</u> That seasonal means foods that grow in a given season in a given country. Some seasonal foods that grow in the UK and what season they grow in. That eating seasonal foods can have a positive impact on the environment. How to describe the flavour and texture of foods. How to cut and peel safely. That the appearance of food is as important as taste. That similar coloured fruits and vegetables often have similar nutritional benefits.	Sewing cross stitch to decorate or join fabric. Decorating fabric using appliqué, beads (or other embellishments), ribbon and pinking scissors. Evaluating an end product. <u>Knowledge:</u> To know that appliqué is a way of mending or decorating a textile by applying smaller pieces of fabric. To understand that a product's function relies on material choices. To identify and explain some materials and explain their aesthetic and functional properties.	Using and manipulating shapes and clipart by using computer-aided design (CAD), to produce a logo. Following a list of design requirements. Creating a 3D using modelling materials. Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press. Investigating and analysing a range of timers by identifying and comparing their advantages and disadvantages. Evaluating a program against points on a design criteria and amending them to include any changes made. Documenting and evaluating a project. Understanding what a logo is and why they are important in the world of design and business. Testing a program for bugs (errors in the code). Finding and fixing bugs (debug) in code.
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			Using an exhibition to gather feedback. Gathering feedback from the user to make suggested improvements to a product. Knowledge: 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 code for errors (bugs). To know that a simulator can be used as a way of checking code works before installing it onto an electronic device. 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
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			potential new customers and gather feedback from users.
Class 4 CYCLE A	Structures: Bridges <u>Skills:</u> Design Designing a stable structure that is able to support weight. Creating a frame structure with a focus on triangulation. Make Making a range of different shaped beam bridges. Using triangles to create truss bridges that span a given distance and support a load. Building a wooden bridge structure. Independently measuring and marking wood accurately. Selecting appropriate tools and equipment for particular tasks. Using the correct techniques to saw safely. Identifying where a structure needs reinforcement and using card corners for support.	Mechanisms: Gears and Pulleys <u>Skills:</u> Design Noticing wider-reaching problems or needs in the community. Identifying a wide range of needs and potential barriers through market research. Writing more complex problem statements that consider multiple factors and constraints. Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost. Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality. Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design. Using a series of prototypes to refine and improve their designs.	Electrical systems: Steady hand games <u>Skills:</u> 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 'fit for purpose' and 'form over function'. 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.

	Explaining why selecting appropriate materials is an important part of the design process. Understanding basic wood functional properties. Evaluate Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. Suggesting points for improvements for own bridges and those designed by others. Knowledge: Some different ways to reinforce structures. Triangles can be used to reinforce bridges. Material selection is important based on properties. The material (functional and aesthetic) properties of wood. The difference between arch, beam, truss and suspension bridges. How to carry and use a saw safely. Properties are words that describe the form and function of materials.	Make Consistently apply safety instructions. Select appropriate scissors to handle delicate cutting tasks and challenging materials. Cutting patterns and drawings accurately. 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. Choosing PVA glue over hot glue for its safety when joining materials in less intensive projects. Evaluate Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects. Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost. Considering alternative materials, tools or techniques that could enhance the product.	Incorporating a circuit into a base. Testing their own and others' finished games, identifying what went well and making suggestions for improvement. Gathering images and information about existing children's toys. Analysing a selection of existing children's toys. Knowledge: To know that 'form' means the shape and appearance of an object. To know the difference between 'form' and 'function'. 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 know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind.
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		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> Mechanical systems that use gears in everyday objects (e.g. bicycle, clock, etc.). Gears and pulleys allow us to transfer movement and force from one part of a mechanical system to another. Gears allow us to increase the output of a mechanism. Market research is a way of collecting information about problems or needs. Constraints are things that might stop our ideas from being successful. Original and innovative ideas are different from what has been made before. Annotations are detailed labels and comments on diagrams.	To understand the diagram perspectives 'top view', 'side view' and 'back'.
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		Risks are things that might happen. Hot glue creates a strong bond quickly. It is often better to choose safer equipment. Sustainability means thinking about the materials that were used to make a product and how the product was made. Their final product can still be improved by different materials or techniques. Evaluating their designs in detail will help them understand their successful and less successful parts. Feedback should be positive, helpful and specific. That explaining how they used feedback to improve their design can help them create better products in the future.	
Class 4 CYCLE B	Cooking and Nutrition: Come Dine With Me <u>Skills:</u> Writing a recipe, explaining the key steps, method and ingredients. Including facts and drawings from research undertaken.	Mechanical Systems: Automata toys <u>Skills:</u> Design Noticing wider-reaching problems or needs in the community.	Textiles: Stuffed toys <u>Skills:</u> Designing a stuffed toy considering the main component shapes required and creating an appropriate template.

	Following a recipe, including using the correct quantities of each ingredient. Adapting a recipe based on research. Working to a given timescale. Working safely and hygienically with independence. Evaluating a recipe, considering: taste, smell, texture and origin of the food group. Taste testing and scoring final products. Suggesting and writing up points of improvements in productions. Evaluating health and safety in production to minimise cross contamination. Knowledge: That 'flavour' is how a food or drink tastes. That many countries have 'national dishes' which are recipes associated with that country. That 'processed food' means food that has been put through multiple changes in a factory.	Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality. Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design. Make 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.	Considering the proportions of individual components. Creating a 3D stuffed toy from a 2D design. Measuring, marking and cutting fabric accurately and independently. Creating strong and secure blanket stitches when joining fabric. Threading needles independently. Using appliqué to attach pieces of fabric decoration. Sewing blanket stitch to join fabric. Applying blanket stitch so the spaces between the stitches are even and regular. Testing and evaluating an end product and giving points for further improvements. Knowledge: To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric.
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	That it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. What happens to a certain food before it appears on the supermarket shelf (farm to fork).	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 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. Knowledge: Which mechanisms are working together to make a mechanical system. That there are different directions of movement.	To understand that it is easier to finish simpler designs to a high standard. To know that soft toys are often made by creating appendages separately and then attaching them to the main body. To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely.
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		That mechanisms can change one type of movement to another.	
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