

DESIGN AND TECHNOLOGY AT LAUREL LANE

Whole School Overview

	Autumn	Spring	Summer
Year 1	Textiles: Simple stitches Food Technology: Fruit and vegetables	Mechanisms: Wheels and axles	Structures: Stable structures
Year 2	Structures: Baby bear's chair Food Technology: A balanced diet	Mechanisms: Levers	Mechanisms: Fairground wheel
Year 3	Structures: Product packaging Food Technology: Eating Seasonally	Mechanisms: Pneumatic toys	Textiles: Egyptian collars food
Year 4	Electrical systems: Exploring electrical products Food Technology: Adapting a recipe	Textiles: Fastenings	Structures: Helmets
Year 5	Textiles: Stuffed toys Food Technology: Developing a recipe	Mechanical Systems: Gears and Pulleys	Structures: Bridges
Year 6	Mechanical systems: Automata toys Food Technology: Come dine with me	Structures: Playground pioneers	Electrical systems: Steady hand game



	Autumn Term	Spring Term	Summer Term	
Year 1	Textiles Simple Stitches	Mechanism Wheels and axles	Structures Stable structures	Food Technology Fruit and Vegetables
	Skills Developed: <u>Design</u> -Stating what they intend to make and why- identifying the purpose. -Using basic skills to communicate ideas. -Talking about ideas, with purpose and user in mind. <u>Make</u> -Choosing between a small number of materials, ingredients or components. -Explaining their choices based on personal experiences. -Explaining in simple terms why certain tools must be handled carefully. -Use large plastic needle and large-weave embroidery fabric to begin to create a running stitch. <u>Evaluate</u> -Saying what they like about their peers' designs and products. -Accepting feedback and understanding it is meant to improve their work. Knowledge Developed: -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.	Skills Developed: <u>Design</u> -Creating ideas with design criteria in mind. -Referring to specific parts of existing products when generating ideas. -Using labels to explain parts of a design, label materials etc, including using ICT. -Integrating moving parts when creating mock-ups. <u>Make</u> -Integrating moving parts when creating mock-ups. -Planning more than one step ahead. -Choosing materials or components from a wider range. -Choosing between pieces of equipment that are used for the same purpose and explaining their choice. -Explaining their choices based on the properties of materials. -Following and recalling simple safety instructions. <u>Evaluate</u> -Discussing whether they were able to use the tools and techniques effectively.	Skills Developed: <u>Design</u> -Learning the importance of a clear design criteria. -Including individual preferences and requirements in a design. <u>Make</u> -Making stable structures from card. • Following instructions to cut and assemble the supporting structure of a windmill. -Making functioning turbines and axles which are assembled into a main supporting structure. - Finding the middle of an object. - Puncturing holes. - Adding weight to structures. -Creating supporting structures. -Cutting evenly and carefully. <u>Evaluate</u> -Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't. -Suggest points for improvements. Knowledge Developed: -To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses).	Skills Developed: <u>Design</u> -Designing smoothie carton packaging by-hand. <u>Make</u> -Chopping fruit and vegetables safely to make a smoothie. -Juicing fruits safely to make a smoothie <u>Evaluate</u> -Tasting and evaluating different food combinations. -Describing appearance, smell and taste. -Suggesting information to be included on packaging. -Comparing their own smoothie with someone else's. Knowledge Developed: -To know that a blender is a machine which mixes ingredients together into 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 ground. -To know that vegetables is any edible part of a plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).





LAUREL LANE
Primary School

		-Evaluating their ideas and creations against simple design criteria. -Comparing a range of products and explaining why some better meet different design criteria than others. Knowledge Developed: -To know that wheels need to be round to rotate and move. -To understand that for a wheel to move it must be attached to a rotating axle. -To know that an axle moves within an axle holder which is fixed to the vehicle or toy. -To know that the frame of a vehicle (chassis) needs to be balanced.	-To understand that axles are used in structures and mechanisms to make parts turn in a circle. -To begin to understand that different structures are used for different purposes. -To know that a structure is something that has been made and put together. -To know that the sails or blades of a windmill are moved by the wind. -To know that a structure is something built for a reason. -To know that stable structures do not topple. -To know that adding weight to the base of a structure can make it more stable.	
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	Autumn Term	Spring Term	Summer Term	
Year 2	Structures Baby Bears' Chair	Mechanism Levers	Mechanism Fairground wheel	Food Technology Balanced Diet
	Skills Developed: <u>Design</u> -Generating and communicating ideas using sketching and modelling. -Learning about different types of structures, found in the natural world and in everyday objects. <u>Make</u> -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. <u>Evaluate</u> -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.	Skills Developed: <u>Design</u> <u>Make</u> -Making linkages using card for levers and split pins for pivots. -Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. -Cutting and assembling components neatly. <u>Evaluate</u> -Evaluating own designs against design criteria. -Using peer feedback to modify a final design. Knowledge Developed: -To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. -To know that there is always an input and output in a mechanism. -To know that an input is the energy that is used to start something working.	Skills Developed: <u>Design</u> -Selecting a suitable linkage system to produce the desired motion. -Designing a wheel. <u>Make</u> -Selecting materials according to their characteristics. -Following a design brief. <u>Evaluate</u> -Evaluating different designs. -Testing and adapting a design. Knowledge Developed: -To know that different materials have different properties and are therefore suitable for different uses.	Skills Developed: <u>Design</u> -Designing three wrap ideas based on a food combination which work well together. <u>Make</u> -Chopping foods safely to make a wrap. -Constructing a wrap that meets a design brief. -Grating foods to make a wrap. -Snipping smaller foods instead of cutting. <u>Evaluate</u> -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. Knowledge Developed: -To know that 'diet' means the food and drink that a person or animal usually eats.



	Knowledge Developed: -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. -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	-To know that an output is the movement that happens as a result of the input. -To know that a lever is something that turns on a pivot. -To know that a linkage mechanism is made up of a series of levers.	-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.
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	Autumn Term	Spring Term	Summer Term	
Year 3	Structures Product packaging	Mechanism Pneumatic toys	Textiles Egyptian collars	Food Technology Eating seasonally
	Skills Developed: <u>Design</u> -Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences. -Beginning to use 2D CAD software to communicate their ideas. <u>Make</u> -Creating accurate shapes from templates. -Cutting out more complex shapes accurately. -Choosing shapes to suit the function of a product. <u>Evaluate</u> -Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements. -Investigating and analysing a range of existing products by looking at their functionality and appeal. -Reflecting on feedback to decide if and how it could be used to improve future iterations.	Skills Developed: <u>Design</u> -Designing a toy which uses a pneumatic system. -Developing design criteria from a design brief. -Generating ideas using thumbnail sketches and exploded diagrams. -Learning that different types of drawings are used in design to explain ideas clearly. <u>Make</u> -Creating a pneumatic system to create a desired motion. -Building secure housing for a pneumatic system. -Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. -Selecting materials due to their functional and aesthetic characteristics. -Manipulating materials to create different effects by cutting, creasing, folding and weaving. <u>Evaluate</u> -Using the views of others to improve designs.	Skills Developed: <u>Design</u> -Designing and making a template from an existing cushion and applying individual design criteria. <u>Make</u> -Following design criteria to create a 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 embellishing the collars based on design ideas. <u>Evaluate</u> -Evaluating an end product and thinking of other ways in which to create similar items. Knowledge developed: -To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.	Skills Developed: <u>Design</u> -Designing a recipe for a savoury tart. <u>Make</u> -Following the instructions within a recipe. -Tasting seasonal ingredients. -Selecting seasonal ingredients. -Peeling ingredients safely. -Cutting safely with a vegetable knife. <u>Evaluate</u> -Establishing and using design criteria to help test and review dishes. -Describing the benefits of seasonal fruits and vegetables and the impact on the environment. -Suggesting points for improvement when making a seasonal tart Knowledge Developed: -To know that not all fruits and vegetables can be grown in the UK. -To know that climate affects food growth. -To know that vegetables and fruit grow in certain seasons.





LAUREL LANE
Primary School

	Knowledge Developed: -Beginning to understand how different structures are built. -Strengthening structures by ribbing. -Constructing a range of 3D shapes.	-Testing and modifying the outcome, suggesting improvements. -Understanding the purpose of exploded-diagrams through the eyes of a designer and their client. Knowledge Developed: -To understand how pneumatic systems work. -To understand that pneumatic systems can be used as part of a mechanism. -To know that pneumatic systems operate by drawing in, releasing and compressing air.	-To know that when two edges of fabric have been joined together it is called a seam. -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.	-To know that cooking instructions are known as a 'recipe'. -To know that imported food is food which has been brought into the country. -To know that exported food is food which has been sent to another country. -To know that eating seasonal foods can have a positive impact on the environment. -To know that similar coloured fruits and vegetables often have similar nutritional benefits. -To know that the appearance of food is as important as taste.
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	Autumn Term	Spring Term	Summer Term	
Year 4	Electrical systems Torches	Textiles Fastenings	Structure Helmets	Cooking and nutrition Adapting a recipe
	Skills Developed: <u>Design</u> -Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. <u>Make</u> -Making a torch with a working electrical circuit and switch. -Using appropriate equipment to cut and attach materials. -Assembling a torch according to the design and success criteria. <u>Evaluate</u> -Evaluating electrical products. -Testing and evaluating the success of a final product. Knowledge Developed: -To understand that electrical conductors are materials which electricity can pass through. -To understand that electrical insulators are materials which electricity cannot pass through. -To know that a battery contains stored electricity that can be used to power products.	Skills Developed: <u>Design</u> -Writing design criteria for a product, articulating decisions made. -Designing a personalised book sleeve. <u>Make</u> -Making and testing a paper template with accuracy and in keeping with the design criteria. -Measuring, marking and cutting fabric using a paper template. -Selecting a stitch style to join fabric. -Working neatly by sewing small, straight stitches. -Incorporating a fastening to a design. <u>Evaluate</u> -Testing and evaluating an end product against the original design criteria. -Deciding how many of the criteria should be met for the product to be considered successful. -Suggesting modifications for improvement. -Articulating the advantages and disadvantages of different fastening types.	Skills Developed: <u>Design</u> -Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences. -Noticing simple problems or needs in everyday life. -Developing drawing and sketching skills with a focus on clarity and simplicity. <u>Make</u> -Selecting materials, components or ingredients based on their form as well as their functional properties. -Explaining choices with regard to function and form. -Choosing shapes to suit the function of a product. <u>Evaluate</u> -Evaluating designs by comparing them against design criteria. -Considering feedback from peers to suggest improvements. -Evaluating how effective the chosen materials were in fulfilling the design brief. Knowledge Developed:	Skills Developed: <u>Design</u> -Designing a biscuit within a given budget, drawing upon previous taste testing judgements. -Designing packaging for a biscuit that targets a specific group <u>Make</u> -Following a baking recipe, including the preparation of ingredients. -Cooking safely, following basic hygiene rules. -Adapting a recipe to meet the requirements of a target audience. -Using a cuboid net to create packaging. <u>Evaluate</u> -Evaluating a recipe, considering taste, smell, texture and appearance. -Describing the impact of the budget on the selection of ingredients. -Evaluating and comparing a range of food products. -Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins).



	-To know that an electrical circuit must be complete for electricity to flow. -To know that a switch can be used to complete and break an electrical circuit.	Knowledge Developed: -To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro. -To know that different fastening types are useful for different purposes. -To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions.	-Strengthening structures by layering materials. -Strengthening structures by ribbing. -To know how some different structures are built. -To know that structures can be strengthened by manipulating materials and shapes. -To know a shell structure is a hollow shape with a thin outer layer.	Knowledge Developed: -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. -To understand the importance of budgeting while planning ingredients for biscuits. -To know that products often have a target audience.
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	Autumn Term	Spring Term	Summer Term	
Year 5	Textiles Stuff toys	Mechanical systems Gears and Pulleys	Structure Bridges	Food Technology Developing a recipe
	Skills Developed: <u>Design</u> -Designing a stuffed toy, considering the main component shapes required and creating an appropriate template. -Considering the proportions of individual components. <u>Make</u> -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. <u>Evaluate</u> -Testing and evaluating an end product and giving point for further improvements. Knowledge Developed:	Skills Developed: <u>Design</u> -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. <u>Make</u> -Consistently apply safety instructions. -Select appropriate scissors to handle delicate cutting tasks and challenging materials. -Cutting patterns and drawings accurately. -Using hot glue guns safely. -Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly. <u>Evaluate</u> -Reflecting on the usability, aesthetics, innovation and sustainability of products and	Skills Developed: <u>Design</u> -Designing a stable structure that is able to support weight. -Creating a frame structure with a focus on triangulation. <u>Make</u> -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 saws safely. -Identifying where a structure needs reinforcement and using card corners for support. -Explaining why selecting appropriating materials is an important part of the design process. -Understanding basic wood functional properties.	Skills Developed: <u>Design</u> -Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. -Writing an amended method for a recipe to incorporate the relevant changes to ingredients. -Designing appealing packaging to reflect a recipe. -Researching existing recipes to inform ingredient choices. <u>Make</u> -Cutting and preparing vegetables safely. -Using equipment safely, including knives, hot pans and hobs. -Knowing how to avoid cross-contamination. -Following a step-by-step method carefully to make a recipe. <u>Evaluate</u> -Identifying the nutritional differences between different products and recipes. -Identifying and describing healthy benefits of food groups.





LAUREL LANE
Primary School

	-To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. -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.	discussing how design choices impact these aspects. -Assessing designs against more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost. Knowledge Developed: -Know that mechanical systems use gears in everyday objects. -That gears and pulleys allow us to transfer movement and force from one part of a mechanical system to another. -That gears allow us to increase the output of a mechanism.	<u>Evaluate</u> -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 Developed: -To understand some different ways to reinforce structures. -To understand how triangles can be used to reinforce bridges. -To know that properties are words that describe the form and function of materials. -To understand why material selection is important based on properties. -To understand the material (functional and aesthetic) properties of wood.	Knowledge Developed: -To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed. -To know that recipes can be adapted to suit nutritional needs and dietary requirements. -To know that I can use a nutritional calculator to see how healthy a food option is. -To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. -To know that coloured chopping boards can prevent cross-contamination. -To know that nutritional information is found on food packaging. -To know that food packaging serves many purposes.
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	Autumn Term	Spring Term	Summer Term	
Year 6	Mechanical systems Automata toys	Structures Playground pioneers	Electrical systems Steady hand game	Food Technology Come dine with me
	Skills Developed: <u>Design</u> • Designing a stuffed toy, considering the main component shapes required and creating an appropriate template. • Considering the proportions of individual components. <u>Make</u> • 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. <u>Evaluate</u> • Testing and evaluating an end product and giving point for further improvements.	Skills Developed: <u>Design</u> • Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs. <u>Make</u> • Building a range of play apparatus structures drawing upon new and prior knowledge of structures. • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures. <u>Evaluate</u> • Improving a design plan based on peer evaluation. • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure. Knowledge Developed: • To know that structures can be strengthened by manipulating materials and shapes.	Skills Developed: <u>Design</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'. <u>Make</u> • 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. <u>Evaluate</u> • Testing own and others finished games, identifying what went well and making suggestions for improvement.	Skills Developed: <u>Design</u> • Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken. <u>Make</u> • 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. <u>Evaluate</u> • 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 when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process. • Evaluating health and safety in production to minimise cross contamination.



	Knowledge Developed: • To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. • 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.		• Gathering images and information about existing children's toys. • Analysing a selection of existing children's toys. Knowledge Developed: • 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	Knowledge Developed: • To know that 'flavour' is how a food or drink tastes. • To know that many countries have 'national dishes' which are recipes associated with that country. • To know that 'processed food' means food that has been put through multiple changes in a factory. • To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. • To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).
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