



# Design & Technology

In Design and Technology, our aim is to develop creative, innovative young thinkers who can apply their knowledge to real life problems.

Pupils will design, make and evaluate products throughout our curriculum. Through a carefully constructed curriculum, we aim to give all pupils, regardless of background, gender, ethnic origin or additional needs, confidence when exploring and drafting ideas. We aim that pupils become reflective learners; able to use a growing range of appropriate vocabulary. We hope to inspire and encourage our pupils to apply their knowledge in the wider world.



Early Years						
Generate ideas through designing and making						
Food	Materials	Textiles	Electrical and Electronics	Construction	Mechanics	Computing
Prepare food Practise cutting skills	Cut stick and glue	Talk about properties of different materials	Switching off and on How do things work?	Make models	Share picture pop up books	Begin to develop skills
Vocabulary						
cut, join, cook, bake, safety, clean, dirty, mix						
Knowledge and Evaluation						
<b>Children will be taught:</b> <ul style="list-style-type: none"> <li>How to safely use tools e.g. scissors, glue, Sellotape, knife, fork</li> <li>How to follow very simple recipe through cake baking, making spring rolls and biscuits</li> <li>A little bit about healthy eating</li> </ul>						
Young Designers should be able to...						
<ul style="list-style-type: none"> <li>Prepare some simple food using cutting implements</li> <li>Use a range of materials and joining techniques to create a model</li> <li>To talk about their constructions and give reasons for their choices</li> <li>To operate an object with switches and investigate how it works</li> </ul>						



## National Curriculum Links LKS2: To be achieved by the end of Year 2

### Design:

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

### Make:

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristic

### Evaluate:

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

### Technical knowledge:

- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products

### Cooking and Nutrition

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from

## Year 1

### Design, Make, Evaluate and Understand Technical Knowledge

Lesson and Vocabulary	Design	Make	Evaluate	Technical Knowledge
<b>Cooking and Nutrition</b> <b>*Food: fruit and vegetables (4 lessons)</b>  blender, carton, fruit, healthy, ingredients, peel/er, recipe, slice, smoothie, stencil, template and vegetable	<ul style="list-style-type: none"> <li>• Designing smoothie carton packaging by-hand or on ICT software</li> </ul>	<ul style="list-style-type: none"> <li>• Chopping fruit and vegetables safely to make a smoothie</li> <li>• Identifying if a food is a fruit or a vegetable</li> <li>• Learning where and how fruits and vegetables grow</li> </ul>	<ul style="list-style-type: none"> <li>• Tasting and evaluating different food combinations</li> <li>• Describing appearance, smell and taste</li> <li>• Suggesting information to be included on packaging</li> </ul>	<ul style="list-style-type: none"> <li>• Understanding the difference between fruits and vegetables</li> <li>• Describing and grouping fruits by texture and taste</li> </ul>
<b>Textiles</b> <b>*Puppets (4 lessons)</b>  decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template	<ul style="list-style-type: none"> <li>• Using a template to create a design for a puppet</li> </ul>	<ul style="list-style-type: none"> <li>• Cutting fabric neatly with scissors</li> <li>• Using joining methods to decorate a puppet</li> <li>• Sequencing steps for construction</li> </ul>	<ul style="list-style-type: none"> <li>• Reflecting on a finished product, explaining likes and dislikes</li> </ul>	<ul style="list-style-type: none"> <li>• Learning different ways in which to join fabrics together: pinning, stapling, gluing</li> </ul>



<p><b>Structures</b>  <b>*Constructing windmills (4 lessons)</b></p> <p>client, design, evaluation, net, stable, strong, test, weak, windmill</p>	<ul style="list-style-type: none"> <li>• Learning the importance of a clear design criteria</li> <li>• Including individual preferences and requirements in a design</li> </ul>	<ul style="list-style-type: none"> <li>• Making stable structures from card, tape and glue</li> <li>• Following instructions to cut and assemble the supporting structure of a windmill</li> <li>• Making functioning turbines and axles which are assembled into a main supporting structure</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't</li> <li>• Suggest points for improvements</li> </ul>	<ul style="list-style-type: none"> <li>• Describing the purpose of structures, including windmills</li> <li>• Learning how to turn 2D nets into 3D structures</li> <li>• Learning that the shape of materials can be changed to improve the strength and stiffness of structures</li> <li>• Understanding that cylinders are a strong type of structure that are often used for windmills and lighthouses</li> <li>• Understanding that windmill turbines use wind to turn and make the machines inside work</li> <li>• Understanding that axles are used in structures and mechanisms to make parts turn in a circle</li> <li>• Developing awareness of different structures for different purposes</li> </ul>
<p><b>Mechanisms/Mechanical systems</b>  <b>*Exploring Sliders as stand-alone lessons, not required for coverage</b></p> <p>assemble, design, evaluation, mechanism, model, sliders, stencil, target, audience, template, test</p>	<ul style="list-style-type: none"> <li>• Explaining how to adapt mechanisms, using bridges or guides to control the movement</li> <li>• Designing a moving story book for a given audience</li> <li>• Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move</li> <li>• Creating clearly labelled drawings</li> </ul>	<ul style="list-style-type: none"> <li>• Following a design to create moving models that use levers and sliders</li> <li>• Adapting mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>• Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed</li> <li>• Reviewing the success of a product by testing it with its intended audience</li> <li>• Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move</li> </ul>	<ul style="list-style-type: none"> <li>• Learning that levers and sliders are mechanisms and can make things move</li> <li>• Identifying whether a mechanism is a lever or slider and determining what movement the mechanism will make</li> <li>• Using the vocabulary: up, down, left, right, vertical and horizontal to describe movement</li> <li>• Identifying what mechanism makes a toy or vehicle roll forwards</li> <li>• Learning that for a wheel to move it must be attached to an axle</li> </ul>



	which illustrate movement			
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Year 2				
Design, Make, Evaluate and Understand Technical Knowledge				
Lesson and Vocabulary	Design	Make	Evaluate	Technical Knowledge
<b>Cooking and Nutrition</b> <b>*Food: Hidden sugars in drinks lesson 1 only as stand-alone lesson unless time allows for full unit.</b>  alternative, diet, balanced diet, evaluation, expensive, healthy, Ingredients, nutrients, packaging, refrigerator, sugar, substitute	<ul style="list-style-type: none"> <li>Designing a healthy wrap based on a food combination which work well together</li> </ul>	<ul style="list-style-type: none"> <li>Slicing food safely using the bridge or claw grip</li> <li>Constructing a wrap that meets a design brief</li> </ul>	<ul style="list-style-type: none"> <li>Describing the taste, texture and smell of fruit and vegetables</li> <li>Taste testing food combinations and final products</li> <li>Describing the information that should be included on a label</li> <li>Evaluating which grip was most effective</li> </ul>	<ul style="list-style-type: none"> <li>Understanding what makes a balanced diet</li> <li>Knowing where to find the nutritional information on packaging</li> <li>Knowing the five food groups</li> </ul>
<b>Textiles</b> <b>*Not necessary (skills covered in Year 1)</b>  decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template	<ul style="list-style-type: none"> <li>Designing a pouch</li> </ul>	<ul style="list-style-type: none"> <li>Selecting and cutting fabrics for sewing</li> <li>Decorating a pouch using fabric glue or running stitch</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshooting scenarios posed by teacher</li> <li>Evaluating the quality of the stitching on others' work</li> <li>Discussing as a class, the success of their stitching against the success criteria</li> <li>Identifying aspects of their peers' work that they particularly like and why</li> </ul>	<ul style="list-style-type: none"> <li>Joining items using fabric glue or stitching Identifying benefits of these techniques</li> <li>Threading a needle</li> <li>Sewing running stitch, with evenly spaced, neat, even stitches to join fabric</li> <li>Neatly pinning and cutting fabric using a template</li> </ul>
<b>Structures</b> <b>* Structures: Baby bear's chair (4 lessons)</b>	<ul style="list-style-type: none"> <li>Generating and communicating ideas using sketching and modelling</li> <li>Learning about different types of</li> </ul>	<ul style="list-style-type: none"> <li>Making a structure according to design criteria</li> <li>Creating joints and structures from paper/card and tape</li> </ul>	<ul style="list-style-type: none"> <li>Exploring the features of structures</li> <li>Comparing the stability of different shapes</li> <li>Testing the strength of own structures</li> </ul>	<ul style="list-style-type: none"> <li>Identifying natural and man-made structures</li> <li>Identifying when a structure is more or less stable than another</li> </ul>



function, man-made, mould, natural, stable, stiff, strong, structure, test, weak	structures, found in the natural world and in everyday objects		<ul style="list-style-type: none"> <li>Identifying the weakest part of a structure</li> <li>Evaluating the strength, stiffness and stability of own structure</li> </ul>	<ul style="list-style-type: none"> <li>Knowing that shapes and structures with wide, flat bases or legs are the most stable</li> <li>Understanding that the shape of a structure affects its strength</li> <li>Using the vocabulary: strength, stiffness and stability</li> <li>Knowing that materials can be manipulated to improve strength and stiffness</li> <li>Building a strong and stiff structure by folding paper</li> </ul>
<b>Mechanisms/Mechanical systems</b> <b>*Mechanisms: Fairground Wheel (4 lessons)</b> <b>*Mechanisms: Making a monster (4 lessons)</b> evaluation, input, lever, linear motion, linkage, mechanical, mechanism, motion, oscillating motion, output, pivot, reciprocating motion, rotary motion, survey	<ul style="list-style-type: none"> <li>Creating a class design criteria for a moving monster</li> <li>Designing a moving monster for a specific audience in accordance with a design criteria</li> <li>Selecting a suitable linkage system to produce the desired motions • Designing a wheel Selecting appropriate materials based on their properties</li> </ul>	<ul style="list-style-type: none"> <li>Making linkages using card for levers and split pins for pivots</li> <li>Experimenting with linkages adjusting the widths, lengths and thicknesses of card used</li> <li>Cutting and assembling components neatly</li> <li>Selecting materials according to their characteristics</li> <li>Following a design brief</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating own designs against design criteria</li> <li>Using peer feedback to modify a final design</li> <li>Evaluating different designs</li> <li>Testing and adapting a design</li> </ul>	<ul style="list-style-type: none"> <li>Learning that mechanisms are a collection of moving parts that work together in a machine</li> <li>Learning that there is an input and output in a mechanism</li> <li>Identifying mechanisms in everyday objects</li> <li>Learning that a lever is something that turns on a pivot</li> <li>Learning that a linkage is a system of levers that are connected by pivots</li> <li>Exploring wheel mechanisms</li> <li>Learning how axels help wheels to move a vehicle</li> </ul>

#### National Curriculum Links KS2: To be achieved by the end of Year 6

<b>Design:</b> <ul style="list-style-type: none"> <li>use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</li> <li>generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</li> </ul> <b>Make</b>
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- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

#### Evaluate

- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- understand how key events and individuals in design and technology have helped shape the world

#### Technical knowledge

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- 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.

#### Cooking and Nutrition

- 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.

### Year 3

#### Design, Make, Evaluate and Understand Technical Knowledge

Lesson and Vocabulary	Design	Make	Evaluate	Technical Knowledge
<b>Cooking and Nutrition</b> <b>*Food: Eating Seasonally (4 lessons)</b>  climate, dry climate, exported, imported, Mediterranean climate, nationality, nutrients, polar climate, recipe, seasonal food, seasons, temperate climate, tropical climate	<ul style="list-style-type: none"> <li>• Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish</li> </ul>	<ul style="list-style-type: none"> <li>• Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination</li> <li>• Following the instructions within a recipe</li> </ul>	<ul style="list-style-type: none"> <li>• Establishing and using design criteria to help test and review dishes</li> <li>• Describing the benefits of seasonal fruits and vegetables and the impact on the environment</li> <li>• Suggesting points for improvement when making a seasonal tart</li> </ul>	<ul style="list-style-type: none"> <li>• Learning that climate affects food growth</li> <li>• Working with cooking equipment safely and hygienically</li> <li>• Learning that imported foods travel from far away and this can negatively impact the environment</li> <li>• Learning that vegetables and fruit grow in certain seasons</li> <li>• Learning that each fruit and vegetable gives us nutritional benefits</li> <li>• Learning to use, store and clean a knife safely</li> </ul>
<b>Textiles</b> <b>*Cross-stitch and applique (stand-alone lesson)</b>	<ul style="list-style-type: none"> <li>• Designing and making a template from an existing cushion and applying individual design criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Following design criteria to create a cushion</li> <li>• Selecting and cutting fabrics with ease using fabric scissors</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating an end product and thinking of other ways in which to create similar items</li> </ul>	<ul style="list-style-type: none"> <li>• Threading needles with greater independence</li> <li>• Tying knots with greater independence</li> <li>• Sewing cross stitch and appliqué</li> </ul>



accurate, applique, cross-stitch, cushion, decorate, detail, fabric, patch, running-stitch, seam, stencil, stuffing, target audience, target customer, template		<ul style="list-style-type: none"> <li>Sewing cross stitch to join fabric</li> <li>Decorating fabric using appliqué</li> <li>Completing design ideas with stuffing and sewing the edges</li> </ul>		<ul style="list-style-type: none"> <li>Understanding the need to count the thread on a piece of evenweave fabric in each direction to create uniform size and appearance</li> <li>Understanding that fabrics can be layered for affect</li> </ul>
<b>Structures</b> <b>*Constructing Castles (4 lessons)</b> 2D shapes, 3D shapes, castle, design criteria, evaluate, façade, feature, flag, net, recyclable, scoring, stable, strong, structure. Tab, weak	<ul style="list-style-type: none"> <li>Designing a castle with key features to appeal to a specific person/purpose</li> <li>Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials need and colours</li> <li>Designing and/or decorating a castle tower on CAD software</li> </ul>	<ul style="list-style-type: none"> <li>Constructing a range of 3D geometric shapes using nets</li> <li>Creating special features for individual designs</li> <li>Making facades from a range of recycled materials</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design</li> <li>Suggesting points for modification of the individual designs</li> </ul>	<ul style="list-style-type: none"> <li>Identifying features of a castle</li> <li>Identifying suitable materials to be selected and used for a castle, considering weight, compression, tension</li> <li>Extending the knowledge of wide and flat based objects are more stable</li> <li>Understanding the terminology of strut, tie, span, beam</li> <li>Understanding the difference between frame and shell structure</li> </ul>
<b>Mechanisms/Mechanical systems</b> <b>*Designing a pneumatic toy (stand-alone lesson)</b> exploded-diagram, function, input, lever, linkage, mechanism, motion, net, output, pivot, pneumatic system, thumbnail sketch	<ul style="list-style-type: none"> <li>Designing a toy which uses a pneumatic system</li> <li>Developing design criteria from a design brief</li> <li>Generating ideas using thumbnail sketches and exploded diagrams</li> <li>Learning that different types of drawings are used in design to explain ideas clearly</li> </ul>	<ul style="list-style-type: none"> <li>Creating a pneumatic system to create a desired motion</li> <li>Building secure housing for a pneumatic system</li> <li>Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy</li> <li>Selecting materials due to their functional and aesthetic characteristics</li> <li>Manipulating materials to create different effects by cutting, creasing, folding, weaving</li> </ul>	<ul style="list-style-type: none"> <li>Using the views of others to improve designs</li> <li>Testing and modifying the outcome, suggesting improvements</li> <li>Understanding the purpose of exploded-diagrams through the eyes of a designer and their client</li> </ul>	<ul style="list-style-type: none"> <li>Understanding how pneumatic systems work</li> <li>Learning that mechanisms are a system of parts that work together to create motion</li> <li>Understanding that pneumatic systems can be used as part of a mechanism</li> <li>Learning that pneumatic systems force air over a distance to create movement</li> </ul>
<b>Electrical Systems</b> <b>(skills taught in year 4)</b>	<ul style="list-style-type: none"> <li>Designing a game that works using static electricity, including the instructions for playing the game Identifying a</li> </ul>	<ul style="list-style-type: none"> <li>Making an electrostatic game, referring to the design criteria</li> <li>Using a wider range of materials and equipment safely</li> </ul>	<ul style="list-style-type: none"> <li>Learning to give constructive criticism on own work and the work of others</li> <li>Testing the success of a product against the original</li> </ul>	<ul style="list-style-type: none"> <li>Understanding what static electricity is and how it moves objects through attraction or repulsion</li> <li>Generating static electricity independently</li> </ul>



	design criteria and a target audience	<ul style="list-style-type: none"> <li>Using electrostatic energy to move objects in isolation as well as in part of a system</li> </ul>	design criteria and justifying opinions	<ul style="list-style-type: none"> <li>Using static electricity to make objects move in a desired way</li> </ul>
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## Digital World

This is covered in Computing - a unit using Crumbles. Children use physical systems to programme a pumpkin/Christmas lights or badge.

## Year 4

### Design, Make, Evaluate and Understand Technical Knowledge

Lesson and Vocabulary	Design	Make	Evaluate	Technical Knowledge
<b>Cooking and Nutrition</b> <b>*Food: Adapting a recipe (lesson 1 only for coverage)</b>  adapt and budget	<ul style="list-style-type: none"> <li>Designing a biscuit within a given budget, drawing upon previous taste testing</li> </ul>	<ul style="list-style-type: none"> <li>Following a baking recipe</li> <li>Cooking safely, following basic hygiene rules</li> <li>Adapting a recipe</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating a recipe, considering: taste, smell, texture and appearance</li> <li>Describing the impact of the budget on the selection of ingredients</li> <li>Evaluating and comparing a range of products</li> <li>Suggesting modifications</li> </ul>	<ul style="list-style-type: none"> <li>Understanding the impact of the cost and importance of budgeting while planning ingredients for biscuits</li> <li>Understanding the environmental impact on future product and cost of production</li> </ul>
<b>Textiles</b> <b>*Cross-stitch and applique (stand-alone lesson)</b>  aesthetic, assemble, book sleeve, design criteria, evaluation, fabric, fastening, mock-up, net, running-stitch, stencil, target audience, target customer, template	<ul style="list-style-type: none"> <li>Writing design criteria for a product, articulating decisions made</li> <li>Designing a personalised Book sleeve</li> </ul>	<ul style="list-style-type: none"> <li>Making and testing a paper template with accuracy and in keeping with the design criteria</li> <li>Measuring, marking and cutting fabric using a paper template</li> <li>Selecting a stitch style to join fabric, working neatly sewing small neat stitches</li> <li>Incorporating fastening to a design</li> </ul>	<ul style="list-style-type: none"> <li>Testing and evaluating an end product against the original design criteria</li> <li>Deciding how many of the criteria should be met for the product to be considered successful</li> <li>Suggesting modifications for improvement</li> </ul>	<ul style="list-style-type: none"> <li>Understanding that there are different types of fastenings and what they are</li> <li>Articulating the benefits and disadvantages of different fastening types</li> </ul>
<b>Structures</b> <b>*Pavilions (4 lessons)</b>	<ul style="list-style-type: none"> <li>Designing a stable pavilion structure that is aesthetically pleasing and selecting</li> </ul>	<ul style="list-style-type: none"> <li>Creating a range of different shaped frame structures</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating electrical products Testing and evaluating the success of a final product</li> </ul>	<ul style="list-style-type: none"> <li>Learning what pavilions are and their purpose</li> </ul>



<p>aesthetic, cladding, design criteria, evaluation, frame structure, function, inspiration, pavilion, reinforce, stable, structure, target audience, target customer, texture, theme</p>	<p>materials to create a desired effect</p> <ul style="list-style-type: none"> <li>Building frame structures designed to support weight</li> </ul>	<ul style="list-style-type: none"> <li>Making a variety of free standing frame structures of different shapes and sizes</li> <li>Selecting appropriate materials to build a strong structure and for the cladding</li> <li>Reinforcing corners to strengthen a structure</li> <li>Creating a design in accordance with a plan</li> <li>Learning to create different textural effects with materials</li> <li></li> </ul>	<p>and taking inspiration from the work of peers</p>	<ul style="list-style-type: none"> <li>Building on prior knowledge of net structures and broadening knowledge of frame structures</li> <li>Learning that architects consider light, shadow and patterns when designing</li> <li>Implementing frame and shell structure knowledge</li> <li>Considering effective and ineffective designs</li> </ul>
<p><b>Mechanisms/Mechanical systems</b>  <b>*Making a slingshot car (4 lessons)</b></p> <p>aesthetic, air resistance, chassis, design, design criteria, function, graphics, kinetic energy, mechanism, net, structure</p>	<ul style="list-style-type: none"> <li>Designing a shape that reduces air resistance</li> <li>Drawing a net to create a structure from</li> <li>Choosing shapes that increase or decrease speed as a result of air resistance</li> <li>Personalising a design</li> </ul>	<ul style="list-style-type: none"> <li>Measuring, marking, cutting and assembling with increasing accuracy</li> <li>Making a model based on a chosen design</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance</li> </ul>	<ul style="list-style-type: none"> <li>Learning that products change and evolve over time • Learning that all moving things have kinetic energy</li> <li>Understanding that kinetic energy is the energy that something (object person) has by being in motion</li> </ul>
<p><b>Electrical Systems</b>  <b>*Torches (4 lessons)</b></p> <p>battery, bulb, buzzer, cell, component, conductor, copper, design criteria, electrical item, electricity,</p>	<ul style="list-style-type: none"> <li>Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on</li> </ul>	<ul style="list-style-type: none"> <li>Making a torch with a working electrical circuit and switch</li> <li>Using appropriate equipment to cut and attach materials</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating structures made by the class</li> <li>Describing what characteristics of a design and construction made it the most effective</li> </ul>	<ul style="list-style-type: none"> <li>Learning how electrical items work</li> <li>Identifying electrical products</li> <li>Learning what electrical conductors and insulators are</li> <li>Understanding that a battery contains stored electricity and can be used to power products</li> </ul>



electronic item, function, insulator, series circuit, switch, test, torch, wire	features of individual design ideas	<ul style="list-style-type: none"> <li>Assembling a torch according to the design and success criteria</li> </ul>	<ul style="list-style-type: none"> <li>Considering effective and ineffective designs</li> </ul>	<ul style="list-style-type: none"> <li>Identifying the features of a torch</li> <li>Understanding how a torch works</li> <li>Articulating the positives and negatives about different torches</li> </ul>
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Year 5				
Design, Make, Evaluate and Understand Technical Knowledge				
Lesson and Vocabulary	Design	Make	Evaluate	Technical Knowledge
<b>Cooking and Nutrition</b> <b>*Food: What could be healthier? (4 lessons)</b> beef, cross-contamination, diet, ethical issues, farm, healthy, ingredients, method, nutrients, packaging. Reared, recipe, research, substitute, supermarket, vegan, vegetarian, welfare	<ul style="list-style-type: none"> <li>Adapting a traditional recipe, understanding what the nutritional value of a recipe alters if you remove, substitute or add additional ingredient</li> <li>Writing an amended method for a recipe to incorporate the relevant changes to ingredient</li> <li>Designing appealing packaging to reflect a recipe</li> </ul>	<ul style="list-style-type: none"> <li>Cutting and preparing vegetables safely</li> <li>Using equipment safely, including knives, hot pans and hobs</li> <li>Knowing how to avoid cross-contamination</li> <li>Following a step by step method carefully to make a recipe</li> </ul>	<ul style="list-style-type: none"> <li>Identifying the nutritional differences between different products and recipes</li> <li>Identifying and describing healthy benefits of food groups</li> </ul>	<ul style="list-style-type: none"> <li>Understanding where food comes from - learning that beef is from cattle and how beef is reared and processed</li> <li>Understanding what constitutes a balanced diet</li> <li>Learning to adapt a recipe to make it healthier</li> <li>Comparing two adapted recipes using a nutritional calculator and then identifying the healthier option</li> <li></li> </ul>
<b>Textiles</b> <b>(Skills covered more in Year 6)</b>	<ul style="list-style-type: none"> <li>Designing a stuffed toy considering the main component shapes required and creating an appropriate template</li> <li>Considering the proportions of individual components</li> </ul>	<ul style="list-style-type: none"> <li>Creating a 3D stuffed toy from a 2D design</li> <li>Measuring, marking and cutting fabric accurately and independently</li> <li>Creating strong and secure blanket stitches when joining fabric</li> <li>Using applique to attach pieces of fabric decoration</li> </ul>	<ul style="list-style-type: none"> <li>Testing and evaluating an end product and giving point for further improvements</li> </ul>	<ul style="list-style-type: none"> <li>Learning to sew blanket stitch to join fabric</li> <li>Applying blanket stitch so the space between the stitches are even and regular</li> <li>Threading needles independently</li> </ul>



<b>Structures</b> (Skills covered more in Year 6)	<ul style="list-style-type: none"> <li>• Designing a stable structure that is able to support weight</li> <li>• Creating frame structure with focus on triangulation</li> </ul>	<ul style="list-style-type: none"> <li>• Making a range of different shaped beam bridges</li> <li>• Using triangles to create truss bridges that span a given distance and supports a load</li> <li>• Building a wooden bridge structure Independently measuring and marking wood accurately</li> <li>• Selecting appropriate tools and equipment for particular tasks</li> <li>• Using the correct techniques to saws safely</li> <li>• Identifying where a structure needs reinforcement and using card corners for support</li> <li>• Explaining why selecting appropriating materials is an important part of the design process</li> <li>• Understanding basic wood functional properties</li> </ul>	<ul style="list-style-type: none"> <li>• 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</li> </ul>	<ul style="list-style-type: none"> <li>• Exploring how to create a strong beam Identifying arch and beam bridges and understanding the terms: compression and tension</li> <li>• Identifying stronger and weaker structures</li> <li>• Finding different ways to reinforce structures</li> <li>• Understanding how triangles can be used to reinforce bridges</li> <li>• Articulating the difference between beam, arch, truss and suspension bridges</li> </ul>
<b>Mechanisms/Mechanical systems</b> *Making a pop-up book (4 lessons) Aesthetic, computer-aided design (CAD), caption, design, design brief, design criteria, exploded-	<ul style="list-style-type: none"> <li>• Designing an electronic greetings card with a copper track circuit and component</li> <li>• Creating a labelled circuit diagram showing positive and negative parts in</li> </ul>	<ul style="list-style-type: none"> <li>• Following a design brief to make a pop up book, neatly and with focus on accuracy</li> <li>• Making mechanisms and/or structures using sliders, pivots and folds to produce movement</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating the work of others and receiving feedback on own work</li> <li>• Suggesting points for improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Knowing that an input is the motion used to start a mechanism</li> <li>• Knowing that output is the motion that happens as a result of starting the input</li> <li>• Knowing that mechanisms control movement</li> </ul>



<p>diagram, function, input, linkage, mechanism, motion, output, pivot, prototype, slider, structure, template</p>	<p>relation to the LED and the battery</p> <ul style="list-style-type: none"> <li>• Writing design criteria for an electronic greeting card</li> <li>• Compiling a moodboard relevant to my chosen theme, purpose and recipient</li> </ul>	<ul style="list-style-type: none"> <li>• Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result</li> </ul>		<p>Describing mechanisms that can be used to change one kind of motion into another</p>
<p><b>Electrical Systems</b> *Electronic greetings cards (4 lessons)</p>	<ul style="list-style-type: none"> <li>• Designing a pop-up book which uses a mixture of structures and mechanism</li> <li>• Naming each mechanism, input and output accurately</li> <li>• Storyboarding ideas for a book</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating the work of others and receiving feedback on own work</li> <li>• Suggesting points for improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating a peer's product against design criteria and suggesting modifications that could be made to improve the reliability or aesthetics of it or to incorporate another type of circuit component</li> <li>• Stating what Sir Rowland Hill invented and why it was important for greeting cards</li> <li>• Analysing and evaluating a range of existing greeting cards.</li> </ul>	<ul style="list-style-type: none"> <li>• Learning the key components used to create a functioning circuit</li> <li>• Learning that copper is a conductor and can be used as part of a circuit</li> <li>• Understanding that breaks in a circuit will stop it from working</li> <li>• Explaining how a series circuit will work in my card</li> <li>• Identifying the negative and positive leg of an LED</li> </ul> <p>Drawing a series circuit diagram and symbols</p>

Year 6				
Design, Make, Evaluate and Understand Technical Knowledge				
Lesson and Vocabulary	Design	Make	Evaluate	Technical Knowledge
<p><b>Cooking and Nutrition</b> *(Skills covered in Year 5)</p>	<ul style="list-style-type: none"> <li>• Writing a recipe, explaining the key steps, method and ingredients</li> <li>• Including facts and drawings from research undertaken</li> </ul>	<ul style="list-style-type: none"> <li>• Following a recipe, including using the correct quantities of each ingredient</li> <li>• Adapting a recipe based on research</li> <li>• Working to a given timescale</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating a recipe, considering: taste, smell, texture and origin of the food group</li> <li>• Taste testing and scoring final products</li> <li>• Suggesting and writing up points of improvements in productions</li> </ul>	<ul style="list-style-type: none"> <li>• Learning how to research a recipe by ingredient</li> <li>• Recording the relevant ingredients and equipment needed for a recipe</li> <li>• Understanding the combinations of food that will complement one another</li> <li>• Understanding where food comes from, describing the</li> </ul>



		<ul style="list-style-type: none"> <li>Working safely and hygienically with independence</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating health and safety in production to minimise cross contamination</li> </ul>	process of 'Farm to Fork' for a given ingredient
<b>Textiles</b> <b>*Waistcoats (4 lessons)</b>  accurate, adapt, annotate, design, design criteria, detail, fabric, fastening, knot, properties, running-stitch, seam, sew, shape, target audience, target customer, template, thread, unique, waistcoat, waterproof	<ul style="list-style-type: none"> <li>Designing a waistcoat in accordance to specification linked to set of design criteria to fit a specific theme</li> <li>Annotating designs</li> </ul>	<ul style="list-style-type: none"> <li>Using a template when pinning panels onto fabric</li> <li>Marking and cutting fabric accurately, in accordance with a design</li> <li>Sewing a strong running stitch, making small, neat stitches and following the edge</li> <li>Tying strong knots</li> <li>Decorating a waistcoat -attaching objects using thread and adding a secure fastening</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating work continually as it is created</li> </ul>	<ul style="list-style-type: none"> <li>Learning different decorative stitches</li> <li>Application and outcome of the individual technique</li> <li>Sewing accurately with even regularity of stitches</li> </ul>
<b>Structures</b> <b>*Structure:</b> <b>Playgrounds (4 lessons)</b> adapt, apparatus, bench hook, cladding, coping saw, design, dowel, evaluation, feedback, idea, jelutong, landscape, mark out, measure, modify, natural materials, plan view, playground, prototype, reinforce, sketch, strong, structure, tenon saw, texture, user, vice, weak	<ul style="list-style-type: none"> <li>Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs</li> </ul>	<ul style="list-style-type: none"> <li>Building a range of play apparatus structures drawing upon new and prior knowledge of structures</li> <li>Measuring, marking and cutting wood to create a range of structures</li> <li>Using a range of materials to reinforce and add decoration to structures</li> </ul>	<ul style="list-style-type: none"> <li>Improving a design plan based on peer evaluation</li> <li>Testing and adapting a design to improve it as it is developed</li> <li>Identifying what makes a successful structure</li> </ul>	<ul style="list-style-type: none"> <li>Knowing that structures can be strengthened by manipulating materials and shapes</li> <li>Identifying the shell structure in everyday life (cars, aeroplanes, tins, cans)</li> <li>Understanding man made and natural structures</li> </ul>
<b>Mechanisms/Mechanical systems</b> <b>*Skills covered in year 5</b>	<ul style="list-style-type: none"> <li>Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement</li> </ul>	<ul style="list-style-type: none"> <li>Measuring, marking and checking the accuracy of the jelutong and dowel pieces required</li> <li>Measuring, marking and cutting components</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating the work of others and receiving feedback on own work</li> <li>Applying points of improvements</li> <li>Describing changes they would make/do if they</li> </ul>	<ul style="list-style-type: none"> <li>Using a bench hook to saw safely and effectively</li> <li>Exploring cams, learning that different shaped cams produce different follower movements</li> </ul>



	<ul style="list-style-type: none"> <li>Understanding how linkages change the direction of a force</li> <li>Making things move at the same time</li> <li>Understanding and drawing cross-sectional diagrams to show the inner-workings of the automata</li> </ul>	<p>accurately using a ruler and scissors</p> <ul style="list-style-type: none"> <li>Assembling components accurately to make a stable frame</li> <li>Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles</li> <li>Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set</li> <li>.</li> </ul>	were to do the project again	Exploring types of motions and direction of a motion
<b>Electrical Systems</b> *Skills covered in year 5	<ul style="list-style-type: none"> <li>Designing a steady hand game - identifying and naming the components required</li> <li>Drawing a design from three different perspectives</li> <li>Generating ideas through sketching and discussion</li> <li>Modelling ideas through prototypes</li> <li>Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'</li> </ul>	<ul style="list-style-type: none"> <li>Constructing a stable base for a game</li> <li>Accurately cutting, folding and assembling a net</li> <li>Decorating the base of the game to a high quality finish</li> <li>Making and testing a circuit Incorporating a circuit into a base</li> </ul>	<ul style="list-style-type: none"> <li>Testing own and others finished games, identifying what went well and making suggestions for improvement</li> <li>Gathering images and information about existing children's toys</li> <li>Analysing a selection of existing children's toys</li> <li>.</li> </ul>	<ul style="list-style-type: none"> <li>Learning that batteries contain acid, which can be dangerous if they leak</li> <li>Identifying and naming the circuit components in a steady hand game</li> </ul>