



## Design & Technology (D.T.) - Curriculum Overview (Year B)

Year	Subject specific Vocabulary	'The Greats'	Autumn 2 Structures	Spring 2 Cooking and Nutrition (KS1) Electrical Systems (KS2) Structures (EYFS)	Summer 2 Mechanisms/ Mechanical systems (KS1) Digital World (KS2) Structures (EYFS)
Nursery			<p><b><u>Personal, Social &amp; Emotional Development (PSED):</u></b> <b>Managing Self</b> • Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen, or one which is suggested to them</p> <p><b><u>Physical Development (PD):</u></b> <b>Gross Motor Skills</b> • Choose the right resources to carry out their own plan. For example, choosing a spade to enlarge a small hole they dug with a trowel</p> <p><b>Fine Motor Skills</b> • Use one-handed tools and equipment, for example, making snips in paper with scissors</p> <p><b><u>Understanding the World:</u></b> <b>The Natural World</b> • Explore how things work</p> <p><b><u>Expressive Arts and Design:</u></b> <b>Creating with Materials</b> • Make imaginative &amp; complex 'small worlds' with blocks &amp; construction kits, such as a city with different buildings and a park • Explore different materials freely, in order to develop their ideas about how to use them and what to make • Develop their own ideas and then decide which materials to use to express them • Join different materials and explore different textures • Draw with increasing complexity and detail, such as representing a face with a circle and including details • Use drawing to represent ideas</p>		
Reception			<p><b><u>Physical Development (PD):</u></b> <b>Fine Motor Skills</b> • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons.</p>	<p><b><u>Physical Development (PD):</u></b> <b>Fine Motor Skills</b> • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons.</p>	



### Key stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:

#### 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 characteristics
- Evaluate

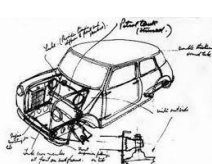
- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria
- Technical knowledge
- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.




### Key stage 2





Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:

#### Design




- 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


	<p>-generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p><u>Make</u></p> <p>-select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>-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</p> <p><u>Evaluate</u></p> <p>-investigate and analyse a range of exist</p>				
Year 1	<p><u>Constructing a Windmill</u></p> <p>Client Design Evaluation Net Stable Strong Test Weak Windmill</p> <p><u>Fruit and Vegetables</u></p> <p>Blender Carton Fruit Healthy Ingredients Peel Peeler Recipe Slice Smoothie Stencil</p>	<p>Alec Issigonis</p> 	<p><u>Constructing a Windmill</u></p> <p><u>Design (class design)</u></p> <p>-Learn the importance of a clear design criteria -Include individual preferences and requirements in a design</p> <p><u>Make</u></p> <p>-Make stable structures from card, tape and glue -Follow instructions to cut and assemble the supporting structure of a windmill -Make functioning turbines and axles which are assembled into a main supporting structure</p> <p><u>Evaluate</u></p> <p>-Evaluate a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't -Review the success of a product by testing it with its intended audience -Suggest points for improvements</p> <p><u>Technical Knowledge</u></p> <p>-Describe the purpose of structures, including windmills -Learn how to turn 2D nets into 3D structures</p>	<p><u>Fruit and Vegetables</u></p> <p><u>Design (group design)</u></p> <p>-Design smoothie carton packaging by-hand or on ICT software</p> <p><u>Make</u></p> <p>-Chop fruit and vegetables safely to make a smoothie -Identify if a food is a fruit or a vegetable -Learn where and how fruits and vegetables grow</p> <p><u>Evaluate</u></p> <p>-Taste and evaluate different food combinations -Describe appearance, smell and taste -Suggest information to be included on packaging</p> <p><u>Technical Knowledge</u></p> <p>-Understand the difference between fruits and vegetables -Describe and group fruits by texture and taste</p>	<p><u>Wheels and Axels</u></p> <p><u>Design (group design)</u></p> <p>-Explain how to adapt mechanisms, using bridges or guides to control the movement -Design a moving story book for a given audience -Design a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move -Create clearly labelled drawings which illustrate movement</p> <p><u>Make</u></p> <p>-Follow a design to create moving models that use levers and sliders -Adapt mechanisms</p> <p><u>Evaluate</u></p> <p>-Test a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed -Review the success of a product by testing it with its intended audience -Test mechanisms, identifying what stops wheels from turning,</p> <p><u>Technical Knowledge</u></p> <p>-Know that a wheel needs an axle in order to move.</p>


	<p>Template Vegetable</p> <p><u>Wheels and Axels</u></p> <p>Axle Axle holder Chassis Design Evaluation Fix Mechanic Mechanism Model Test Wheel</p>		<p>-Learn that the shape of materials can be changed to improve the strength and stiffness of structures</p> <p>-Understand that cylinders are a strong type of structure that are often used for windmills and lighthouses</p> <p>-Understand that windmill turbines use wind to turn and make the machines inside work</p> <p>-Understand that axles are used in structures and mechanisms to make parts turn in a circle</p> <p>-Develop awareness of different structures for different purposes</p> 		<p>-Learn that levers and sliders are mechanisms and can make things move</p> <p>-Identify whether a mechanism is a lever or slider and determining what movement the mechanism will make</p> <p>-Use the vocabulary: up, down, left, right, vertical and horizontal to describe movement</p> <p>-Identify what mechanism makes a toy or vehicle roll forwards</p> <p>-Learn that for a wheel to move it must be attached to an axle</p>
Year 2	<p><u>Baby Bear's Chair</u></p> <p>Function Man-made Mould Natural Stable Stiff Strong Structure Test Weak</p> <p><u>A Balanced Diet</u></p> <p>Alternative</p>	<p>Marcel Breuer</p> 	<p><u>Baby Bear's Chair</u></p> <p><u>Design (class design)</u></p> <p>-Understand and create design criteria for a chair.</p> <p>-Design a chair for a specific audience in accordance with design criteria.</p> <p>-Generate and communicate ideas using sketching and modelling</p> <p><u>Make</u></p> <p>-Make a structure according to design criteria</p> <p>-Create joints and structures from paper/card and tape</p> <p>-Follow a design brief</p> <p><u>Evaluate</u></p> <p>-Explore the features of structures</p> <p>-Compare the stability of different shapes</p> <p>-Test the strength of own structures</p>	<p><u>A Balanced Diet</u></p> <p><u>Design</u></p> <p>-Design a healthy wrap based on a food combination which work well together</p> <p><u>Make</u></p> <p>-Slice food safely using the bridge or claw grip</p> <p>-Constructing a wrap that meets a design brief</p> <p><u>Evaluate</u></p> <p>-Describe the taste, texture and smell of fruit and vegetables</p> <p>-Taste testing food combinations and final products</p> <p>-Describe the information that should be included on a label</p> <p>-Evaluate which grip was most effective</p> <p><u>Technical Knowledge</u></p> <p>-Understand what makes a balanced diet</p>	<p><u>Fairground Wheel</u></p> <p><u>Design (individual design)</u></p> <p>-Understand and create design criteria for a fairground wheel.</p> <p>-Design a wheel for a specific audience in accordance with design criteria.</p> <p>-Design a wheel selecting appropriate materials based on their properties</p> <p>-Generate and communicate ideas using sketching and modelling</p> <p><u>Make</u></p> <p>-Select a suitable linkage system to produce the desired motions</p> <p>-Make linkages using card for levers and split pins for pivots</p>

	<p>Diet Balanced diet Evaluation Expensive Healthy Ingredients Nutrients Packaging Refrigerator Sugar Substitute</p> <p><u>Fairground</u> <u>Wheel</u> Axle Decorate Evaluation Ferris wheel Mechanism Stable Strong Test Waterproof Weak</p>		<p>-Identify the weakest part of a structure -Evaluate the strength, stiffness and stability of own structure</p> <p><b>Technical Knowledge</b> -Learn about different types of structures, found in the natural world and in everyday objects -Identify natural and man-made structures -Understand that the shape of a structure affects its strength -Know that shapes and structures with wide, flat bases or legs are the most stable -Use the vocabulary: strength, stiffness and stability. -Identify when a structure is more or less stable than another -Know that materials can be manipulated to improve strength and stiffness -Build a strong and stiff structure by folding paper</p>  	<p>-Know where to find the nutritional information on packaging -Know the five food groups</p>  	<p>-Experiment with linkages adjusting the widths, lengths and thicknesses of card used -Cut and assemble components neatly -Select materials according to their characteristics -Follow a design brief</p> <p><b>Evaluate</b> -Evaluate own designs against design criteria -Use peer feedback to modify a final design -Evaluate different designs -Test and adapt a design</p> <p><b>Technical Knowledge</b> -Learn that mechanisms are a collection of moving parts that work together in a machine -Learning that there is an input and output in a mechanism -Identifying mechanisms in everyday objects -Learning that a lever is something that turns on a pivot -Learning that a linkage is a system of levers that are connected by pivots -Exploring wheel mechanisms -Learning how axels help wheels to move a vehicle</p>
Year 3	<u>Constructing a castle</u>	Pieter van Musschenbroek	<u>Constructing a castle</u> <u>Design</u>	<u>Electric Poster</u> <u>Design</u>	<u>Digital World; Electronic Charm</u> <u>Design</u>

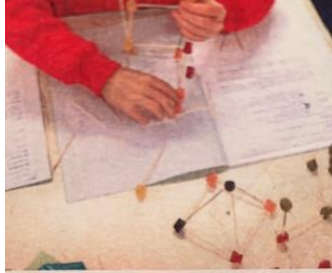

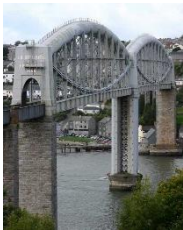





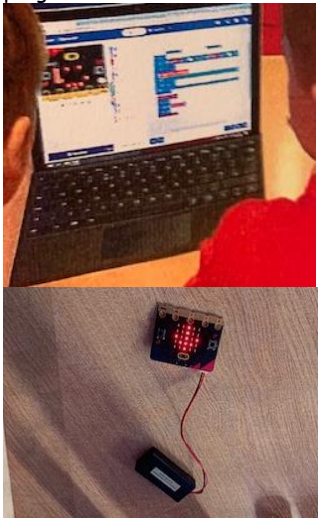
<p>2-D shapes 3-D shapes Castle Design criteria Evaluate Façade Feature Flag Net Recyclable Scoring Stable Strong Structure Tab Weak</p> <p><u>Electric Poster</u> Battery Bulb Circuit Circuit component Crocodile wires Electrical product Electrical system Final design Information design Initial ideas Peer assessment Research</p>		<p>-Design a castle with key features to appeal to a specific person/purpose -Draw and label a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials need and colours -Design a castle that fits the requirements of a given brief.</p> <p><b>Make</b> -Construct a range of 3D geometric shapes using nets -Create special features for individual designs -Make facades from a range of recycled materials</p> <p><b>Evaluate</b> -Evaluate own work and the work of others based on the aesthetic of the finished product and in comparison, to the original design -Suggest points for modification of the individual designs</p> <p><b>Technical Knowledge</b> -Identify features of a castle -Identify suitable materials to be selected and used for a castle, considering weight, compression, tension -Extend the knowledge of wide and flat based objects being more stable -Understanding the terminology of strut, tie, span, beam -Understand the difference between frame and shell structure</p> 	<p>-Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas. -Generate a final design for the electric poster with consideration to the client's needs and design criteria. -Design an electric poster that fits the requirements of a given brief. -Plan the positioning of the bulb (circuit component) and its purpose</p> <p><b>Make</b> -Create a final design for the electric poster. -Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear. -Measure and mark materials out using a template or ruler. -Fit an electrical component (bulb). -Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge).</p> <p><b>Evaluate</b> -Learn to give and accept constructive criticism on own work and the work of others. -Test the success of initial ideas against the design criteria and justifying opinions. -Revisit the requirements of the client to review developing design ideas and check that they fulfil their needs.</p> <p><b>Technical Knowledge</b> -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). -To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits</p>	<p>-Problem solving by suggesting potential features on a Micro: bit and justifying my ideas -Develop design ideas for a technology pouch -Draw and manipulate 2D shapes, using computer-aided design, to produce a point-of-sale badge</p> <p><b>Make</b> -Use a template when cutting and assembling the pouch -Follow a list of design requirements -Select and use the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch -Apply functional features such as using foam to create soft buttons</p> <p><b>Evaluate</b> -Analyse and evaluate an existing product -Identify the key features of a pouch</p> <p><b>Technical Knowledge</b> -Identify key product developments that occurred as a result of the digital revolution -Write a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm -Understand what a loop is in programming -Explain the basic functionality of my eCharm program -Understand what is meant by 'point of sale display'</p> 
---	---	--	---	--


	<p>Self-assessment Sketch</p> <p><u>Digital World:</u> <u>Electronic</u> <u>Charm</u></p> <p>Analogue Badge CAD Control Develop Digital Digital revolution Digital world Display Electronic Feature Function Initiate Monitor Net Point of sale Product Product design Program Sense Simulator Smart wearables Technology Template Test User Layers Loops Micro: bit</p>				
--	--	--	--	--	--

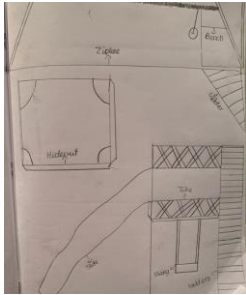
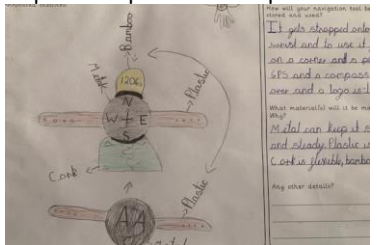
<p><b>Year 4</b></p>	<p><b><u>Pavilions</u></b> Aesthetic Cladding Frame structure Function Inspiration Pavilion Reinforce Stable Structure Target Audience Texture Theme</p> <p><b><u>Torches</u></b> Battery Bulb Buzzer Cell Component Conductor Copper Electricity Insulator Series circuit switch</p> <p><b><u>Mindful moments timer</u></b> 2D Advantage Assemble Block Brand identity Branding</p>	<p>David Missel Edward Milner</p>	<p><b><u>Pavilions</u></b> <b><u>Design</u></b> -Design a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect -Build frame structures designed to support weight -Develop design criteria from a design brief. <b><u>Make</u></b> -Create a range of different shaped frame structures -Make a variety of free-standing frame structures of different shapes and sizes -Select appropriate materials to build a strong structure and for the cladding -Reinforce corners to strengthen a structure -Learn to create different textural effects with materials <b><u>Evaluate</u></b> -Evaluate structures made by the class -Describe what characteristics of a design and construction made it the most effective -Consider effective and ineffective designs <b><u>Technical Knowledge</u></b> -Learn what pavilions are and their purpose -Build on prior knowledge of net structures and broadening knowledge of frame structures -Learn that architects consider light, shadow and patterns when designing -Implement frame and shell structure knowledge</p>	<p><b><u>Torches</u></b> <b><u>Design</u></b> -Design a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. <b><u>Make</u></b> -Make a torch with a working electrical circuit and switch -Use appropriate equipment to cut and attach materials -Assemble a torch according to the design and success criteria <b><u>Evaluate</u></b> -Evaluate electrical products -Test and evaluating the success of a final product and taking inspiration from the work of peers <b><u>Technical Knowledge</u></b> -Learn how electrical items work -Identify electrical products -Learn what electrical conductors and insulators are -Understand that a battery contains stored electricity and can be used to power products -Identify the features of a torch -Understanding how a torch works -Articulate the positives and negatives about different torches</p> 	<p><b><u>Mindful moments timer</u></b> <b><u>Design</u></b> -Write design criteria for a programmed timer (Micro:bit) -Explore different mindfulness strategies -Apply the results of my research to further inform my design criteria -Develop a prototype case for my mindful moment timer -Use and manipulate shapes and clipart, using computer-aided design (CAD), to produce a logo -Follow a list of design requirements <b><u>Make</u></b> -Develop a prototype case for my mindful moment timer -Create a 3D structure using a net <b><u>Evaluate</u></b> -Investigate and analyse a range of timers by identifying and comparing their advantages and disadvantages -Evaluate my micro:bit program against points on my design criteria and amending them to include any changes I made -Document and evaluate my project -Understand what a logo is and why they are important in the world of design and business <b><u>Technical Knowledge</u></b> -Write design criteria for a programmed timer (Micro:bit) -Programme a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press -Test my program for bugs (errors in the code) -Find and fix the bugs (debug) in my code</p>
----------------------	--	---------------------------------------	--	--	--



	<p>Bug</p> <p>CAD</p> <p>Clipart</p> <p>Coding</p> <p>Debug</p> <p>Disadvantage</p> <p>Ergonomic</p> <p>Logo</p> <p>Mindfulness</p> <p>Net</p> <p>Prototype</p> <p>Research</p> <p>Function</p> <p>Variable</p>				
Year 5	<p><b>Bridges</b></p> <p>Abutment</p> <p>Accurate</p> <p>Arched bridge</p> <p>Beam bridge</p> <p>Bridge</p> <p>Compression</p> <p>Coping saw</p> <p>Evaluation</p> <p>Predict</p> <p>Reinforce</p> <p>Suspension bridge</p> <p>Tension</p> <p>Truss bridge</p> <p><b>Electronic Doodlers</b></p> <p>Circuit component</p> <p>Configuration</p> <p>Current</p> <p>Develop</p> <p>DIY</p> <p>Investigate</p> <p>Motor</p>	<p><b>Isambard Kingdom Brunel</b></p> 	<p><b>Bridges</b></p> <p><u>Design</u></p> <ul style="list-style-type: none"> <li>-Design a stable structure that is able to support weight</li> <li>-Create frame structure with focus on triangulation</li> <li>-Develop design criteria from a design brief.</li> </ul> <p><u>Make</u></p> <ul style="list-style-type: none"> <li>-Make a range of different shaped beam</li> </ul>  <p>bridges</p> <ul style="list-style-type: none"> <li>-Use triangles to create truss bridges that span a given distance and supports a load</li> </ul>  <ul style="list-style-type: none"> <li>-Build a wooden bridge structure independently measuring and marking wood accurately</li> </ul>	<p><b>Electronic Doodlers</b></p> <p><u>Design</u></p> <ul style="list-style-type: none"> <li>-Identify factors that could be changed on existing products and explaining how these would alter the form and function of the product.</li> <li>-Develop design criteria based on findings from investigating existing products.</li> <li>-Develop design criteria that clarifies the target user.</li> </ul> <p><u>Make</u></p> <ul style="list-style-type: none"> <li>-Alter a product's form and function by tinkering with its configuration.</li> <li>-Make a functional series circuit, incorporating a motor.</li> <li>-Construct a product with consideration for the design criteria. -Breaking down the construction process into steps so that others can make the product.</li> </ul> <p><u>Evaluate</u></p> <ul style="list-style-type: none"> <li>-Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses.</li> <li>-Determine which parts of a product affect its function and which parts affect its form.</li> <li>-Analyse whether changes in configuration positively or negatively affect an existing product.</li> </ul>	<p><b>Monitoring Devices</b></p> <p><u>Design</u></p> <ul style="list-style-type: none"> <li>-Research (books, internet) for a particular (user's) animal's needs</li> <li>-Develop design criteria based on research</li> <li>-Generate multiple housing ideas using building bricks</li> <li>-Understand what a virtual model is and the pros and cons of traditional and CAD modelling</li> <li>-Place and manoeuvring 3D objects, using CAD</li> <li>-Change the properties of, or combine one or more 3D objects, using CAD</li> </ul> <p><u>Make</u></p> <ul style="list-style-type: none"> <li>-Understand the functional and aesthetic properties of plastics</li> </ul> <p><u>Evaluate</u></p> <ul style="list-style-type: none"> <li>-State an event or fact from the last 100 years of plastic history</li> <li>-Explain how plastic is affecting planet Earth and suggesting ways to make more sustainable choices</li> </ul> <p><b>Technical Knowledge</b></p>

<p>Motorised Problem solve Product analysis Series circuit Stable Target user</p> <p><b>Monitoring Devices</b> Alert Ambient Boolean Consumables Decompose Development Device Duplicate Durable Electronic Inventor Lightweight Man-made Manipulate Manoeuvre Micro plastics Monitoring device Plastic pollution Programming Reformed Replica Research Sensor Strong Sustainability Synthetic Thermometer Thermoscope Value Variable Versatile</p>		<ul style="list-style-type: none"> <li>-Select appropriate tools and equipment for particular tasks</li> <li>-Use the correct techniques to saws safely</li> <li>-Identify where a structure needs reinforcement and using card corners for support</li> <li>-Explain why selecting appropriating materials is an important part of the design process</li> <li>-Understand basic wood functional properties</li> </ul> <p><b>Evaluate</b></p> <ul style="list-style-type: none"> <li>-Adapt and improve own bridge structure by identifying points of weakness and reinforcing them as necessary</li> <li>-Suggest points for improvements and modifications for own bridges and those designed by others</li> </ul> <p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>-Explore how to create a strong beam identifying arch and beam bridges and understand the terms: compression and tension</li> <li>-Identify stronger and weaker structures</li> <li>-Find different ways to reinforce structures</li> <li>-Understand how triangles can be used to reinforce bridges</li> <li>-Articulate the difference between beam, arch, truss and suspension bridges</li> </ul> 	<ul style="list-style-type: none"> <li>-Peer evaluating a set of instructions to build a product</li> </ul> <p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>-To know that series circuits only have one direction for the electricity to flow.</li> <li>-To know when there is a break in a series circuit, all components turn off.</li> <li>-To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin.</li> <li>-To know a motorised product is one which uses a motor to function</li> </ul>	<ul style="list-style-type: none"> <li>-Describe key developments in thermometer history</li> <li>-Programme to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range</li> <li>-Explain key functions in my program (audible alert, visuals)</li> <li>-Explain how my product would be useful for an animal carer including programmed features</li> </ul> 
--	--	--	--	---

	Water-resistant Workplane				
Year 6	<p><b><u>Playgrounds</u></b></p> <p>Adapt Apparatus Bench hook Cladding Coping saw Dowel Jelutong Landscape Modify Prototype Vice</p> <p><b><u>Steady Hand Game</u></b></p> <p>Assemble Battery Battery pack Benefit Bulb Bulb holder Buzzer Circuit Circuit symbol Component Conductor Copper Fine motor skills Function Gross motor skills</p>	<p>Antonio Gaudi</p> 	<p><b><u>Playgrounds</u></b></p> <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>-Design a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs</li> <li>-Develop design criteria from a design brief.</li> </ul> <p><b><u>Make</u></b></p> <ul style="list-style-type: none"> <li>-Build a range of play apparatus structures drawing upon new and prior knowledge of structures</li> <li>-Measure, marking and cutting wood to create a range of structures</li> <li>-Use a range of materials to reinforce and add decoration to structures</li> </ul> <p><b><u>Evaluate</u></b></p> <ul style="list-style-type: none"> <li>-Improve a design plan based on peer evaluation</li> <li>-Test and adapt a design to improve it as it is developed</li> <li>-Identify what makes a successful structure</li> </ul> <p><b><u>Technical Knowledge</u></b></p> <ul style="list-style-type: none"> <li>-Know that structures can be strengthened by manipulating materials and shapes</li> <li>-Identify the shell structure in everyday life (cars, aeroplanes, tins, cans)</li> </ul>	<p><b><u>Steady Hand Game</u></b></p> <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>-Design a steady hand game - identifying and naming the components required</li> <li>-Draw a design from three different perspectives</li> <li>-Generate ideas through sketching and discussion • Modelling ideas through prototypes</li> <li>-Understand the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'</li> <li>-Develop design criteria from a design brief.</li> </ul> <p><b><u>Make</u></b></p> <ul style="list-style-type: none"> <li>-Construct a stable base for a game</li> <li>-Accurate cutting, folding and assembling a net</li> <li>-Decorate the base of the game to a high-quality finish</li> <li>-Make and test a circuit Incorporating a circuit into a base</li> </ul> <p><b><u>Evaluate</u></b></p> <ul style="list-style-type: none"> <li>-Test own and others finished games, identifying what went well and making suggestions for improvement</li> <li>-Gather images and information about existing children's toys</li> <li>-Analyse a selection of existing children's toys</li> </ul> <p><b><u>Technical Knowledge</u></b></p> <ul style="list-style-type: none"> <li>-Learn that batteries contain acid, which can be dangerous if they leak</li> <li>-Identify and name the circuit components in a steady hand game</li> </ul>	<p><b><u>Navigating the world</u></b></p> <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>-Write a design brief from information submitted by a client</li> <li>-Develop design criteria to fulfil the client's request</li> <li>-Consider and suggest additional functions for my navigation tool</li> <li>-Develop a product idea through annotated sketches</li> <li>-Place and manoeuvre 3D objects, using CAD</li> <li>-Change the properties of, or combine one or more 3D objects, using CAD</li> </ul> <p><b><u>Make</u></b></p> <ul style="list-style-type: none"> <li>-Consider materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo)</li> <li>-Explain material choices and why they were chosen as part of a product concept</li> </ul> <p><b><u>Evaluate</u></b></p> <ul style="list-style-type: none"> <li>-Explain how my program fits the design criteria and how it would be useful as part of a navigation tool</li> <li>-Develop an awareness of sustainable design</li> </ul>

<p><u>Navigating the world</u></p> <p>3D CAD Application (apps) Biodegradable Boolean Cardinal compass Client Compass Concept Convince Corrode Duplicate Environmentally friendly Equipment Feature Finite Function Functional Infinite Product lifespan Program Recyclable Smart Sustainable Sustainable Design Unsustainable design Variable Workplane</p>			<p>-Understand man-made and natural structures</p> 		<p>-Identify key industries that utilise 3D CAD modelling and explain why</p> <p>-Describe how the product concept fits the client's request and how it will benefit the customers</p> <p><b>Technical Knowledge</b></p> <p>-Programme an N,E, S,W cardinal compass</p> <p>-Explain the key functions in my program, including any additions</p> <p>-Explain how my program fits the design criteria and how it would be useful as part of a navigation tool</p> <p>-Explain the key functions and features of my navigation tool to the client as part of a product concept pitch</p> <p>-Demonstrate a functional program as part of a product concept</p> 
--	--	--	--	--	---