



**Liden Academy**  
**DT Progression**

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## Design and Technology Curriculum Progression

### Purpose:

At Liden Academy, we want to build awareness of the impact Design and Technology has on our real lives through progressive, practical activities. We aim to inspire pupils to be innovative and creative thinkers who understand the design cycle. Children will take risks through the design process, progressing to become reflective learners who evaluate their work.

Through **Kapow's Design and Technology curriculum**, pupils will respond to design briefs that require the consideration of the needs of a wide range of users. Each of the 3 projects taught over the course of the year follow the design process of design, make and evaluate. This is underpinned by specific technical knowledge and skills in 6 key areas: structures, mechanisms, textiles, cooking and nutrition, electrical systems and digital world.

### Concepts

Research, design (for a purpose), construct safely and evaluate are key concepts that run through all enquiries. In addition, we have identified the following:

**reinforce, strength, stability, mechanism, hygiene, healthy eating, textiles, joins, prototype, texture, pattern.**

### EYFS

The DT curriculum has its earliest roots in the EYFS learning experiences and are reflected in a range of goals across this interconnected curriculum, but most notably in the following areas: 'Technology', 'Expressive Arts and Design' and 'Creating with materials.'

#### Expressive Arts and Design

The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe.

#### Early Learning Goal

ELG: Creating with Materials

Children at the expected level of development will:

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function;
- Share their creations, explaining the process they have used;


## Curriculum Overview

Year Group	Structures	Mechanisms	Textiles	Cooking and Nutrition	Electrical Systems	Digital World
1	Constructing windmills		Puppets	Fruit and Vegetables		
2	Baby bear's chair	Fairground wheel Moving monster				
3	Constructing a castle			Eating seasonally		Electronic charm
4	Pavilions	Making a slingshot car			Torches	
5		Making a pop up book		What could be healthier?	Doodlers	
6	Playgrounds		Waistcoats			Navigating the world


## National Curriculum

Key stage 1 - National Curriculum Design and Technology subject content	Strands	Year 1	Year 2
Pupils should be taught to:			
Design purposeful, functional, appealing products for themselves and other users based on design criteria	Design	Constructing windmills Puppets	Baby bear's chair Fairground wheel
Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology	Design	Constructing windmills Puppets	Baby bear's chair Fairground wheel
Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]	Make	Constructing windmills Puppets Fruit and Vegetables	Baby bear's chair Fairground wheel
Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics	Make	Constructing windmills Puppets Fruit and Vegetables	Baby bear's chair Fairground wheel
Explore and evaluate a range of existing products	Evaluate	Constructing windmills Fruit and Vegetables	Fairground wheel
Evaluate their ideas and products against design criteria	Evaluate	Constructing windmills Puppets	Baby bear's chair Fairground wheel
Build structures, exploring how they can be made stronger, stiffer and more stable	Technical Knowledge	Constructing windmills	Baby bear's chair Fairground wheel
Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	Technical Knowledge	Constructing windmills	Fairground wheel
Use basic principles of a healthy and varied diet to prepare dishes	Cooking and Nutrition	Fruit and Vegetables	
Understand where food comes from	Cooking and Nutrition	Fruit and Vegetables	


<b>Key stage 2 - National Curriculum Design and technology subject content</b>	<b>Strands</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
Pupils should be taught to:					
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	<b>Design</b>	Constructing a castle Eating seasonally Electronic charm	Pavilions Slingshot car Torches	Pop-up books What could be healthier? Doodlers	Playgrounds Waistcoats Navigating the world
Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design	<b>Design</b>	Constructing a castle Electronic charm	Pavilions Slingshot car Torches	Pop-up books What could be healthier? Doodlers	Playgrounds Waistcoats Navigating the world
Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately	<b>Make</b>	Constructing a castle Electronic charm	Pavilions Slingshot car Torches	Pop-up books Doodlers	Playgrounds Waistcoats Navigating the world
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	<b>Make</b>	Constructing a castle Electronic charm Eating seasonally	Pavilions Slingshot car Torches	Pop-up books What could be healthier? Doodlers	Playgrounds Waistcoats
Investigate and analyse a range of existing products	<b>Evaluate</b>	Constructing a castle	Pavilions Slingshot car Torches	Pop-up books	Playgrounds Waistcoats
Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	<b>Evaluate</b>	Constructing a castle Electronic charm	Pavilions Slingshot car Torches	Pop-up books Doodlers	Playgrounds Waistcoats Navigating the world
Understand how key events and individuals in design and technology have helped shape the world	<b>Evaluate</b>	Electronic charm	Slingshot car Torches	What could be healthier?	Playgrounds
Apply their understanding of how to strengthen, stiffen and reinforce more complex structures	<b>Technical Knowledge</b>	Constructing a castle	Pavilions		Playgrounds
Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]	<b>Technical Knowledge</b>		Slingshot car	Pop-up books	
Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]	<b>Technical Knowledge</b>		Torches	Doodlers	
Apply their understanding of computing to program, monitor and control their products	<b>Technical Knowledge</b>	Electronic charm			Navigating the world
Understand and apply principles of a healthy and varied diet	<b>Cooking and Nutrition</b>	Eating seasonally		What could be healthier?	
Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques	<b>Cooking and Nutrition</b>	Eating seasonally		What could be healthier?	
Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed	<b>Cooking and Nutrition</b>	Eating seasonally		What could be healthier?	

DT Progression of Knowledge and Skills Structures						
	<b>Year 1</b> <b>Constructing a windmill</b>	<b>Year 2</b> <b>Baby Bear's Chair</b>	<b>Year 3</b> <b>Constructing a Castle</b>	<b>Year 4</b> <b>Pavilions</b>	<b>Year 6</b> <b>Playgrounds</b>	<b>Year 7 (Dorcan)</b> Personalised toy storage box
<b>Concepts</b>	<i>Reinforce Strength stability</i>	<i>Reinforce Strength stability</i>	<i>Reinforce Strength stability</i>	<i>Reinforce Strength stability</i>	<i>Reinforce strength stability</i>	<i>Reinforce Strength stability</i>
<b>Design</b>	-Learning the importance of a clear design criteria, including individual preferences and requirements in a design.	-Generating and communicating ideas using sketching and modelling. -Learning about different types of structures, found in the natural world and in everyday objects.	-Designing a castle with key features to appeal to a specific person/purpose. -Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. -Designing and/or decorating a castle tower on CAD software.	-Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. -Building frame structures designed to support weight.	-Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used considering effective and ineffective designs.	<i>Client profiling Task analysis Primary &amp; Secondary research Designing Presentation skills 3d Drawing Design influence</i>
<b>Make</b>	-Making stable structures from card, tape and glue. -Learning how to turn 2D nets into 3D structures. -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.	-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.	-Constructing a range of 3D geometric shapes using nets. -Creating special features for individual designs. -Making facades from a range of recycled materials.	-Creating a range of different shaped frame structures. -Making a variety of free standing frame structures of different shapes and sizes. -Selecting appropriate materials to build a strong structure and cladding. -Reinforcing corners to strengthen a structure. -Creating a design in accordance with a plan. -Learning to create different textural effects with materials	-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.	<i>Laser cutting Using MDF &amp; Plywood Measuring &amp; Cutting Hand saws Working within tolerances Sanding Finishing Soldering Measuring &amp; Cutting Hand saws Working within tolerances Sanding Finishing</i>
<b>Evaluate</b>	-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	-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 own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. -Suggesting points for modification of the individual designs.	-Evaluating structures made by the class. -Describing what characteristics of a design and construction made it the most effective. -Considering effective and ineffective designs.	-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.	<i>Assembling using quality checks and controls Finishing techniques Reflection Analysing Extended writing</i>


		-Evaluating the strength, stiffness and stability of own structure.				
<b>Technical Knowledge</b>	<ul style="list-style-type: none"> <li>-To understand that the shape of materials can be changed to improve the strength and stiffness of structures.</li> <li>-To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses).</li> <li>-To understand that axles are used in structures and mechanisms to make parts turn in a circle.</li> <li>-To begin to understand that different structures are used for different purposes.</li> <li>-To know that a structure is something that has been made and put together.</li> </ul>	<ul style="list-style-type: none"> <li>-To know that shapes and structures with wide, flat bases or legs are the most stable.</li> <li>-To understand that the shape of a structure affects its strength.</li> <li>-To know that materials can be manipulated to improve strength and stiffness.</li> <li>-To know that a structure is something which has been formed or made from parts.</li> <li>-To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move.</li> <li>-To know that a 'strong' structure is one which does not break easily.</li> <li>-To know that a 'stiff' structure or material is one which does not bend easily.</li> </ul>	<ul style="list-style-type: none"> <li>-To understand that wide and flat based objects are more stable.</li> <li>-To understand the importance of strength and stiffness in structures.</li> </ul>	<ul style="list-style-type: none"> <li>-To understand what a frame structure is.</li> <li>-To know that a 'free-standing' structure is one which can stand on its own.</li> </ul>	<ul style="list-style-type: none"> <li>-To know that structures can be strengthened by manipulating materials and shapes.</li> </ul>	<ul style="list-style-type: none"> <li><i>Hand saws</i></li> <li><i>Electric circuits</i></li> <li><i>Soldering</i></li> <li><i>Use of clamps</i></li> </ul>
<b>Additional</b>	<ul style="list-style-type: none"> <li>-To know that a client is the person I am designing for.</li> <li>-To know that design criteria is a list of points to ensure the product meets the clients needs and wants.</li> <li>-To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity.</li> <li>-To know that windmill turbines use wind to turn and make the machines inside work.</li> <li>-To know that a windmill is a structure with sails that are moved by the wind.</li> <li>-To know the three main parts of a windmill are the turbine, axle and structure.</li> </ul>	<ul style="list-style-type: none"> <li>-To know that natural structures are those found in nature.</li> <li>-To know that man-made structures are those made by people.</li> </ul>	<ul style="list-style-type: none"> <li>-To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose.</li> <li>-To know that a façade is the front of a structure.</li> <li>-To understand that a castle needed to be strong and stable to withstand enemy attack.</li> <li>-To know that a paper net is a flat 2D shape that can become a 3D shape once assembled.</li> <li>-To know that a design specification is a list of success criteria for a product.</li> </ul>	<ul style="list-style-type: none"> <li>-To know that a pavilion is a decorative building or structure for leisure activities.</li> <li>-To know that cladding can be applied to structures for different effects.</li> <li>-To know that aesthetics are how a product looks.</li> <li>-To know that a product's function means its purpose.</li> <li>-To understand that the target audience means the person or group of people a product is designed for.</li> <li>-To know that architects consider light, shadow and patterns when designing.</li> </ul>	<ul style="list-style-type: none"> <li>-To understand what a 'footprint plan' is.</li> <li>-To understand that in the real world, design can impact users in positive and negative ways.</li> <li>-To know that a prototype is a cheap model to test a design idea.</li> </ul>	

<b>Mechanisms</b>				
	<b>Year 2 Fairground Wheel</b>	<b>Year 2 Moving Monster</b>	<b>Year 4 Slingshot car</b>	<b>Year 5 Pop-up book</b>
<b>Concepts</b>	Reinforce strength stability mechanism	Reinforce mechanism	Reinforce Strength Stability mechanism	Reinforce mechanism
<b>Design</b>	-Selecting a suitable linkage system to produce the desired motion. -Designing a wheel.	-Creating a class design criterion for a moving monster. -Designing a moving monster for a specific audience in accordance with a design criteria.	-Designing a shape that reduces air resistance. -Drawing a net to create a structure from. -Choosing shapes that increase or decrease speed as a result of air resistance. Personalising a design.	-Designing a pop-up book which uses a mixture of structures and mechanisms. -Naming each mechanism, input and output accurately. -Storyboarding ideas for a book.
<b>Make</b>	-Selecting materials according to their characteristics. -Following a design brief.	-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.	-Measuring, marking, cutting and assembling with increasing accuracy. -Making a model based on a chosen design.	-Following a design brief to make a pop-up book, neatly and with focus on accuracy. -Making mechanisms and/or structures using sliders, pivots and folds to produce movement. -Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.
<b>Evaluate</b>	-Evaluating different designs. -Testing and adapting a design.	-Evaluating own designs against design criteria. -Using peer feedback to modify a final design.	-Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.	-Evaluating the work of others and receiving feedback on own work. -Suggesting points for improvement.
<b>Technical Knowledge</b>	-To know that different materials have different properties and are therefore suitable for different uses.	-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. -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 that all moving things have kinetic energy. -To understand that kinetic energy is the energy that something (object/person) has by being in motion. -To know that air resistance is the level of drag on an object as it is forced through the air. -To understand that the shape of a moving object will affect how it moves due to air resistance.	-To know that mechanisms control movement. -To understand that mechanisms can be used to change one kind of motion into another. -To understand how to use sliders, pivots and folds to create paper-based mechanisms.
<b>Additional</b>	-To know the features of a ferris wheel include the wheel, frame, pods, a base an axle and an axle holder. -To know that it is important to test my design as I go along so that I can solve any problems that may occur.	-To know some real-life objects that contain mechanisms.	-To understand that products change and evolve over time. -To know that aesthetics means how an object or product looks in design and technology.	-To know that a design brief is a description of what I am going to design and make. -To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.


			<ul style="list-style-type: none"> <li>-To know that a template is a stencil you can use to help you draw the same shape accurately.</li> <li>-To know that a birds-eye view means a view from a high angle (as if a bird in flight).</li> <li>-To know that graphics are images which are designed to explain or advertise something.</li> <li>-To know that it is important to assess and evaluate design ideas and models against a list of design criteria.</li> </ul>	
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Textiles			
	Year 1 Puppets	Year 6 Waistcoat	
<b>Concepts</b>	Textiles Joins Texture pattern	Textiles joins Texture pattern	
<b>Design</b>	-Using a template to create a design for a puppet.	-Designing a waistcoat in accordance to a specification linked to set of design criteria. -Annotating designs, to explain their decisions.	
<b>Make</b>	<ul style="list-style-type: none"> <li>-Cutting fabric neatly with scissors.</li> <li>-Using joining methods to decorate a puppet.</li> <li>-Sequencing the steps taken during construction.</li> </ul>	<ul style="list-style-type: none"> <li>-Using a template when cutting fabric to ensure they achieve the correct shape.</li> <li>-Using pins effectively to secure a template to fabric without creases or bulges.</li> <li>-Marking and cutting fabric accurately, in accordance with their 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 features (such as appliqué) using thread.</li> <li>-Finishing the waistcoat with a secure fastening (such as buttons).</li> <li>-Learning different decorative stitches.</li> <li>-Sewing accurately with evenly spaced, neat stitches.</li> </ul>	
<b>Evaluate</b>	-Reflecting on a finished product, explaining likes and dislikes.	-Reflecting on their work continually throughout the design, make and evaluate process.	
<b>Technical Knowledge</b>	<ul style="list-style-type: none"> <li>-To know that 'joining technique' means connecting two pieces of material together.</li> <li>-To know that there are various temporary methods of joining fabric by using staples. glue or pins.</li> <li>-To understand that different techniques for joining materials can be used for different purposes.</li> <li>-To understand that a template (or fabric pattern) is used to cut out the same shape multiple times.</li> <li>-To know that drawing a design idea is useful to see how an idea will look.</li> </ul>	<ul style="list-style-type: none"> <li>-To understand that it is important to design clothing with the client/ target customer in mind.</li> <li>-To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric.</li> <li>To understand the importance of consistently sized stitches.</li> </ul>	




Cooking and Nutrition				
	Year 1 Fruit and Vegetables	Year 3 Eating Seasonally	Year 5 What could be healthier?	Year 7 (Dorcan) Healthy Eating
<b>Concepts</b>	hygiene healthy eating texture	Hygiene healthy eating texture	Hygiene healthy eating texture	Hygiene healthy eating texture
<b>Design</b>	-Designing smoothie carton packaging by-hand or on ICT software.	-Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.	-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.	<i>Select and adjust cooking process.</i>
<b>Make</b>	-Chopping fruit and vegetables safely to make a smoothie. -Identifying if a food is a fruit or a vegetable. -Learning where and how fruits and vegetables grow.	-Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. -Following the instructions within a recipe.	-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.	<i>Prepare, combine &amp; Shape Select and use of equipment. Preparation of ingredients and equipment.</i>
<b>Evaluate</b>	-Tasting and evaluating different food combinations. -Describing appearance, smell and taste. -Suggesting information to be included on packaging.	-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.	-Identifying the nutritional differences between different products and recipes. Identifying and describing healthy benefits of food groups.	<i>Test for readiness. Judge and manipulate sensory properties.</i>
<b>Technical Knowledge</b>	-Understanding the difference between fruits and vegetables. -To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). -To know that a blender is a machine which mixes ingredients together into a smooth liquid. -To know that a fruit has seeds and a vegetable does not. -To know that fruits grow on trees or vines. -To know that vegetables can grow either above or below ground. -To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).	-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. -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 understand that imported foods travel from far away and this can negatively impact the environment. -To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre.	-To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues. -To know that I can adapt a recipe to make it healthier by substituting ingredients. -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.	<i>Weighing Measuring Knife Skills</i>

		<ul style="list-style-type: none"> <li>-To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health.</li> <li>-To know safety rules for using, storing and cleaning a knife safely.</li> <li>-To know that similar coloured fruits and vegetables often have similar nutritional benefits.</li> </ul>		
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Electrical Systems				
	<b>Year 4 Torches</b>	<b>Year 5 Doodlers</b>	<b>Year 7 (Dorcan) Personalised Toy Storage Box</b>	
<b>Concepts</b>	reinforce	reinforce	reinforce	
<b>Design</b>	-Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas	-Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. -Developing design criteria based on findings from investigating existing products. -Developing design criteria that clarifies the target user.	Client profiling Task analysis Primary & Secondary research Designing Presentation skills 3d Drawing Design influence	
<b>Make</b>	-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.	-Altering a product's form and function by tinkering with its configuration. -Making a functional series circuit, incorporating a motor. -Constructing a product with consideration for the design criteria. -Breaking down the construction process into steps so that others can make the product.	Laser cutting Using MDF & Plywood Measuring & Cutting Hand saws Working within tolerances Sanding Finishing Soldering Measuring & Cutting Hand saws Working within tolerances Sanding Finishing	
<b>Evaluate</b>	-Evaluating electrical products. -Testing and evaluating the success of a final product.	-Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. -Determining which parts of a product affect its function and which parts affect its form. -Analysing whether changes in configuration positively or negatively affect an existing product. -Peer evaluating a set of instructions to build a product.	Assembling using quality checks and controls Finishing techniques Reflection Analysing Extended writing	
<b>Technical Knowledge</b>	-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 series circuits only have one direction for the electricity to flow. -To know when there is a break in a series circuit, all components turn off.	Hand saws Electric circuits Soldering Use of clamps	

	<ul style="list-style-type: none"> <li>-To know that a battery contains stored electricity that can be used to power products.</li> <li>-To know that an electrical circuit must be complete for electricity to flow.</li> <li>-To know that a switch can be used to complete and break an electrical circuit.</li> </ul>	<ul style="list-style-type: none"> <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>	
<b>Additional</b>	<ul style="list-style-type: none"> <li>-To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens.</li> <li>-To know facts from the history and invention of the electric light bulb(s)-by Sir Joseph Swan and Thomas Edison.</li> </ul>	<ul style="list-style-type: none"> <li>-To know that product analysis is critiquing the strengths and weaknesses of a product.</li> <li>-To know that 'configuration' means how the parts of a product are arranged.</li> </ul>	

## Digital World

	<b>Year 3 Electronic Charm</b>	<b>Year 6 Navigating the World</b>
<b>Design</b>	<ul style="list-style-type: none"> <li>-Problem solving by suggesting potential features on a Micro: bit and justifying my ideas</li> <li>-Developing design ideas for a technology pouch</li> <li>-Drawing and manipulating 2D shapes, using computer-aided design, to produce a point-of-sale badge</li> </ul>	<ul style="list-style-type: none"> <li>-Writing a design brief from information submitted by a client</li> <li>-Developing design criteria to fulfil the client's request</li> <li>-Considering and suggesting additional functions for my navigation tool</li> <li>-Developing a product idea through annotated sketches</li> <li>-Placing and manoeuvring 3D objects, using CAD</li> <li>-Changing the properties of, or combine one or more 3D objects, using CAD</li> </ul>
<b>Make</b>	<ul style="list-style-type: none"> <li>-Using a template when cutting and assembling the pouch</li> <li>-Following a list of design requirements</li> <li>-Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch</li> <li>-Applying functional features such as using foam to create soft buttons</li> </ul>	<ul style="list-style-type: none"> <li>-Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo)</li> <li>-Explaining material choices and why they were chosen as part of a product concept</li> <li>-Programming an N,E, S,W cardinal compass</li> </ul>
<b>Evaluate</b>	<ul style="list-style-type: none"> <li>-Analysing and evaluating an existing product</li> <li>-Identifying the key features of a pouch</li> </ul>	<ul style="list-style-type: none"> <li>-Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool</li> <li>-Developing an awareness of sustainable design</li> <li>-Identifying key industries that utilise 3D CAD modelling and explain why • Describing how the product concept fits the client's request and how it will benefit the customers</li> <li>-Explaining the key functions in my program, including any additions</li> <li>-Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool</li> <li>-Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch</li> <li>-Demonstrating a functional program as part of a product concept</li> </ul>
<b>Technical Knowledge</b>	<ul style="list-style-type: none"> <li>-To understand that in programming a 'loop' is code that repeats something again and again until stopped</li> <li>-To know that a Micro:bit is a pocket-sized, codeable computer</li> <li>-Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm</li> </ul>	<ul style="list-style-type: none"> <li>-To know that accelerometers can detect movement</li> <li>-To understand that sensors can be useful in products as they mean the product can function without human input</li> </ul>
<b>Additional</b>	<ul style="list-style-type: none"> <li>-To know what the 'Digital Revolution' is and features of some of the products that have evolved as a result</li> <li>-To know that in Design and technology the term 'smart' means a programmed product</li> <li>-To know the difference between analogue and digital technologies</li> <li>-To understand what is meant by 'point of sale display'</li> <li>-To know that CAD stands for Computer-aided design</li> </ul>	<ul style="list-style-type: none"> <li>-To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request</li> <li>-To know that 'multifunctional' means an object or product has more than one function</li> <li>-To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing</li> </ul>