



Marsh Green Primary School

DESIGN TECHNOLOGY



Long Term Overview



	<u>Autumn</u>		<u>Spring</u>		<u>Summer</u>	
Young Explorers	All about me	Light and Dark	It's Cold Outside	Traditional Tales	People and Communities	All Creatures Great and Small
Nursery	Marvellous Me	Winter Wonderland	If We Go Down to the Woods	Take a Look Back	People Who Help Us	Our World
Reception	Drawing Marvelous Marks - Art		Painting And Mixed Media - Art		Sculpture and 3D - Art	

DT - Education in The Early Years Foundation Phase

Development Matters – Physical Development, Personal Social and Emotional Development

Young Explorers	<p>Explore different materials, using all their senses to investigate them.</p> <p>Manipulate and play with different materials.</p> <p>Use their imagination as they consider what they can do with different materials.</p> <p>Make simple models which express their ideas.</p>
Nursery	<p>Select and use activities and resources, with help when needed.</p> <p>This helps them to achieve a goal they have chosen or one which is suggested to them.</p> <p>Use large-muscle movements to wave flags and streamers, paint and make marks.</p> <p>Choose the right resources to carry out their own plan.</p> <p>Use one-handed tools and equipment, for example, making snips in paper with scissors.</p> <p>Explore how things work.</p> <p>Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park.</p> <p>Explore different materials freely, in order to develop their ideas about how to use them and what to make.</p> <p>Develop their own ideas and then decide which materials to use to express them.</p> <p>Create closed shapes with continuous lines, and begin to use these shapes to represent objects.</p>
Reception	<p>Progress towards a more fluent style of moving, with developing control and grace.</p> <p>Develop their small motor skills so that they can use a range of tools competently, safely and confidently.</p> <p>Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.</p> <p>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</p> <p>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</p> <p>Create collaboratively, sharing ideas, resources and skills Use a range of small tools, including scissors, paintbrushes and cutlery.</p> <p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p> <p>Share their creations, explaining the process they have used.</p>
ELG	<p>Creating with Materials</p> <p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p> <p>Share their creations, explaining the process they have used.</p> <p>Make use of props and materials when role playing.</p>

<u>Long Term Overview</u>			
	<u>Autumn</u>	<u>Spring</u>	<u>Summer</u>
1	Textiles: Puppets	Structures: Constructing a windmill	Cooking and Nutrition: Smoothies
2	Structures: Baby bear's chair	Mechanisms: Making a moving monster	Mechanisms: Fairground wheel
3	Digital world: Wearable technology	Structures: Constructing a castle	Cooking and Nutrition: Eating seasonally
4	Textiles: Fastenings	Mechanical Systems: Slingshot cars	Electrical Systems: Torches

5	Mechanical Systems: Gears and pulleys	Cooking and Nutrition: Develop a recipe	Electrical Systems: Doodlers
6	Textiles: Waistcoats	Digital World: Navigating the world	Structures: Playgrounds

Skills Progression: Structures

Design Technology Overview – Marsh Green 2024/2025

		Year 1	Year 2
		<u>Constructing a windmill</u>	<u>Baby bear's chair</u>
Skills	Design	<ul style="list-style-type: none"> • Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design. 	<ul style="list-style-type: none"> • Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects.
	Make	<ul style="list-style-type: none"> • Making stable structures from card. • Following instructions to cut and assemble the supporting structure of a windmill. • Making functioning turbines and axles which are assembled into a main supporting structure. • Finding the middle of an object. • Puncturing holes. • Adding weight to structures. • Creating supporting structures. • Cutting evenly and carefully. 	<ul style="list-style-type: none"> • 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.
	Evaluate	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure.
Knowledge	Technical	<ul style="list-style-type: none"> • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • To understand that axles are used in structures and mechanisms to make parts turn in a circle. • To begin to understand that different structures are used for different purposes. • To know that a structure is something that has been made and put together. • To know that the sails or blades of a windmill are moved by the wind. • To know that a structure is something built for a reason. • To know that stable structures do not topple. • To know that adding weight to the base of a structure can make it more stable. 	<ul style="list-style-type: none"> • To know that shapes and structures with wide, flat bases or legs are the most stable. • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily.
	Additional	<ul style="list-style-type: none"> • To know that design criteria is a list of points to ensure the product meets the clients needs and wants. • To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. • To know that windmill turbines use wind to turn and make the machines inside work. • To know that a windmill is a structure with sails that are moved by the wind. • To know the three main parts of a windmill are the turbine, axle and structure. • To know that windmills are used to generate power and were used for grinding flour. 	<ul style="list-style-type: none"> • To know that natural structures are those found in nature. • To know that man-made structures are those made by people.

		Year 3	Year 6
		<u>Constructing a castle</u>	<u>Playgrounds</u>
Skills	Design	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.
	Make	<ul style="list-style-type: none"> • Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials. 	<ul style="list-style-type: none"> • 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.
	Evaluate	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Improving a design plan based on peer evaluation. • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure.
Knowledge	Technical	<ul style="list-style-type: none"> • To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures. 	<ul style="list-style-type: none"> • To know that structures can be strengthened by manipulating materials and shapes.
	Additional	<ul style="list-style-type: none"> • To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose. • To know that a façade is the front of a structure. • To understand that a castle needed to be strong and stable to withstand enemy attack. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product. 	<ul style="list-style-type: none"> • To understand what a 'footprint plan' is. • To understand that in the real world, design , can impact users in positive and negative ways. • To know that a prototype is a cheap model to test a design idea.

Skills Progression: Mechanisms/Mechanical Systems

		Year 2	
		Fairground wheel	Making a moving monster
Skills	Design	<ul style="list-style-type: none"> Conducting simple surveys or discussions to gather opinions on what others need or like in a design. Knowing that a survey is used to find out what people like. Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria. Knowing that a design brief helps to decide what to make. Knowing that design criteria are the steps for making a product successful. Creating ideas with design criteria in mind. Referring to specific parts of existing products when generating ideas. Knowing that the design criteria help when thinking of ideas. Using labels to explain parts of a design, label materials, etc. Using labels to explain parts of a design, label materials, etc. Knowing that drawings can help explain how something works. Knowing that a label explains part of a drawing. 	<ul style="list-style-type: none"> Creating a class design criteria for a moving monster. Designing a moving monster for a specific audience in accordance with a design criteria.
	Make	<ul style="list-style-type: none"> Choosing materials, ingredients or components from a wider range of materials, ingredients or components. Explaining their choices based on the properties of materials and components. Knowing some properties of materials like hard, soft, flexible, waterproof, strong etc. Following and recalling simple safety instructions. Knowing that some tools are sharp like scissors and knives. Choosing known geometric shapes when making. Beginning to shape objects to improve how they work. Knowing the names of some geometric shapes: triangle, pyramid, square, cube, circle, sphere. Considering balance in their finishing, like evenly spaced decoration. 	<ul style="list-style-type: none"> 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.
	Evaluate	<ul style="list-style-type: none"> Discussing a range of existing products and saying what they like and dislike about them. Evaluating existing products against design criteria. Evaluating their ideas and creations against simple design criteria. Knowing that design criteria help to decide if their product is a success. Suggesting improvements to their peers' designs and products. Knowing that improve means to make something better. Knowing that their suggestions can improve someone else's work. 	<ul style="list-style-type: none"> Evaluating own designs against design criteria. Using peer feedback to modify a final design.
Knowledge	Technical	<ul style="list-style-type: none"> To know everyday objects have mechanisms. To know many things that move have parts inside to help them work. To know mechanisms usually limit unwanted movement. To know everyday objects utilise wheels and axles. To know wheels must be able to turn to work effectively. To know axles allow wheels to turn without falling off. 	<ul style="list-style-type: none"> 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.
	Additional	<ul style="list-style-type: none"> To know the features of a fairground wheel include the wheel, frame, pods, a base an axle and an axle holder. 	<ul style="list-style-type: none"> To know some real-life objects that contain mechanisms.

Year 4		
<u>Making a slingshot car</u>		
Skills	Design	<ul style="list-style-type: none"> • 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.
	Make	<ul style="list-style-type: none"> • Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design.
	Evaluate	<ul style="list-style-type: none"> • Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.
Knowledge	Technical	<ul style="list-style-type: none"> • 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.
	Additional	<ul style="list-style-type: none"> • 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 template is a stencil you can use to help you draw the same shape accurately. • To know that a birds-eye view means a view from a high angle (as if a bird in flight). • To know that graphics are images which are designed to explain or advertise something. • To know that it is important to assess and evaluate design ideas and models against a list of design criteria.

Year 5		
New <u>Gears and pulleys</u>		
Skills	Design	<ul style="list-style-type: none"> ● Noticing wider-reaching problems or needs in the community. ● Identifying a wide range of needs and potential barriers through market research. ● Writing more complex problem statements that consider multiple factors and constraints. ● Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost. ● Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality. ● Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design. ● Using a series of prototypes to refine and improve their designs.
	Make	<ul style="list-style-type: none"> ● Consistently apply safety instructions. ● Select appropriate scissors to handle delicate cutting tasks and challenging materials. ● Cutting patterns and drawings accurately. ● In supervised groups, using hot glue guns safely. ● Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly. ● Choosing PVA glue over hot glue for its safety when joining materials in less intensive projects.
	Evaluate	<ul style="list-style-type: none"> ● Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects. ● Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost. ● Considering alternative materials, tools or techniques that could enhance the product. ● Providing feedback that is helpful, specific, and encouraging. ● Incorporating feedback from peers or users improve their product further, explaining the changes they made and the impact they had.
Knowledge	Technical	<ul style="list-style-type: none"> ● That mechanical systems that use gears in everyday objects (eg bicycle, clock). ● That gears and pulleys allow us to transfer movement and force from one part of a mechanical system to another. ● That gears allow us to increase the output of a mechanism.
	Additional	<ul style="list-style-type: none"> ● That market research is a way of collecting information about problems or needs. ● That constraints are things that might stop our ideas being successful. ● That original and innovative ideas are different from what has been made before. ● That annotations are detailed labels and comments on diagrams. ● That risks are things that might happen. ● That hot glue creates a strong bond quickly. ● That is often better to choose safer equipment. ● That sustainability means thinking about the materials that were used to make a product and how the product was made. ● That their final product can still be improved by different materials or techniques. ● That evaluating their designs in detail will help them understand its successful and less successful parts. ● That feedback should be positive, helpful and specific. ● That explaining how they used feedback to improve their design can help them create better products in the future.

Skills Progression: Electrical Systems

		Year 4	Year 5
		<u>Torches</u>	<u>Doodlers</u>
Skills	Design	<ul style="list-style-type: none"> • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. 	<ul style="list-style-type: none"> • 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.
	Make	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.
	Evaluate	<ul style="list-style-type: none"> • Evaluating electrical products. • Testing and evaluating the success of a final product. 	<ul style="list-style-type: none"> • 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.
Knowledge	Technical	<ul style="list-style-type: none"> • To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity that can be used to power products. • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit. 	<ul style="list-style-type: none"> • 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. • To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. • To know a motorised product is one which uses a motor to function.
	Additional	<ul style="list-style-type: none"> • To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. • To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison. 	<ul style="list-style-type: none"> • To know that product analysis is critiquing the strengths and weaknesses of a product. • To know that 'configuration' means how the parts of a product are arranged.

Skills Progression: Cooking and Nutrition

		Year 1	Year 3
		<u>Smoothies</u>	<u>Eating seasonally</u>
Skills	Design	<ul style="list-style-type: none"> • Designing smoothie carton packaging by-hand. 	<ul style="list-style-type: none"> • Designing a recipe for a savoury tart.
	Make	<ul style="list-style-type: none"> • Chopping fruit and vegetables safely to make a smoothie. • Juicing fruits safely to make a smoothie. 	
	Evaluate	<ul style="list-style-type: none"> • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. • Comparing their own smoothie with someone else's. 	<ul style="list-style-type: none"> • Following the instructions within a recipe. • Tasting seasonal ingredients. • Selecting seasonal ingredients. • Peeling ingredients safely. • Cutting safely with a vegetable knife. • Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart.
Knowledge		<ul style="list-style-type: none"> • To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables is any edible part of a plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber). 	<ul style="list-style-type: none"> • 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 know that eating seasonal foods can have a positive impact on the environment. • To know that similar coloured fruits and vegetables often have similar nutritional benefits. • To know that the appearance of food is as important as taste.

Year 5		
<u>Developing a recipe</u>		
Skills	Design	<ul style="list-style-type: none"> • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe. • Researching existing recipes to inform ingredient choices.
	Make	<ul style="list-style-type: none"> • 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.
	Evaluate	<ul style="list-style-type: none"> • Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups.
Knowledge		<ul style="list-style-type: none"> • To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed. • To know that recipes can be adapted to suit nutritional needs and dietary requirements. • To know that I can use a nutritional calculator to see how healthy a food option is. • To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. • To know that coloured chopping boards can prevent cross-contamination. • To know that nutritional information is found on food packaging. • To know that food packaging serves many purposes.

Skills Progression: Textiles

		Year 1	Year 4
		<u>Puppets</u>	<u>Fastenings</u>
Skills	Design	<ul style="list-style-type: none"> Using a template to create a design for a puppet. 	<ul style="list-style-type: none"> Writing design criteria for a product, articulating decisions made. Designing a personalised book sleeve.
	Make	<ul style="list-style-type: none"> Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. Sequencing steps for construction. 	<ul style="list-style-type: none"> Making and testing a paper template with accuracy and in keeping with the design criteria. Measuring, marking and cutting fabric using a paper template. Selecting a stitch style to join fabric. Working neatly by sewing small, straight stitches. Incorporating a fastening to a design.
	Evaluate	<ul style="list-style-type: none"> Reflecting on a finished product, explaining likes and dislikes. 	<ul style="list-style-type: none"> Testing and evaluating an end product against the original design criteria. Deciding how many of the criteria should be met for the product to be considered successful. Suggesting modifications for improvement. Articulating the advantages and disadvantages of different fastening types.
Knowledge		<ul style="list-style-type: none"> To know that 'joining technique' means connecting two pieces of material together. To know that there are various temporary methods of joining fabric by using staples, glue or pins. To understand that different techniques for joining materials can be used for different purposes. To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. To know that drawing a design idea is useful to see how an idea will look. 	<ul style="list-style-type: none"> To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro. To know that different fastening types are useful for different purposes. To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions.

Year 6		
<u>Waistcoats</u>		
Skills	Design	<ul style="list-style-type: none"> • Designing a waistcoat in accordance to a specification linked to set of design criteria. • Annotating designs, to explain their decisions.
	Make	<ul style="list-style-type: none"> • Using a template when cutting fabric to ensure they achieve the correct shape. • Using pins effectively to secure a template to fabric without creases or bulges. • Marking and cutting fabric accurately, in accordance with their design. • Sewing a strong running stitch, making small, neat stitches and following the edge. • Tying strong knots. • Decorating a waistcoat, attaching features (such as appliqué) using thread. • Finishing the waistcoat with a secure fastening (such as buttons). • Learning different decorative stitches. • Sewing accurately with evenly spaced, neat stitches.
	Evaluate	<ul style="list-style-type: none"> • Reflecting on their work continually throughout the design, make and evaluate process.
Knowledge		<ul style="list-style-type: none"> • To understand that it is important to design clothing with the client/ target customer in mind. • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches.

Skills Progression: Digital World

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

<u>Vocabulary</u>			
	<u>Autumn</u>	<u>Spring</u>	<u>Summer</u>
1	<p>Textiles: Puppets</p> <p>Decorate • Design • Fabric • Glue • Model • Hand puppet • Safety pin • Staple • Stencil • Template</p>	<p>Structures: Constructing a windmill</p> <p>Base • Centre • Design • Equal • Evaluate • Rotate • Rotor • Rotor Blades • Sails • Stable • Strong • Structure • Test • Weak • Wind • Windmill</p>	<p>Cooking and Nutrition: Smoothies</p> <p>Blender • Fruit • Healthy • Ingredients • Recipe • Smoothie • Vegetable • Seed • Root • Leaf • Stem • Flavour • Design • Cut • Juice • Knife • Juicer • Plant • Bush • Tree • Vine • Chopping board • Fork • Taste • Select • Blend • Evaluate • Compare</p>
2	<p>Structures: Baby bear's chair</p> <p>Function • Man-made • Mould • Natural • Stable • Stiff • Strong • Structure • Test • Weak</p>	<p>Mechanisms: Making a moving monster</p> <p>Evaluation • Input • Lever • Linear motion • Linkage • Mechanical • Mechanism • Motion • Oscillating motion</p>	<p>Mechanisms: Fairground wheel</p> <p>Design brief • Design criteria • Evaluate • Frame • Model • Opinion • Rotate • Survey</p>

		<ul style="list-style-type: none"> • Output • Pivot • Reciprocating motion • Rotary motion • Survey 	
3	<p>Digital world: Wearable technology</p> <p>Analogue • Analyse • Annotate • Badge • CAD • Control • Design criteria • Develop • Digital • Digital revolution • Digital world • Display • Electronic • Fastening • Feature • Feedback • Form • Function • Initiate • Layers • Loops • Micro:bit • Monitor • Net • Point of sale • Product • Product concept • Program • Sense • Simulator • Smart • Technology • Test • User</p>	<p>Structures: Constructing a castle</p> <p>2D shapes • 3D shapes • Castle • Design criteria • Evaluate • Facade • Feature • Flag • Net • Recyclable • Scoring • Stable • Strong • Structure • Tab • Weak</p>	<p>Cooking and Nutrition: Eating seasonally</p> <p>Arid • Climate • Complementary • Country • Export • Import • Mediterranean • Mock-up • Mountain • Peel • Polar • Seasonal • Seasons • Snip • Temperate • Texture • Tropical • Weather</p>
4	<p>Textiles: Fastenings</p> <p>Aesthetic • Assemble • Book sleeve • Design criteria •</p>	<p>Mechanical Systems: Slingshot cars</p>	<p>Electrical Systems: Torches</p> <p>Battery • Bulb • Buzzer • Cell • Component •</p>

	Evaluation • Fabric • Fastening • Mock-up • Net • Running-stitch • Stencil • Target audience • Target customer • Template	Aesthetic • Air resistance • Chassis • Design • Design criteria • Function • Graphics • Kinetic energy • Mechanism • Net • Structure	Conductor • Copper • Design criteria • Electrical item • Electricity • Electronic item • Function • Insulator • Series circuit • Switch • Test • Torch • Wire
5	Mechanical Systems: Gears and pulleys Annotate • Gear • Gear system • Input • Market research • Output • Problem statement • Pulley • Pulley system • Research • Sustainability • Teeth	Cooking and Nutrition: Develop a recipe Abattoir • Adaptation • Balanced • Beef • Brand • Cook • Cross-contamination • Develop • Enhance • Equipment • Farm • Label • Measure • Nutrient • Nutrition • Nutritional value • Preference • Press • Process • Safety • Theme	Electrical Systems: Doodlers Circuit component • Configuration • Current • Develop • DIY • Investigate • Motor • Motorised • Problem solve • Product analysis • Series circuit • Stable • Target user
6	Textiles: Waistcoats Accurate • Adapt • Annotate • Design • Design criteria • Detail • Fabric • Fastening • Knot • Properties • Running-	Digital World: Navigating the world 3D CAD • Application (apps) • Biodegradable • Boolean • Cardinal compass • Client •	Structures: Playgrounds Adapt • Apparatus • Bench hook • Cladding • Coping saw • Design • Dowel • Evaluation • Feedback • Idea

	stitch • Seam • Sew • Shape • Target audience • Target customer • Template • Thread • Unique • Waistcoat • Waterproof	Compass • Concept • Convince • Corrode • Duplicate • Environmentally friendly • Equipment • Feature • Finite • Function • Functional • GPS tracker • If statement • Infinite • Investment • Lightweight • Loop • Manufacture • Materials (wood, metal, plastic etc.) • Mouldable • Navigation • Non-recyclable • Product lifecycle • Product lifespan • Program • Recyclable • Smart • Sustainable • Sustainable design • Unsustainable design • Variable • Workplane	• Jelutong • Landscape • Mark out • Measure • Modify • Natural materials • Plan view • Playground • Prototype • Reinforce • Sketch • Strong • Structure • Tenon saw • Texture • User • Vice • Weak
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