



## Curriculum Overview Design and Technology

Year	Autumn			Spring			Summer		
Topic	Who am I? Let's Celebrate			Space New Life in Spring			People Who Help Us Land and Sea		
	Nursery 1	Nursery 2	Reception	Nursery 1	Nursery 2	Reception	Nursery 1	Nursery 2	Reception
<b>Expressive Arts and Design Physical Development</b>	<p><b>EY Link -</b> -Pretends that one object represents another, especially when objects have characteristics in common. -When holding crayons, chalks etc, makes connections between their movement and the marks they make.</p>	<p><b>EY Link -</b> -Pretends that one object represents another, especially when objects have characteristics in common. -Develop manipulation and control e.g. tearing paper, making marks on paper.</p>	<p><b>EY Link -</b> -Understanding of using lines to enclose a space and begins to use drawings to represent things. -Use a variety of construction materials in different ways. -Use tools for a purpose. -Uses available resources to create props or creates imaginary ones to support play. -Manipulates a range of tools and equipment in one hand, tools include paintbrushes, scissors, hairbrushes, toothbrush, scarves or ribbons.</p>	<p><b>EY Link -</b> -Experiments with ways to enclose a space, create shapes and represent actions, sounds and objects -Enjoys and responds to playing with colour in a variety of ways, for example combining colours -Shows increasing control in holding, using and manipulating a range of tools and objects</p>	<p><b>EY Link -</b> -Continues to explore colour -Explore different materials and tools providing opportunities for children to grasp, hold and explore materials. -Use one-handed tools and equipment, for example, making snips in paper with scissors. -Show a preference for a dominant hand</p>	<p><b>EY Link -</b> -Uses tools to explore and develop their thinking around their interests. -Begins to use combinations of art forms.  -Develop their small motor skills so that they can use a range of tools competently, safely and confidently e.g. pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons.</p>	<p><b>EY Link -</b> -Uses everyday materials to explore, understand and represent their world - their ideas, interests and fascinations. -Shows increasing control in holding, using and manipulating a range of tools and objects such as tambourines, jugs, hammers, and mark making tools -Holds mark-making tools with thumb and all fingers</p>	<p><b>EY Link -</b> -Continues to explore how colours can be changed. -Creates lines and circles pivoting from the shoulder and elbow. -Uses a comfortable grip with good control when holding pens and pencils.</p>	<p><b>EY Link -</b> -Create collaboratively, sharing ideas, resources and skills. -Handles tools, objects, construction and malleable materials safely and with increasing control and intention -Begins to use anticlockwise movement and retrace vertical lines -Begins to form recognisable letters independently</p>

	<p><b>Autumn 1:</b> Focus - self portraits, creating with different textures including materials and paint. Constructing houses and homes in the small world area/creative area</p> <p><b>Autumn 2:</b> Focus - Firework art/ Autumn colours, building. Clay Diya lamps, T4W character masks.</p>	<p><b>Spring 1:</b> Focus - Designing and building rockets/space transport.</p> <p><b>Spring 2:</b> Focus - Making bird feeds/bird catchers. Easter crafts.</p>	<p><b>Summer 1:</b> Focus - Job tool kit. Constructing models of our jobs</p> <p><b>Summer 2:</b> Focus - seaside displays/treasure boxes</p>
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**Structures Textiles Cooking and Nutrition Mechanisms Digital World Mechanical System Electrical Systems**

1	<p><b>NC ref: Structures</b></p> <p><b>Focus: Constructing a Windmill</b></p> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Learning the importance of a clear design criteria.</li> <li>• Including individual preferences and requirements in a design.</li> <li>• Making stable structures from card, tape and glue.</li> <li>• Learning how to turn 2D nets into 3D structures.</li> <li>• Following instructions to cut and assemble the supporting structure of a windmill.</li> <li>• Making functioning turbines and axles which are assembled into a main supporting structure.</li> </ul> <p><b>Knowledge:</b></p> <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 (and, therefore, they are 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> <p><b>Enhancement</b></p> <p><b>Key Vocabulary:</b> axle, bridge, design, design, criteria, model, net, packaging, structure, template, unstable, stable, strong, weak</p>	<p><b>NC ref: Textiles</b></p> <p><b>Focus: Puppets</b></p> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Using a template to create a design for a puppet.</li> <li>• Cutting fabric neatly with scissors.</li> <li>• Using joining methods to decorate a puppet.</li> <li>• Sequencing steps for construction.</li> <li>• Reflecting on a finished product, explaining likes and dislikes.</li> </ul> <p><b>Knowledge:</b></p> <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> <p><b>Enhancement:</b> Visiting puppet show</p> <p><b>Key Vocabulary:</b> decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template</p>	<p><b>NC ref: Cooking and Nutrition</b></p> <p><b>Focus: Smoothies</b></p> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Designing smoothie carton packaging by-hand or on ICT software.</li> <li>• Chopping fruit and vegetables safely to make a smoothie.</li> <li>• Identifying if a food is a fruit or a vegetable.</li> <li>• Learning where and how fruits and vegetables grow.</li> <li>• Tasting and evaluating different food combinations.</li> <li>• Describing appearance, smell and taste.</li> <li>• Suggesting information to be included on packaging.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• To understand the difference between fruits and vegetables.</li> <li>• To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).</li> <li>• To know that a blender is a machine which mixes ingredients together into a smooth liquid.</li> <li>• To know that a fruit has seeds and a vegetable does not.</li> <li>• To know that fruits grow on trees or vines.</li> <li>• To know that vegetables can grow either above or below ground.</li> <li>• To know that vegetables can come from different parts of the plant.</li> </ul> <p><b>Enhancement:</b> Visit the local supermarket to explore smoothies and seasonal fruits</p> <p><b>Key Vocabulary:</b> fruit, vegetable, seed, leaf, root, stem, smoothie, healthy, carton, design, flavour, peel slice</p>
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<p style="text-align: center;">2</p>	<p><b>NC ref: Structures</b>  <b>Focus: Baby Bear's Chair</b>  <b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Generating and communicating ideas using sketching and modelling.</li> <li>• Learning about different types of structures, found in the natural world and in everyday objects.</li> <li>• Making a structure according to design criteria.</li> <li>• Creating joints and structures from paper/card and tape.</li> <li>• Building a strong and stiff structure by folding paper.</li> <li>• Exploring the features of structures.</li> <li>• Comparing the stability of different shapes.</li> <li>• Testing the strength of their own structures</li> <li>• Identifying the weakest part of a structure.</li> <li>• Evaluating the strength, stiffness and stability of their own structure.</li> </ul> <p><b>Knowledge:</b></p> <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> <p><b>Enhancement:</b>  <b>Key Vocabulary:</b> design criteria, man-made, natural, properties, structure, stable, shape, model, test</p>	<p><b>NC ref: Mechanisms</b>  <b>Focus: Fairground Wheels</b>  <b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Selecting a suitable linkage system to produce the desired motions.</li> <li>• Designing a wheel.</li> <li>• Selecting appropriate materials based on their properties.</li> <li>• Selecting materials according to their characteristics.</li> <li>• Following a design brief.</li> <li>• Evaluating different designs.</li> <li>• Testing and adapting a design.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• To know that different materials have different properties and are therefore suitable for different uses.</li> <li>• To know the features of a Ferris wheel include the wheel, frame, pods, a base, an axle and an axle holder.</li> <li>• To know that it is important to test my design as I go along so that I can solve any problems that may occur.</li> </ul> <p><b>Enhancement:</b> Scarborough Seafront Ferris Wheel  <b>Key Vocabulary:</b> design, design criteria, wheel, Ferris wheel, pods, Axle, axle holder, frame, mechanism</p>	<p><b>NC ref: Mechanisms</b>  <b>Focus: Making a Moving Monster</b>  <b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Creating a design criteria for a moving monster as a class.</li> <li>• Designing a moving monster for a specific audience in accordance with a design criteria.</li> <li>• Making linkages using card for levers and split pins for pivots.</li> <li>• Experimenting with linkages adjusting the widths, lengths and thicknesses of card used.</li> <li>• Cutting and assembling components neatly.</li> <li>• Evaluating own designs against design criteria.</li> <li>• Using peer feedback to modify a final design.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• To know that mechanisms are a collection of moving parts that work together as a machine to produce movement.</li> <li>• To know that there is always an input and an output in a mechanism</li> <li>• To know that an input is the energy that is used to start something working.</li> <li>• To know that an output is the movement that happens as a result of the input.</li> <li>• To know that a lever is something that turns on a pivot.</li> <li>• To know that a linkage mechanism is made up of a series of levers.</li> </ul> <p><b>Enhancement</b>  <b>Key Vocabulary:</b> axle, design criteria  Input, linkage, mechanical, output, pivot, wheel</p>
<p style="text-align: center;">3</p>	<p><b>NC ref: Cooking and Nutrition (Food)</b>  <b>Focus: Eating Seasonally</b>  <b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.</li> <li>• Knowing how to prepare themselves and a workspace to cook safely in, learning the basic rules to avoid food contamination.</li> <li>• Following the instructions within a recipe.</li> <li>• Establishing and using design criteria to help test and review dishes.</li> </ul>	<p><b>NC ref: Digital World</b>  <b>Focus: Electronic Charm</b>  <b>Skills:</b></p> <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> <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> </ul>	<p><b>NC ref: Structures</b>  <b>Focus: Constructing a Castle</b>  <b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Designing a castle with key features to appeal to a specific person/purpose.</li> <li>• Drawing and labelling a castle design using 2D shapes.</li> <li>• Designing and/or decorating a castle tower on CAD software.</li> <li>• Constructing a range of 3D geometric shapes using nets.</li> <li>• Creating special features for individual designs.</li> <li>• Making facades from a range of recycled materials.</li> </ul>

	<ul style="list-style-type: none"> <li>Describing the benefits of seasonal fruits and vegetables and the impact on the environment.</li> <li>Suggesting points for improvement when making a seasonal tart.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>To know that not all fruits and vegetables can be grown in the UK.</li> <li>To know that climate affects food growth.</li> <li>To know that vegetables and fruit grow in certain seasons.</li> <li>To know that cooking instructions are known as a 'recipe'.</li> <li>To know that imported food is food that has been brought into the country.</li> </ul> <p><b>Enhancement:</b> Take finished products over to Jazz Court for residents to evaluate.</p> <p><b>Key Vocabulary:</b> climate, diet, imported, ingredients, natural, processed, reared, recipe, seasonal, seasons, sugar</p>	<ul style="list-style-type: none"> <li>Applying functional features such as using foam to create soft buttons.</li> <li>Analysing and evaluating an existing product.</li> <li>Identifying the key features of a pouch.</li> </ul> <p><b>Knowledge:</b></p> <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> <p><b>Enhancement:</b></p> <p><b>Key Vocabulary:</b> smart wearables, product design, digital revolution, technology, analogue, digital, feature, function, digital world, Micro:bit, electronic products, program, loops, initiate, simulator, control, monitor, sense, template, develop, fasten, test, user, CAD (computer-aided design), point of sale, display, badge, stand, net, design requirements</p>	<ul style="list-style-type: none"> <li>Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design.</li> <li>Suggesting points for modification of the individual designs.</li> </ul> <p><b>Knowledge:</b></p> <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> <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> </ul> <p><b>Enhancement</b></p> <p><b>Key Vocabulary:</b> 2D, 3D, castle, design, key features, net, scoring, shape, stable, stiff, strong, structure, tab</p>
4	<p><b>NC ref:</b> Structures</p> <p><b>Focus:</b> Pavilions</p> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.</li> <li>Building frame structures designed to support weight.</li> <li>Creating a range of different shaped frame structures.</li> <li>Making a variety of free-standing frame structures of different shapes and sizes.</li> <li>Selecting appropriate materials to build a strong structure and for the cladding.</li> <li>Reinforcing corners to strengthen a structure.</li> <li>Creating a design in accordance with a plan.</li> <li>Learning to create different textural effects with materials.</li> </ul> <p><b>Knowledge:</b></p> <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 that can stand on its own.</li> <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> </ul> <p><b>Enhancement</b></p> <p><b>Key Vocabulary:</b> 3D shapes, Cladding, Design criteria, Innovative, Natural, Reinforce, Structure</p>	<p><b>NC ref:</b> Mechanical System</p> <p><b>Focus:</b> Making a Slingshot Car</p> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Designing a shape that reduces air resistance.</li> <li>Drawing a net to create a structure from.</li> <li>Choosing shapes that increase or decrease speed as a result of air resistance.</li> <li>Personalising a design.</li> <li>Measuring, marking, cutting and assembling with increasing accuracy.</li> <li>Making a model based on a chosen design.</li> <li>Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>To understand that all moving things have kinetic energy.</li> <li>To understand that kinetic energy is the energy that something (object/person) has by being in motion.</li> <li>To know that air resistance is the level of drag on an object as it is forced through the air.</li> <li>To understand that the shape of a moving object will affect how it moves due to air resistance.</li> </ul> <p><b>Enhancement:</b> Slingshot Car Tournament in school.</p> <p><b>Key Vocabulary:</b> chassis, energy, kinetic, mechanism, air resistance, design, structure, graphics, research, model, template</p>	<p><b>NC ref:</b> Electrical Systems</p> <p><b>Focus:</b> Torches</p> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.</li> <li>Making a torch with a working electrical circuit and switch.</li> <li>Using appropriate equipment to cut and attach materials.</li> <li>Assembling a torch according to the design and success criteria.</li> <li>Evaluating electrical products.</li> <li>Testing and evaluating the success of a final product.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>To understand that electrical conductors are materials which electricity can pass through.</li> <li>To understand that electrical insulators are materials which electricity cannot pass through.</li> <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> <p><b>Enhancement:</b></p> <p><b>Key Vocabulary:</b> battery, test, sketch, properties, bulb, buzzer, conductor, circuit, circuit diagram, electricity, insulator, series circuit, switch, component, design, design criteria, diagram, evaluation,</p>

			LED, model, shape, target audience, input, recyclable, theme, aesthetics, assemble, equipment, ingredients, packaging
5	<p><b>NC ref:</b> <b>Electrical Systems</b></p> <p><b>Focus:</b> Doodlers</p> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product.</li> <li>Developing design criteria based on findings from investigating existing products.</li> <li>Developing design criteria that clarifies the target user.</li> <li>Altering a product's form and function by tinkering with its configuration.</li> <li>Making a functional series circuit, incorporating a motor.</li> <li>Constructing a product with consideration for the design criteria</li> <li>Breaking down the construction process into steps so that others can make the product.</li> <li>Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses.</li> <li>Determining which parts of a product affect its function and which parts affect its form.</li> <li>Analysing whether changes in configuration positively or negatively affect an existing product.</li> <li>Peer evaluating a set of instructions to build a product.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>To know that, in a series circuit, electricity only flows in one direction.</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> <p><b>Enhancement:</b></p> <p><b>Key Vocabulary:</b> circuit component, configuration, current, develop, DIY, investigate, motor, motorised, problem solve, product, analysis, series circuit, stable, target, user</p>	<p><b>NC ref:</b> <b>Mechanical Systems</b></p> <p><b>Focus:</b> Making a Pop-up Book</p> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Skills: Designing a pop-up book which uses a mixture of structures and mechanisms.</li> <li>Naming each mechanism, input and output accurately.</li> <li>Storyboarding ideas for a book.</li> <li>Following a design brief to make a pop up book, neatly and with focus on accuracy.</li> <li>Making mechanisms and/or structures using sliders, pivots and folds to produce movement.</li> <li>Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.</li> <li>Evaluating the work of others and receiving feedback on own work.</li> <li>Suggesting points for improvement.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>To know that mechanisms control movement.</li> <li>To understand that mechanisms can be used to change one kind of motion into another.</li> <li>To understand how to use sliders, pivots and folds to create paper-based mechanisms.</li> <li>To know that a design brief is a description of what I am going to design and make.</li> <li>To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.</li> </ul> <p><b>Enhancement:</b> Share pop-up books with families and younger pupils</p> <p><b>Key Vocabulary:</b> design, input, motion, mechanism, criteria, research, reinforce, model</p>	<p><b>NC ref:</b> <b>Cooking and Nutrition</b></p> <p><b>Focus:</b> Developing a Recipe</p> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients.</li> <li>Writing an amended method for a recipe to incorporate the relevant changes to ingredients.</li> <li>Designing appealing packaging to reflect a recipe.</li> <li>Cutting and preparing recipes safely.</li> <li>Using equipment safely, including knives, hot pans and hobs.</li> <li>Knowing how to avoid cross-contamination.</li> <li>Following a step-by-step method carefully to make a recipe.</li> <li>Identifying the nutritional differences between different products and recipes.</li> <li>Identifying and describing healthy benefits of food groups.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues.</li> <li>To know that I can adapt a recipe to make it healthier by substituting ingredients.</li> <li>To know that I can use a nutritional calculator to see how healthy a food option is.</li> <li>To understand that 'cross-contamination' means that bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.</li> </ul> <p><b>Enhancement:</b> Create a meal to be used on the school menu as a 'Summer Special'</p> <p><b>Key Vocabulary:</b> beef, reared, processed, ethical, diet, ingredients, supermarket, farm, balanced</p>
6	<p><b>NC ref:</b> <b>Textiles</b></p> <p><b>Focus:</b> Waistcoats</p> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Designing a waistcoat in accordance with a specification and design criteria to fit a specific theme.</li> </ul>	<p><b>NC ref:</b> <b>Structures</b></p> <p><b>Focus:</b> Playgrounds</p> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Designing a playground featuring a variety of different structures, giving consideration to how the structures will be used.</li> </ul>	<p><b>NC ref:</b> <b>Digital World</b></p> <p><b>Focus:</b> Navigating the World</p> <p><b>Skills:</b></p> <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> </ul>

- Annotating designs.
- Using a template when pinning panels onto fabric.
- Marking and cutting fabric accurately, in accordance with a design.
- Sewing a strong running stitch, making small, neat stitches and following the edge.
- Tying strong knots.
- Decorating a waistcoat - attaching objects using thread and adding a secure fastening.
- Learning different decorative stitches.
- Sewing accurately with even regularity of stitches.
- Evaluating work continually as it is created.

### Knowledge:

- 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.

**Enhancement:** Visiting costume designer - SJT

**Key Vocabulary:** annotate, decorate, design, criteria, fabric, target customer, waistcoat, waterproof

- Considering effective and ineffective designs.
- 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.
- 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:

- To know that structures can be strengthened by manipulating materials and shapes.
- 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.

**Enhancement:** Visit Playgrounds in the local area.

**Key Vocabulary:** apparatus, design criteria, equipment, playground, landscape, features, cladding

- Developing a product idea through annotated sketches.
- Placing and manoeuvring 3D objects, using CAD.
- Changing the properties of, or combine one or more 3D objects, using CAD.
- 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.
- 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.
- 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

### Knowledge:

- 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.
- 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.

### Enhancement

**Key Vocabulary:** smart, smartphone, equipment, navigation, cardinal compass, application (apps), pedometer, GPS tracker, design brief, design criteria, client, function, program, duplicate, replica, loop, variable, value, if statement, Boolean, corrode, mouldable, lightweight, sustainable design, environmentally friendly, biodegradable, recyclable