



# Clifton Upon-Teme Primary School

## Whole School DT Progression of Technical Knowledge Document

| Year 1/2   | Skills                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| Mechanisms | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>Recognising and exploring everyday objects that have mechanisms.</li></ul> <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>Recognising everyday objects that use a slider mechanism (e.g. drawers, sliding doors, a paper trimmer).</li><li>Recognising everyday objects that utilise wheels and axles (shopping trolley, car, revolving door).</li><li>Recognising that wheels must be able to turn to work effectively.</li><li>Exploring everyday objects that use levers (e.g. scissors, tongs, door handle, stapler).</li></ul> | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>To know that many moving objects contain internal parts to help them function.</li><li>To know that mechanisms usually limit unwanted movement.</li></ul> <p><b>Key knowledge by unit</b></p> <ul style="list-style-type: none"><li>To know that a slider mechanism moves an object in a straight line (e.g. left/right, up/down).</li><li>To know that sliding mechanisms are designed to keep movement in one direction (e.g. using guides/rails etc).</li><li>To know that an axle allows the wheel to turn without falling off.</li><li>To know that a pivot is the part that a lever moves around.</li></ul> |
| Structure  | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>Recognising that different structures are used for different purposes.</li><li>Exploring the features of structures.</li><li>Describing structures as buildings or freestanding structures.</li></ul> <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>Making stable structures from card.</li><li>Creating supporting structures to aid stability.</li><li>Using stable objects, such as cylinders, to create structures.</li><li>Building a strong and stiff structure by folding paper.</li></ul>                                  | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>To know that a structure is something that has been made and put together.</li><li>To understand that the shape of a structure affects its strength.</li></ul> <p><b>Key knowledge by unit</b></p> <ul style="list-style-type: none"><li>To know that stable structures do not topple.</li><li>To know that shapes and structures with wide, flat bases or legs are the most stable.</li><li>To know that adding weight to the base of a structure can make it more stable.</li></ul>                                                                                                                             |



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|                       | <ul style="list-style-type: none"><li>• Folding to strengthen or stiffen.</li><li>• Comparing the stability of different shapes.</li><li>• Identifying the weakest part of a structure.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"><li>• To know that materials can be manipulated to improve strength and stiffness.</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>                                                                                                                                                                                                                                                                                                  |
| Textile               | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>• Discussing fabric properties.</li><li>• Threading large needles.</li><li>• Rehearsing sewing techniques with large needles and thick thread like wool.</li><li>• Sewing a running stitch in large-weave embroidery fabric or hessian.</li><li>• Beginning to sew stitches into a fabric.</li></ul> <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>• Creating patterns and following them with stitching.</li><li>• Spacing stitches evenly.</li><li>• Pinning fabric to a template.</li><li>• Selecting fabric for sewing.</li><li>• Sewing a running stitch, with evenly spaced, neat, even stitches to join fabric.</li></ul> | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>• To know that sewing is a method of joining fabric.</li></ul> <p><b>Key knowledge by unit</b></p> <ul style="list-style-type: none"><li>• To know that evenly spaced stitches help when following a pattern.</li><li>• To know that 'joining' 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 know that a template (or fabric pattern) is used to cut out the same shape multiple times.</li></ul> |
| Cooking and Nutrition | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>• Understanding where fruits and vegetables come from.</li><li>• Selecting foods to create a balanced recipe.</li><li>• Selecting foods based on their food group.</li></ul> <p><b>Key skills by unit</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><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 are any edible part of a plant (e.g. potatoes are roots, lettuce is leaves, cucumber is a fruit).</li></ul>                                                                                                                                                                                                                                                            |



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|  | <ul style="list-style-type: none"><li>• Chopping fruit and vegetables safely to make a smoothie.</li><li>• Juicing fruits safely to make a smoothie.</li><li>• Describing appearance, smell and taste.</li><li>• Chopping foods safely to make a wrap.</li><li>• Grating foods.</li><li>• Snipping smaller foods instead of cutting.</li></ul> | <ul style="list-style-type: none"><li>• To know that 'diet' means the food and drink that a person or animal usually eats.</li><li>• To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.</li><li>• To know that a balanced diet is eating foods from different food groups.</li></ul> <p><b>Key knowledge by unit</b></p> <ul style="list-style-type: none"><li>• To know that a fruit has seeds.</li><li>• To know that 'ingredients' means the items in a mixture or recipe.</li><li>• To know that different foods have different appearance, taste and smell.</li><li>• To know that kitchen equipment can be used to prepare foods.</li></ul> |
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# Clifton Upon-Teme Primary School

## Whole School DT Progression of Technical Knowledge Document

| Year 3/4   | Skills                                                                                                                                                                                                                                                                                                                                                                                                     | Knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| Mechanisms | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>Beginning to understand how mechanisms work.</li></ul> <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>Using a series of pivots to create linkages.</li><li>Combining levers to create linkages.</li><li>Recognising pneumatic systems in everyday objects (e.g. a car boot, an adjustable chair).</li></ul> | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>To understand that a mechanical system can allow us to move something more easily.</li><li>To know that mechanical systems have more than one mechanism that moves to make them work.</li><li>To know that mechanical systems are often hidden in products to make them look more appealing.</li></ul> <p><b>Key knowledge by unit</b></p> <ul style="list-style-type: none"><li>To know that pushing air can be used to move a mechanism.</li><li>To know that linkages can be used to create more movement in a mechanical system.</li><li>To know that a combination of mechanisms can improve a product.</li><li>To know that by using a mechanical system, they can make the car go further.</li><li>To know that either the wheels move around the axle or with the axle and the advantages and disadvantages of each.</li></ul> |
| Structure  | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>Beginning to understand how different structures are built.</li></ul> <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>Constructing a range of 3D shapes.</li><li>Stiffening structures.</li></ul>                                                                                                            | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>To know how a range of structures are built.</li><li>To know a shell structure is a hollow shape with a thin outer layer.</li><li>To know that 3D shapes can form structures.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |



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|         | <ul style="list-style-type: none"><li>Strengthening structures by ribbing.</li><li>Making a variety of free standing shell structures of different shapes and sizes.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"><li>To know that structures can be strengthened by manipulating materials and shapes.</li></ul> <b>Key knowledge by unit</b> <ul style="list-style-type: none"><li>To stiffen structures by layering.</li><li>To strengthen structures by layering materials (lamination).</li><li>To strengthen structures by ribbing.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Textile | <b>Key skills by area</b> <ul style="list-style-type: none"><li>Threading needles with greater independence.</li><li>Sewing with smaller needles to create smaller stitches.</li><li>Selecting similar or different colour thread to hide or show the stitch.</li></ul> <b>Key skills by unit</b> <ul style="list-style-type: none"><li>Creating a template.</li><li>Sewing cross stitch to decorate or join fabric.</li><li>Decorating fabric using appliqué.</li><li>Stuffing and sewing to finish a product.</li><li>Making and testing a paper template.</li><li>Incorporating a fastening to a design.</li><li>Sewing using a running stitch.</li></ul> | <b>Key knowledge by area</b> <ul style="list-style-type: none"><li>To know that smaller stitches with similar colour thread to the fabric can hide the stitching.</li><li>To know that thread of a different colour to the fabric will make the stitch more decorative.</li></ul> <b>Key knowledge by unit</b> <ul style="list-style-type: none"><li>To know that appliqué is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.</li><li>To know that when two edges of fabric have been joined together it is called a seam.</li><li>To know that it is important to leave space on the fabric for the seam.</li><li>To know that some products are turned inside out after sewing so the stitching is hidden.</li><li>To know that different fastening types are useful for different purposes.</li><li>To know that a fastening is something that holds two pieces of material together.</li></ul> |



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## Whole School DT Progression of Technical Knowledge Document

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| Cooking and Nutrition | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>Identifying foods with different nutritional properties.</li><li>Recognising the seasonality of foods.</li><li>Understanding that many foods are imported from other countries.</li></ul> <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>Following the instructions within a recipe.</li><li>Tasting seasonal ingredients.</li><li>Selecting seasonal ingredients.</li><li>Peeling ingredients safely.</li><li>Cutting safely with a vegetable knife.</li><li>Following a baking recipe, including the preparation of ingredients.</li><li>Cooking safely, following basic hygiene rules.</li></ul> | <p><b>Key knowledge by area</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 which has been brought into the country.</li><li>To know that similar coloured fruits and vegetables often have similar nutritional benefits.</li></ul> <p><b>Key knowledge by unit</b></p> <ul style="list-style-type: none"><li>To know that the appearance of food is as important as taste.</li><li>To know which foods are grown in the UK in a specified season.</li><li>To know which foods can be cut and peeled using equipment.</li><li>To know that the amount of an ingredient in a recipe is known as the 'quantity.'</li><li>To know that safety and hygiene are important when cooking.</li><li>To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping.</li></ul> |



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## Whole School DT Progression of Technical Knowledge Document

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| Electrical Systems | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>• Recognising and exploring everyday electrical products.</li></ul> <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>• Identifying some electrical components.</li><li>• Using batteries and other electrical components safely.</li><li>• Creating a working electrical circuit.</li><li>• Incorporating switches into circuits.</li></ul>                                              | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>• To know that an electrical system is a group of parts (components) that work together to transport electricity around a circuit.</li><li>• To know some common features of an electric product (e.g. switch, battery, plug, dials, buttons, etc).</li></ul> <p><b>Key knowledge by unit</b></p> <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> |
| Digital World      | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>• Beginning to use understanding from computing to control products.</li><li>• Begin to use a micro:bit as the starting point for a product.</li></ul> <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>• Using code to control button presses.</li><li>• Using code to sense light.</li><li>• Using code to monitor time.</li><li>• Using a micro:bit simulator to test code.</li></ul> | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>• To know that creating simple programs can help control products.</li><li>• To know some features of a micro:bit.</li></ul> <p><b>Key knowledge by unit</b></p> <ul style="list-style-type: none"><li>• To know that loops and variables can be used in programmable products.</li><li>• To know that a simulator is able to replicate the functions of an existing piece of technology.</li></ul>                                                                                                                                                                                                                        |



# Clifton Upon-Teme Primary School

## Whole School DT Progression of Technical Knowledge Document

| Year 5/6   | Skills                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| Mechanisms | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>• Naming which mechanisms work together to make a mechanical system.</li><li>• Recognising that there are different directions of movement.</li><li>• Understanding that some mechanical systems allow a small input force to be turned into a greater output force.</li><li>• Recognising that mechanisms can change one type of movement to another.</li></ul> <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>• Recognising mechanical systems that use gears in everyday objects (e.g. a bicycle, clock).</li><li>• Using cams to change motion as desired.</li></ul> | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>• To know that movement can be up and down, back and forth, side to side, circular.</li><li>• To know that there are different names for the types of movement.</li><li>• To know that some mechanisms change one type of movement to another.</li></ul> <p><b>Key knowledge by unit</b></p> <ul style="list-style-type: none"><li>• To know that gears and pulleys allow us to transfer movement and force from one part of a mechanical system to another.</li><li>• To know that gears allow us to increase the output of a mechanism.</li><li>• To know that cams, axles and followers work together to create movement.</li><li>• To understand that different cam shapes produce different movements.</li><li>• To know that cams allow us to change a rotary input to a linear output.</li><li>• To know that rotating the axles and cams makes the follower move.</li><li>• To understand that the cam profile changes the movement of the follower.</li></ul> |



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| Structure | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>Understanding how to reinforce structures to make them more stable.</li></ul> <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>Creating a frame structure using strong shapes, like triangles.</li><li>Identifying where a structure needs reinforcement.</li><li>Using triangulation to strengthen or stabilise a structure.</li></ul> | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>To know a frame structure supports or holds a shape, and is made up of strong parts joined together, like a skeleton or a climbing frame.</li><li>To know how to reinforce structures.</li><li>To know that triangles can be used to reinforce structures.</li></ul> <p><b>Key knowledge by unit</b></p> <ul style="list-style-type: none"><li>To know that adding materials to the corners of frames can strengthen the join.</li><li>To know that triangles can create strong and stable structures.</li><li>To know that bracing is a way of reinforcing a structure.</li></ul>                                                                                                                           |
| Textile   | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>Threading needles independently.</li><li>Beginning to follow simple patterns or templates that require accurate cutting or measuring.</li></ul>                                                                                                                                                                                                               | <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>Sewing a blanket stitch to join fabric.</li><li>Sewing using a blanket stitch with even a regular spaces between the stitches.</li><li>Using pins effectively to secure a template to fabric without creases or bulges.</li><li>Attaching objects like buttons using thread.</li><li>Tying strong knots.</li></ul> <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric.</li></ul> <p><b>Key knowledge by unit</b></p> <ul style="list-style-type: none"><li>To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric.</li></ul> |



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## Whole School DT Progression of Technical Knowledge Document

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|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"><li>• To know that complete products are sometimes made in parts that are sewn together.</li><li>• To know that consistently sized stitches improve the aesthetic of a product.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Cooking and Nutrition | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>• Understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients.</li><li>• Recognising that meat is farmed and reared.</li></ul> <p><b>Key skills by unit</b></p> <ul style="list-style-type: none"><li>• Adapting a traditional recipe.</li><li>• Cutting and preparing vegetables safely.</li><li>• Using equipment safely, including knives, hot pans and hobs.</li><li>• Following a step by step method carefully to make a recipe.</li><li>• Knowing how to avoid cross-contamination.</li><li>• Identifying the flavours of different foods.</li><li>• Pairing foods based on their flavours.</li></ul> | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>• To understand where meat comes from.</li><li>• To know that recipes can be adapted to suit nutritional needs and dietary requirements.</li><li>• To know that I can use a nutritional calculator to see how healthy a food option is.</li></ul> <p><b>Key knowledge by unit</b></p> <ul style="list-style-type: none"><li>• To know that adapting means changing ingredients.</li><li>• To know how the steps in a recipe fit together and what happens if they are changed.</li><li>• 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.</li><li>• To know that coloured chopping boards can prevent cross-contamination.</li><li>• To know that flavour is how a food or drink tastes.</li></ul> |
| Electrical Systems    | <p><b>Key skills by area</b></p> <ul style="list-style-type: none"><li>• Beginning to understand that electricity flows around a circuit.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>Key knowledge by area</b></p> <ul style="list-style-type: none"><li>• To know that an electric motor converts electricity into rotational movement.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |



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## Whole School DT Progression of Technical Knowledge Document

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|               | <ul style="list-style-type: none"><li>Using different components to produce different results from electrical systems.</li></ul> <b>Key skills by unit</b> <ul style="list-style-type: none"><li>Creating working electrical circuits with a wider variety of electrical components.</li><li>Deconstructing electrical systems to understand how they work.</li><li>Apply knowledge from science to improve the function of an electrical system.</li></ul> | <ul style="list-style-type: none"><li>To know a motorised product is one which uses a motor to function.</li></ul> <b>Key knowledge by unit</b> <ul style="list-style-type: none"><li>To know the names of components that can form an electrical system.</li></ul>                                                                                                                                                                                                                          |
| Digital World | <b>Key skills by area</b> <ul style="list-style-type: none"><li>Designing products that require an understanding from computing to work.</li><li>Understanding the functions of the micro:bit and use these when creating products.</li></ul> <b>Key skills by unit</b> <ul style="list-style-type: none"><li>Using code that triggers an alert such as a sound or light.</li></ul>                                                                         | <b>Key knowledge by area</b> <ul style="list-style-type: none"><li>To know that coding can complete tasks when used with a device such as a micro:bit.</li><li>To know the features of a micro:bit that are useful for the product.</li></ul> <b>Key knowledge by unit</b> <ul style="list-style-type: none"><li>To know that conditional statements (and, or, if) can be used to monitor and control products.</li><li>To know that some micro:bit functions can detect movement.</li></ul> |



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## Whole School DT Progression of Technical Knowledge Document

