

DT overview

	Structures	Cooking and nutrition	Textiles	Mechanisms	Mechanisms
Year 1	<p>Free standing structure Windmill</p> <p>Making</p> <ul style="list-style-type: none"> • Making stable structures from card, tape and glue • Learning how to turn 2D nets into 3D structures • Following instructions to cut and assemble the supporting structure of a windmill • Making functioning turbines and axles which are assembled into a main supporting structure <p>Technical</p> <ul style="list-style-type: none"> • To understand that the shape of materials can be changed to improve the strength and stiffness of structures <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 <ul style="list-style-type: none"> • 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 	<p>Fruit or vegetable? Where do fruit and vegetables grow? Smoothie OR fruit/ vegetable kebab</p> <p>Making</p> <ul style="list-style-type: none"> • Chopping fruit and vegetables safely to make a smoothie etc • Identifying if a food is a fruit or a vegetable <ul style="list-style-type: none"> • Learning where and how fruits and vegetables grow <p>Knowledge</p> <ul style="list-style-type: none"> • Understanding the difference between fruits and vegetables • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber) • To know that a blender is a machine which mixes ingredients together into a smooth liquid • To know that a fruit has seeds and a vegetable does not <ul style="list-style-type: none"> • To know that fruits grow on trees or vines • To know that vegetables can grow either above or below ground • To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber) 	<p>Use running stitch Puppets</p> <p>Making</p> <ul style="list-style-type: none"> • Cutting fabric neatly with scissors • Using joining methods to decorate a puppet • Sequencing steps for construction <p>Technical</p> <ul style="list-style-type: none"> • To know that ‘joining technique’ means connecting two pieces of material together <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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 	<p>Sliders Moving storybook</p> <p>Making</p> <ul style="list-style-type: none"> • Following a design to create moving models that use levers and sliders <p>Technical</p> <ul style="list-style-type: none"> • To know that a mechanism is the parts of an object that move together • To know that a slider mechanism moves an object from side to side • To know that a slider mechanism has a slider, slots, guides and an object • To know that bridges and guides are bits of card that purposefully restrict the movement of the slider 	<p>Wheels and axles Make a moving vehicle</p> <p>Making</p> <ul style="list-style-type: none"> • Adapting mechanisms <p>Technical</p> <ul style="list-style-type: none"> • To know that wheels need to be round to rotate and move • To understand that for a wheel to move it must be attached to a rotating axle • To know that an axle moves within an axle holder which is fixed to the vehicle or toy • To know that the frame of a vehicle (chassis) needs to be balanced
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<p>year 2</p>	<p>Exploring stability Build a baby's chair</p> <p>Making</p> <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 <p>Technical</p> <ul style="list-style-type: none"> • 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 	<p>Healthy and varied diet Hidden sugars</p> <p>Make a Tortilla wrap/ sandwich – healthy one</p> <p>Making</p> <ul style="list-style-type: none"> • Slicing food safely using the bridge or claw grip • Constructing a wrap that meets a design brief <p>Knowledge</p> <ul style="list-style-type: none"> • To know that 'diet' means the food and drink that a person or animal usually eats • To understand what makes a balanced diet • To know where to find the nutritional information on packaging • To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group • To know that nutrients are substances in food that all living things need to make energy, grow and develop • To know that 'ingredients' means the items in a mixture or recipe • To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy • To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars' 	<p>Use running stitch Make a pouch</p> <p>Making</p> <ul style="list-style-type: none"> • Selecting and cutting fabrics for sewing • Threading a needle • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric • Neatly pinning and cutting fabric using a template <p>Knowledge</p> <ul style="list-style-type: none"> • To know that sewing is a method of joining fabric • To know that different stitches can be used when sewing • To understand the importance of tying a knot after sewing the final stitch • To know that a thimble can be used to protect my fingers when sewing 	<p>Levers and linked levers Grabber as a monster</p> <p>Making</p> <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 <p>Technical</p> <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 	<p>Wheels and axles Fairground wheel</p> <p>Making</p> <ul style="list-style-type: none"> • Selecting materials according to their characteristics • Following a design brief <p>Technical</p> <ul style="list-style-type: none"> • To know that different materials have different properties and are therefore suitable for different uses
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	Structures	Cooking and nutrition	Textiles	Mechanisms	Electrical systems
Year 3	<p>Constructing a castle (link to work on the UK)</p> <p>Making</p> <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 <p>Technical</p> <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 	<p>Seasonal foods (link to English book Quills’s soup)</p> <p>Vegetable Soup</p> <p>Making</p> <ul style="list-style-type: none"> • Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination • Following the instructions within a recipe <p>Knowledge</p> <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 understand that imported foods travel from far away and this can negatively impact the environment • To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health • To know safety rules for using, storing and cleaning a knife safely 	<p>Join textiles.</p> <p>Cushion</p> <p>Making</p> <ul style="list-style-type: none"> • Following design criteria to create a cushion • Selecting and cutting fabrics with ease using fabric scissors • Threading needles with greater independence • Tying knots with greater independence • Sewing cross stitch to join fabric • Decorating fabric using appliqué • Completing design ideas with stuffing and sewing the edges <p>Knowledge</p> <ul style="list-style-type: none"> • To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric • To know that when two edges of fabric have been joined together it is called a seam • To know that it is important to leave space on the fabric for the seam • To understand that some products are turned inside out after sewing so the stitching is hidden 	<p>Pneumatics</p> <p>Moving monster</p> <p>Toy with a pneumatic system</p> <p>Making</p> <ul style="list-style-type: none"> • Creating a pneumatic system to create a desired motion • Building secure housing for a pneumatic system • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy • Selecting materials due to their functional and aesthetic characteristics • Manipulating materials to create different effects by cutting, creasing, folding, weaving <p>Technical</p> <ul style="list-style-type: none"> • To understand how pneumatic systems work • To understand that pneumatic systems can be used as part of a mechanism • To know that pneumatic systems operate by drawing in, releasing and compressing air 	<p>Simple circuits and switches (link to science unit of light)</p> <p>Torches</p> <p>Making</p> <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 <p>Technical</p> <ul style="list-style-type: none"> • 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 similar coloured fruits and vegetables often have similar nutritional benefits 			
	Structures	Cooking and nutrition	Textiles	Mechanisms	Digital world
Year 4	Frame structure Pavilion Making <ul style="list-style-type: none"> Creating a range of different shaped frame structures Making a variety of free-standing frame structures of different shapes and sizes Selecting appropriate materials to build a strong structure and for the cladding Reinforcing corners to strengthen a structure Creating a design in accordance with a plan Learning to create different textural effects with materials Technical <ul style="list-style-type: none"> To understand what a frame structure is To know that a 'free-standing' structure is one which can stand on its own 	Adapting a recipe Design a biscuit/ adapt a recipe Making <ul style="list-style-type: none"> Following a baking recipe Cooking safely, following basic hygiene rules Adapting a recipe Knowledge <ul style="list-style-type: none"> To know that the amount of an ingredient in a recipe is known as the 'quantity' To know that it is important to use oven gloves when removing hot food from an oven To know the following cooking techniques: sieving, creaming, rubbing method, cooling To understand the importance of budgeting while planning ingredients for biscuits 	Join textiles. Fastenings – book sleeve Making <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 sewing small neat stitches Incorporating fastening to a design Knowledge <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 <ul style="list-style-type: none"> To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions 	Chassis, wheels, axles, slingshot mechanism Slingshot car Making <ul style="list-style-type: none"> Measuring, marking, cutting and assembling with increasing accuracy Making a model based on a chosen design Technical <ul style="list-style-type: none"> 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. 	Micro-bits Micro-bit Electronic charm Making <ul style="list-style-type: none"> Using a template when cutting and assembling the pouch Following a list of design requirements Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch Applying functional features such as using foam to create soft buttons 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 Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm
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Year 5	Frame structures Arch/ beam structures Bridges (with wood) Making <ul style="list-style-type: none"> Making a range of different shaped beam bridges 	Adapt a recipe – nutritional value Menus for cultural events e.g. Diwali Making <ul style="list-style-type: none"> Cutting and preparing vegetables safely 	Create objects with a seam Learn a variety of stitches. Stuffed toy Making <ul style="list-style-type: none"> Using a template when cutting and assembling the pouch Following a list of design requirements 	Consolidate – structures/ levers/ sliders/ layers/ spacers Making a pop up book Making <ul style="list-style-type: none"> Following a design brief to make a pop up book, neatly and with focus on accuracy 	Circuits with a buzzer Steady hand game Making <ul style="list-style-type: none"> Constructing a stable base for a game Accurately cutting, folding and assembling a net

	<ul style="list-style-type: none"> Using triangles to create truss bridges that span a given distance and supports a load Building a wooden bridge structure Independently measuring and marking wood accurately Selecting appropriate tools and equipment for particular tasks Using the correct techniques to saws safely Identifying where a structure needs reinforcement and using card corners for support Explaining why selecting appropriating materials is an important part of the design process Understanding basic wood functional properties <p>Technical</p> <ul style="list-style-type: none"> To understand some different ways to reinforce structures To understand how triangles can be used to reinforce bridges To know that properties are words that describe the form and function of materials To understand why material selection is important based on their properties To understand the material (functional and aesthetic) properties of wood 	<ul style="list-style-type: none"> 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 <p>Knowledge</p> <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, including key welfare issues To know that I can adapt a recipe to make it healthier by substituting ingredients To know that I can use a nutritional calculator to see how healthy a food option is To understand that 'cross-contamination' means 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 	<ul style="list-style-type: none"> Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch Applying functional features such as using foam to create soft buttons <p>Technical</p> <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 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"> Making mechanisms and/or structures using sliders, pivots and folds to produce movement Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result <p>Technical</p> <ul style="list-style-type: none"> To know that mechanisms control movement To understand that mechanisms that can be used to change one kind of motion into another To understand how to use sliders, pivots and folds to create paper-based mechanisms 	<ul style="list-style-type: none"> Decorating the base of the game to a high quality finish Making and testing a circuit Incorporating a circuit into a base <p>Technical</p> <ul style="list-style-type: none"> To know the key components used to create a functioning circuit To understand that breaks in a circuit will stop it from working To understand that a series circuit only has one path for the electrical current to flow from positive to negative <ul style="list-style-type: none"> To know that we use symbols to represent components in a circuit diagram To know the names of the components in a basic series circuit: crocodile wires, LED (light-emitting diode), battery holder, battery, cell and buzzer To know that batteries contain acid, which can be dangerous if they leak
	Mechanisms	Food	Structures	Mechanisms	Digital world
Year 6	<p>Pulleys, levers and gears (link to year 5 science)</p> <p>Catapult etc based on invasion topic/</p> <p>Simple machines – pulleys, gears, levers, wedges and screws</p>	<p>Come dine with me</p> <p>Make a 3 course meal</p> <p>Making</p> <ul style="list-style-type: none"> Following a recipe, including using the correct quantities of each ingredient Adapting a recipe based on research 	<p>Playground</p> <p>Making</p> <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 	<p>Cams</p> <p>Automata toys CQ 403</p> <p>Making</p> <ul style="list-style-type: none"> Measuring, marking and checking the accuracy of the jelutong and dowel pieces required 	<p>Navigating the world – using Tinkercad (3D modelling)</p> <p>Making</p> <ul style="list-style-type: none"> Considering materials and their functional properties, especially those that are sustainable and

	<p>Making</p> <ul style="list-style-type: none"> • Assembling components accurately to make a stable frame • Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles • Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set • Measuring, marking, cutting and assembling with increasing accuracy • Making a model based on a chosen design <p>Technical</p> <ul style="list-style-type: none"> • To know that mechanisms control movement • To understand that mechanisms that can be used to change one kind of motion into another 	<ul style="list-style-type: none"> • Working to a given timescale • Working safely and hygienically with independence <p>Knowledge</p> <ul style="list-style-type: none"> • To know that 'flavour' is how a food or drink tastes • To know that many countries have 'national dishes' which are recipes associated with that country • To know that 'processed food' means food that has been put through multiple changes in a factory • To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides • To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork) 	<ul style="list-style-type: none"> • Using a range of materials to reinforce and add decoration to structures <p>Technical</p> <ul style="list-style-type: none"> • To know that structures can be strengthened by manipulating materials and shapes 	<ul style="list-style-type: none"> • Measuring, marking and cutting components accurately using a ruler and scissors • Assembling components accurately to make a stable frame • Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles • Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set <p>Technical</p> <ul style="list-style-type: none"> • To understand that the mechanism in an automata uses a system of cams, axles and followers • To understand that different shaped cams produce different outputs 	<p>recyclable (for example, cork and bamboo)</p> <ul style="list-style-type: none"> • Explaining material choices and why they were chosen as part of a product concept • Programming an N,E, S,W cardinal compass <p>Technical</p> <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
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