



| Class | Cycle | Autumn 2 | Spring 2 | Summer 2 | Additional Nutrition and Hydration Week |
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| Year 1 / 2 | A | <p>Structures: Constructing a Windmill</p> <ul style="list-style-type: none"> Learning the importance of a clear design criteria. <ul style="list-style-type: none"> Including individual preferences and requirements in a design. To understand that the shape of materials can be changed to improve the strength and stiffness of structures. 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. 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>Textiles: Puppets</p> <ul style="list-style-type: none"> Using a template to create a design for a puppet. <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"> Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. <ul style="list-style-type: none"> Sequencing steps for construction. | <p>Mechanisms / Mechanical Systems: Wheels and axles</p> <ul style="list-style-type: none"> Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move. <ul style="list-style-type: none"> Creating clearly labelled drawings which illustrate movement. 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. <ul style="list-style-type: none"> Adapting mechanisms. | <p>Cooking & Nutrition: Fruit and Vegetables</p> <ul style="list-style-type: none"> Designing smoothie carton packaging by-hand or on ICT software. Understanding the difference between fruits and vegetables. To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). To know that a blender is a machine which mixes ingredients together into a smooth liquid. To know that a fruit has seeds and a vegetable does not. To know that fruits grow on trees or vines. To know that vegetables can grow either above or below ground. To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber). |
| | B | <p>Structures: Baby bear's chair</p> <ul style="list-style-type: none"> Generating and communicating ideas using sketching and modelling. 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. 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>Textiles: Pouches</p> <ul style="list-style-type: none"> Designing a pouch. 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. <ul style="list-style-type: none"> Selecting and cutting fabrics for sewing. <ul style="list-style-type: none"> Threading a needle. Sewing running stitch, with evenly spaced, neat, even stitches to join fabric. Neatly pinning and cutting fabric using a template. | <p>Mechanisms / Mechanical Systems: Making a moving monster</p> <ul style="list-style-type: none"> Creating a 'class design criteria' for a moving monster. <ul style="list-style-type: none"> Designing a moving monster for a specific audience in accordance with a design criteria. To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. <ul style="list-style-type: none"> 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. Making linkages using card for levers and split pins for pivots. <ul style="list-style-type: none"> Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. Cutting and assembling components neatly. | <p>Cooking & Nutrition: A balanced diet</p> <ul style="list-style-type: none"> Designing a healthy wrap based on a food combination which work well together. To know that 'diet' means the food and drink that a person or animal usually eats. To understand what makes a balanced diet. <ul style="list-style-type: none"> 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. |

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| | | | | | <ul style="list-style-type: none"> To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'. |
| Year 3 / 4 | A | <p>Structures: Constructing a Castle</p> <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. To understand that wide and flat based objects are more stable. To understand the importance of strength and stiffness in structures. Constructing a range of 3D geometric shapes using nets. Creating special features for individual designs. <ul style="list-style-type: none"> Making facades from a range of recycled materials. | <p>Textiles: Cushions</p> <ul style="list-style-type: none"> Designing and making a template from an existing cushion and applying individual design criteria. 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. Following design criteria to create a cushion. Selecting and cutting fabrics with ease using fabric scissors. Threading needles with greater independence. <ul style="list-style-type: none"> Tying knots with greater independence. <ul style="list-style-type: none"> Sewing cross stitch to join fabric. Decorating fabric using appliqué. Completing design ideas with stuffing and sewing the edges. | <p>Mechanisms / Mechanical Systems: Pneumatic toys</p> <ul style="list-style-type: none"> Designing a toy which uses a pneumatic system. Developing design criteria from a design brief. Generating ideas using thumbnail sketches and exploded diagrams. Learning that different types of drawings are used in design to explain ideas clearly. 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. 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>Cooking & Nutrition: Eating seasonally</p> <ul style="list-style-type: none"> Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. 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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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. To know that similar coloured fruits and vegetables often have similar nutritional benefits. |
| | B | <p>Structures: Pavilions</p> <ul style="list-style-type: none"> Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. Building frame structures designed to support weight. <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. Creating a range of different shaped frame structures. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> Reinforcing corners to strengthen a structure. Creating a design in accordance with a plan. Learning to create different textural effects with materials. | <p>Electrical Systems: Torches</p> <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. 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. 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>Mechanisms / Mechanical Systems: Making a slingshot car</p> <ul style="list-style-type: none"> Designing a shape that reduces air resistance. <ul style="list-style-type: none"> Drawing a net to create a structure from. Choosing shapes that increase or decrease speed as a result of air resistance. <ul style="list-style-type: none"> Personalising a design. 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. Measuring, marking, cutting and assembling with increasing accuracy/ Making a model based on a chosen design. | <p>Cooking & Nutrition: Adapting a recipe</p> <ul style="list-style-type: none"> Designing a biscuit within a given budget, drawing upon previous taste testing. 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. <ul style="list-style-type: none"> To know the following cooking techniques: sieving, creaming, rubbing method, cooling. To understand the importance of budgeting while planning ingredients for biscuits. |
| Year 5 / 6 | A | <p>Mechanisms / Mechanical Systems: Pop-up book</p> <ul style="list-style-type: none"> Designing a pop-up book which uses a mixture of structures and mechanisms. | <p>Electrical Systems: Electronic Easter Card</p> <ul style="list-style-type: none"> Designing an electronic greetings card with a copper track circuit and components. | <p>Digital: Monitoring devices</p> <ul style="list-style-type: none"> Researching (books, internet) for a particular (user's) animal's needs. Developing design criteria based on research. | <p>Cooking & Nutrition: What could be healthier?</p> <ul style="list-style-type: none"> Adapting a traditional recipe, understanding that the nutritional value of |

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| | <ul style="list-style-type: none"> Naming each mechanism, input and output accurately. <ul style="list-style-type: none"> Storyboarding ideas for a book. 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. Following a design brief to make a pop up book, neatly and with focus on accuracy. Making mechanisms and/or structures using sliders, pivots and folds to produce movement. Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. | <ul style="list-style-type: none"> Creating a labelled circuit diagram showing positive and negative parts in relation to the LED and the battery. Writing design criteria for an electronic greeting card. Compiling a moodboard relevant to my chosen theme, purpose and recipient. To know the key components used to create a functioning circuit. To know that copper is a conductor and can be used as part of a 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. <ul style="list-style-type: none"> Making a functional series circuit. Creating an electronics greeting card, referring to a design criteria. Mapping out where different components of the circuit will go. | <ul style="list-style-type: none"> Generating multiple housing ideas using building bricks. Understanding what a virtual model is and the pros and cons of traditional and CAD modelling. Placing and manoeuvring 3D objects, using CAD. Changing the properties of, or combine one or more 3D objects, using CAD. <ul style="list-style-type: none"> To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record. To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose. To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met. Understanding the functional and aesthetic properties of plastics <ul style="list-style-type: none"> Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range. | <p>a recipe alters if you remove, substitute or add additional ingredients.</p> <ul style="list-style-type: none"> Writing an amended method for a recipe to incorporate the relevant changes to ingredients. Designing appealing packaging to reflect a recipe. To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues. <ul style="list-style-type: none"> 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. |
| B | <p><u>Structures: Playgrounds</u></p> <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. To know that structures can be strengthened by manipulating materials and shapes. 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. | <p><u>Electrical Systems: Steady hand game</u></p> <ul style="list-style-type: none"> Designing a steady hand game - identifying and naming the components required. <ul style="list-style-type: none"> Drawing a design from three different perspectives. Generating ideas through sketching and discussion. <ul style="list-style-type: none"> Modelling ideas through prototypes. To know that batteries contain acid, which can be dangerous if they leak. To know the names of the components in a basic series circuit including a buzzer. <ul style="list-style-type: none"> Constructing a stable base for a game. Accurately cutting, folding and assembling a net. Decorating the base of the game to a high-quality finish. Making and testing a circuit Incorporating a circuit into a base. | <p><u>Digital: Navigating the World</u></p> <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 combine one or more 3D objects, using CAD. <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. <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. | <p><u>Cooking & Nutrition: Come dine with us</u></p> <ul style="list-style-type: none"> Writing a recipe, explaining the key steps, method and ingredients. <ul style="list-style-type: none"> Including facts and drawings from research undertaken. To know that 'flavour' is how a food or drink tastes. <ul style="list-style-type: none"> 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). |