



Aim High....Fly High!

Design & Technology Curriculum – Implementation Plan

The mapping table below shows where curriculum objectives related to the subject area above are covered. This table is intended as guidance and may be modified according to the needs/experiences of individual cohorts of learners. The four ‘Big Ideas’ for our DT curriculum – Design, Make, Evaluate, Technical Knowledge – are interwoven throughout the topics below..

Cycle A

EYFS	<u>Autumn / Spring / Summer</u>				
	<p>Three and Four-Year-Olds</p> <p><i>Personal, Social and Emotional Development</i></p> <ul style="list-style-type: none"> • Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them. <p><i>Physical Development</i></p> <ul style="list-style-type: none"> • Use large-muscle movements to wave flags and streamers, paint and make marks • Choose the right resources to carry out their own plan. • Use one-handed tools and equipment, for example, making snips in paper with scissors. <p><i>Understanding the World</i></p> <ul style="list-style-type: none"> • Explore how things work. <p><i>Expressive Arts and Design</i></p> <ul style="list-style-type: none"> • Make imaginative and complex ‘small worlds’ with blocks and construction kits, such as a city with different buildings and a park • Explore different materials freely, in order to develop their ideas about how to use them and what to make • Develop their own ideas and then decide which materials to use to express them. • Create closed shapes with continuous lines, and begin to use these shapes to represent objects. <p><u>Reception</u></p> <p><i>Physical Development</i></p> <ul style="list-style-type: none"> • Progress towards a more fluent style of moving, with developing control and grace. • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. • Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor. <p><i>Expressive Arts and Design</i></p> <ul style="list-style-type: none"> • Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills. <p><u>ELG</u></p> <p><i>Physical Development</i></p> <p><i>Fine Motor Skills</i></p> <ul style="list-style-type: none"> • Use a range of small tools, including scissors, paintbrushes and cutlery. <p><i>Expressive Arts and Design</i></p> <p><i>Creating with Materials</i></p> <ul style="list-style-type: none"> • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Share their creations, explaining the process they have used. 				
KS1 Y1/2	<u>Autumn 2</u>	<u>Spring 1 Year 1</u>	<u>Spring 2 Year 2</u>	<u>Summer 1 Year 1</u>	<u>Summer 2 Year 2</u>

NC	<i>build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users</i> <i>critique, evaluate and test their ideas and products and the work of other</i>	<i>build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users</i> <i>critique, evaluate and test their ideas and products and the work of other</i>		<i>Understand and apply the principles of nutrition and learn how to cook.</i>	
	<p align="center"><u>Year 1 – Mechanisms – Wheels & Axels</u></p> <p>Design Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. • Creating clearly labelled drawings that illustrate movement.</p> <p>Make Adapting mechanisms, when: • they do not work as they should. • to fit their vehicle design. • to improve how they work after testing their vehicle.</p> <p>Evaluate Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move.</p> <p>Technical Knowledge 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.</p> <p align="center"><u>Year 2 – Structure ‘Baby Bear’s Chair’</u></p> <p>Design Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects</p> <p>Make 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> <p>Evaluate Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure.</p> <p>Technical Knowledge To know that shapes and structures with wide, flat bases or legs are the most stable. • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a ‘stable’ structure is one which is firmly fixed and unlikely to change or move. • To know that a ‘strong’ structure is one which does not break easily. • To know that a ‘stiff’ structure or material is one which does not bend easily</p>	<p align="center"><u>Textiles - Puppets</u></p> <p>Design Using a template to create a design for a puppet.</p> <p>Make Cutting fabric neatly with scissors. Decorating a pouch using fabric glue Sequencing steps for construction.</p> <p>Evaluate Reflecting on a finished product, explaining likes and dislikes. Troubleshooting scenarios posed by teacher. • Evaluating the quality of the stitching on others’ work. • Discussing as a class, the success of their stitching against the success criteria. • Identifying aspects of their peers’ work that they particularly like and why.</p>	<p align="center"><u>Textiles - Puppets</u></p> <p>Design Design a puppet</p> <p>Make Selecting and cutting fabric neatly with scissors. Decorating a pouch using running stitch. Sequencing steps for construction. Threading needle and neatly pinning and cutting fabric using a template.</p> <p>Evaluate Troubleshooting scenarios posed by teacher. • Evaluating the quality of the stitching on others’ work. • Discussing as a class, the success of their stitching against the success criteria. • Identifying aspects of their peers’ work that they particularly like and why.</p>	<p align="center"><u>Year 1 - Food – Fruit & Vegetables</u></p> <p>Design Designing smoothie carton packaging by-hand or on ICT software.</p> <p>Make Chopping fruit and vegetables safely to make a smoothie.</p> <p>Evaluate Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging.</p> <p>Technical Knowledge 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).</p>	<p align="center"><u>Year 2 – A balanced diet</u></p> <p>Design Designing a healthy wrap based on a food combination which work well together</p> <p>Make Slicing food safely using the bridge or claw grip. • Constructing a wrap that meets a design brief.</p> <p>Evaluate Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. • Evaluating which grip was most effective.</p> <p>Technical Knowledge 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>
Year 3/4	<u>Autumn 2</u>	<u>Spring 1 Year 3</u>	<u>Spring 2 Year 4</u>	<u>Summer 1 Year 3</u>	<u>Summer 2 Year 4</u>
NC	<i>build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users</i> <i>critique, evaluate and test their ideas and products and the work of other</i>	<i>Understand and apply the principles of nutrition and learn how to cook.</i>		<i>build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users</i> <i>critique, evaluate and test their ideas and products and the work of other</i>	
	<p align="center"><u>Textiles - Cross-stitch and appliqué – Cushions (& Fastenings Yr4)</u></p> <p>Design Yr 3 - Designing and making a template from an existing cushion and applying individual design criteria. Yr 4 - Writing design criteria for product,</p>	<p align="center"><u>Food – Eating Seasonally</u></p> <p>Design Creating a healthy and nutritious recipe for a <u>savoury</u> tart using seasonal ingredients, considering the taste,</p>	<p align="center"><u>Food – Eating Seasonally</u></p> <p>Design Creating a healthy and nutritious recipe for a tart within a given budget using seasonal ingredients, considering the</p>	<p align="center"><u>Structures - Castles</u></p> <p>Design 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</p>	<p align="center"><u>Structures - Castles</u></p> <p>Design 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</p>

	<p>Make Yr 3 - 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. Yr 4 - Making and testing a paper template with accuracy and in keeping with the design criteria. • Measuring, marking and cutting fabric using a paper template. • Selecting a stitch style to join fabric. • Working neatly by sewing small, straight stitches. • Incorporating a fastening to a design.</p> <p>Evaluate Yr 3 - Evaluating an end product and thinking of other ways in which to create similar items. • Testing and evaluating an end product against the original design criteria. • Deciding how many of the criteria should be met for the product to be considered successful. • Suggesting modifications for improvement. • Articulating the advantages and disadvantages of different fastening types.</p> <p>Technical Knowledge Yr3 - To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. •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. Yr4 - To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro.</p>	<p>texture, smell and appearance of the dish.</p> <p>Make 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> <p>Evaluate Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart.</p> <p>Technical Knowledge 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>	<p>taste, texture, smell and appearance of the dish.</p> <p>Make Following a baking recipe, from start to finish, including the preparation of ingredients. • Cooking safely, following basic hygiene rules. • Adapting a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet).</p> <p>Evaluate Evaluating a recipe, considering: taste, smell, texture and appearance. • Describing the impact of the budget on the selection of ingredients. • Evaluating and comparing a range of food products. • Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins).</p> <p>Technical Knowledge 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</p>	<p>shapes that will create the features - materials needed and colours. • Designing and/or decorating a castle tower on CAD software.</p> <p>Make Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials.</p> <p>Evaluate Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs.</p> <p>Technical Knowledge To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures.</p>	<p>shapes that will create the features - materials needed and colours. • Designing and/or decorating a castle tower on CAD software.</p> <p>Make Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials. Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials.</p> <p>Evaluate Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs.</p> <p>Technical Knowledge To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures.</p>
Year 5/6	Autumn 2	Spring 1 Year 5	Spring 2 Year 6	Summer 1 Year 5	Summer 2 Year 6
NC	<i>build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users</i> <i>critique, evaluate and test their ideas and products and the work of other</i>	<i>build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users</i> <i>critique, evaluate and test their ideas and products and the work of other</i>		<i>Understand and apply the principles of nutrition and learn how to cook.</i>	

	<p style="text-align: center;"><u>Textiles – Stuffed Toys</u></p> <p>Design Yr 5 - Designing a stuffed toy, considering the main component shapes required and creating an appropriate template. • Considering the proportions of individual components. Yr 6 – Design in accordance to a specification linked to set of design criteria. • Annotating designs, to explain their decisions.</p> <p>Make Yr 5 - Creating a 3D stuffed toy from a 2D design. • Measuring, marking and cutting fabric accurately and independently . • Creating strong and secure blanket stitches when joining fabric. • Threading needles independently. • Using appliqué to attach pieces of fabric decoration. • Sewing blanket stitch to join fabric. • Applying blanket stitch so the spaces between the stitches are even and regular. Yr 6 – Using a template when cutting fabric to ensure they achieve the correct shape. • Using pins effectively to secure a template to fabric without creases or bulges. • Marking and cutting fabric accurately, in accordance with their design. • Sewing a strong running stitch, making small, neat stitches and following the edge. • Tying strong knots. • Decorating toy , attaching features (such as appliqué) using thread. • Finishing the toy with a secure fastening (such as buttons). • Learning different decorative stitches. • Sewing accurately with evenly spaced, neat stitches.</p> <p>Evaluate Both - Testing and evaluating an end product and giving point for further improvements.</p> <p>Technical Knowledge Yr 5 - To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. • To understand that it is easier to finish simpler designs to a high standard. • To know that soft toys are often made by creating appendages separately and then attaching them to the main body. • To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely. Year 6 - 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.</p>	<p style="text-align: center;"><u>Mechanical Systems – Pop up Book</u></p> <p>Design • Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book.</p> <p>Make 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.</p> <p>Evaluate Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement.</p> <p>Technical Knowledge To know that mechanisms control movement. • To understand that mechanisms 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.</p>	<p style="text-align: center;"><u>Mechanical Systems – Pop up Book</u></p> <p>Design • Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book.</p> <p>Make 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. Measuring, marking and cutting components accurately using a ruler and scissors</p> <p>Evaluate Evaluating the work of others and receiving feedback on own work. • Suggesting and applying points for improvement. Describing changes they would make/do if they were to do the project again.</p> <p>Technical Knowledge To know that mechanisms control movement. • To understand that mechanisms 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.</p>	<p style="text-align: center;"><u>Food – What could be healthier?</u></p> <p>Design Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe.</p> <p>Make Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe.</p> <p>Evaluate Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups.</p> <p>Technical Knowledge 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 bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.</p>	<p style="text-align: center;"><u>Food – What could be healthier?</u></p> <p>Design Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe.</p> <p>Make Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe.</p> <p>Evaluate Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups. • Suggesting and writing up points of improvements when scoring others’ dishes, and when evaluating their own throughout the planning, preparation and cooking process. • Evaluating health and safety in production to minimise cross contamination.</p> <p>Technical Knowledge 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 bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects</p>
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Cycle B

<u>Year 1/2</u>	<u>Autumn 1</u> <u>Year 1</u>	<u>Autumn 2</u> <u>Year 2</u>	<u>Spring 1</u> <u>Year 1</u>	<u>Spring 2</u> <u>Year 2</u>	<u>Summer 1</u> <u>Year 1</u>	<u>Summer 2</u> <u>Year 2</u>
<u>NC</u>	<i>build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users</i>		<i>Understand and apply the principles of nutrition and learn how to cook.</i>		<i>build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users</i>	

	critique, evaluate and test their ideas and products and the work of other			critique, evaluate and test their ideas and products and the work of other		
	<p><u>Mechanism</u> <u>Making a moving story book</u></p> <p>Design Explaining how to adapt mechanisms, using bridges or guides to control the movement. • Designing a moving story book for a given audience.</p> <p>Make Following a design to create moving models that use levers and sliders.</p> <p>Evaluate Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. • Reviewing the success of a product by testing it with its intended audience</p> <p>Technical Knowledge 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>	<p><u>Mechanism</u> <u>Fairground Wheels</u></p> <p>Design Selecting a suitable linkage system to produce the desired motion. • Designing a wheel.</p> <p>Make Selecting materials according to their characteristics. • Following a design brief.</p> <p>Evaluate Evaluating different designs. • Testing and adapting a design.</p> <p>Technical Knowledge To know that different materials have different properties and are therefore suitable for different uses.</p>	<p><u>Year 1 - Food – Fruit & Vegetables</u></p> <p>Design Designing smoothie carton packaging by-hand or on ICT software.</p> <p>Make Chopping fruit and vegetables safely to make a smoothie.</p> <p>Evaluate Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging.</p> <p>Technical Knowledge 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).</p>	<p><u>Year 2 – A balanced diet</u></p> <p>Design Designing a healthy wrap based on a food combination which work well together</p> <p>Make Slicing food safely using the bridge or claw grip. • Constructing a wrap that meets a design brief.</p> <p>Evaluate Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. • Evaluating which grip was most effective.</p> <p>Technical Knowledge 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>	<p><u>Year 1 – Structures – Windmills</u></p> <p>Design Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design.</p> <p>Make 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> <p>Evaluate Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn’t. • Suggest points for improvements.</p> <p>Technical Knowledge 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.</p>	<p><u>Year 2 – Structure ‘Baby Bear’s Chair’</u></p> <p>Design Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects</p> <p>Make 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> <p>Evaluate Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure.</p> <p>Technical Knowledge To know that shapes and structures with wide, flat bases or legs are the most stable. • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a ‘stable’ structure is one which is firmly fixed and unlikely to change or move. • To know that a ‘strong’ structure is one which does not break easily. • To know that a ‘stiff’ structure or material is one which does not bend easily.</p>
Year 3 / 4	<u>Autumn Term</u> <u>Year 3</u>	<u>Autumn Term</u> <u>Year 4</u>	<u>Spring Term</u> <u>Year 3</u>	<u>Spring Term</u> <u>Year 4</u>	<u>Summer Term</u> <u>Year 3</u>	<u>Summer Term</u> <u>Year 4</u>
NC	build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users critique, evaluate and test their ideas and products and the work of other		build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users critique, evaluate and test their ideas and products and the work of other		build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users critique, evaluate and test their ideas and products and the work of other	

Year 3/4	<p><u>Electrical systems Posters</u></p> <p>Design Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas. • Generate a final design for the electric poster with consideration to the client’s needs and design criteria. • Design an electric poster that fits the requirements of a given brief. • Plan the positioning of the bulb (circuit component) and its purpose.</p> <p>Make Create a final design for the electric poster. • Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear. • Measure and mark materials out using a template or ruler. • Fit an electrical component (bulb). • Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge).</p> <p>Evaluate Learning to give and accept constructive criticism on own work and the work of others. • Testing the success of initial ideas against the design criteria and justifying opinions. • Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs.</p> <p>Technical Knowledge To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. • To understand common features of an electric product (switch, battery or plug, dials, buttons etc.). • To list examples of common electric products (kettle, remote control etc.). • To understand that an electric product uses an electrical system to work (function). • To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.</p>	<p><u>Electrical systems Posters</u></p> <p>Design Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas. • Generate a final design for the electric poster with consideration to the client’s needs and design criteria. • Design an electric poster that fits the requirements of a given brief. • Plan the positioning of the bulb (circuit component) and its purpose.</p> <p>Make Create a final design for the electric poster. • Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear. • Measure and mark materials out using a template or ruler. • Fit an electrical component (bulb). • Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge).</p> <p>Evaluate Learning to give and accept constructive criticism on own work and the work of others. • Testing the success of initial ideas against the design criteria and justifying opinions. • Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs.</p> <p>Technical Knowledge To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. • To understand common features of an 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materials to create different effects by cutting, creasing, folding and weaving.</p> <p>Evaluate Using the views of others to improve designs. • Testing and modifying the outcome, suggesting improvements. • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client</p> <p>Technical Knowledge 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>	<p><u>Mechanical Systems Pneumatic toys</u></p> <p>Design 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.</p> <p>Make Creating a pneumatic system to create a desired motion. • Building secure housing for a pneumatic system. • Using syringes and balloons to 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point of sale badge.</p> <p>Make 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. • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.</p> <p>Evaluate Analysing and evaluating an existing product. • Identifying the key features of a pouch.</p> <p>Technical Knowledge 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.</p>	<p><u>Digital World Electronic Charm</u></p> <p>Design Problem solving by suggesting potential features on a Micro: bit and justifying my ideas. • Developing design ideas for a technology pouch. • Drawing and manipulating 2D shapes, using 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Year 5/6	Autumn Term Year 6	Autumn Term Year 5	Spring Term Year 6	Spring Term Year 5	Summer Term Year 6	Summer Term Year 5
NC	build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users critique, evaluate and test their ideas and products and the work of other		build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users critique, evaluate and test their ideas and products and the work of other		build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users critique, evaluate and test their ideas and products and the work of other	
	Digital World: Monitoring Devices Design Researching (books, internet) for a particular (user’s) animal’s needs. • Developing design criteria based on research. • 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 combining one or more 3D objects, using CAD. Make Understanding the functional and aesthetic properties of plastics. • Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range Evaluate Stating an event or fact from the last 100 years of plastic history. • Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices. • Explaining key functions in my program (audible alert, visuals). • Explaining how my product would be useful for an animal carer including programmed features. Technical Knowledge 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.	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Electrical Systems Doodlers Design Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. • Developing design criteria based on findings from investigating existing products. • Developing design criteria that clarifies the target user. Make Altering a product’s form and function by tinkering with its configuration. • Making a functional series circuit, incorporating a motor. • Constructing a product with consideration for the design criteria. • Breaking down the construction process into steps so that others can make the product. Evaluate Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. • Determining which parts of a product affect its function and which parts affect its form. • Analysing whether changes in configuration positively or negatively affect an existing product. • Peer evaluating a set of instructions to build a product. Technical Knowledge To know that series circuits only have one direction for the electricity to flow. • To know when there is a break in a series circuit, all components turn off. • To know that an electric motor converts electrical energy into rotational movement, causing the motor’s axle to spin. • To know a motorised product is one which uses a motor to function.	Electrical Systems Doodlers Design Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. • Developing design criteria based on findings from investigating existing products. • Developing design criteria that clarifies the target user. Make Altering a product’s form and function by tinkering with its configuration. • Making a functional series circuit, incorporating a motor. • Constructing a product with consideration for the design criteria. • Breaking down the construction process into steps so that others can make the product. 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Make Making a range of different shaped beam bridges. • Using triangles to create truss bridges that span a given distance and support 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. Yr 6 - Using a range of materials to reinforce and add decoration to structures Evaluate Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. • Suggesting points for improvements for own bridges and those designed by others. Technical Information 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	Structures Bridges Design Designing a stable structure that is able to support weight. • Creating a frame structure with a focus on triangulation. Make Making a range of different shaped beam bridges. • Using triangles to create truss bridges that span a given distance and support 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. 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					materials. • To understand why material selection is important based on properties. • To understand the material (functional and aesthetic) properties of wood.	materials. • To understand why material selection is important based on properties. • To understand the material (functional and aesthetic) properties of wood.
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