

Please note that the skills are developed across 2 years depending on units taught (see Long Term Plan document). Year 3&4 are a mixed class and so will cover units biannually on rotation.

EYFS

- Explore and play with a wide range of media and materials.
- Develop understanding, self-expression, vocabulary and ability to communicate through the arts.
- Interpret and appreciate what they hear, respond to and observe.

	Skills	Year 1/2	Year 3/4	Year 5/6
Structure	Design	<ul style="list-style-type: none"> • Learning the importance of a clear design criteria • Including individual preferences and requirements in a design • Generating and communicating ideas using sketching and modelling • Learning about different types of structures, found in the natural world and in everyday objects 	<ul style="list-style-type: none"> • Designing with key features to appeal to a specific person/purpose • Drawing and labelling a design including the materials and colours • Designing and/or decorating using a computer programme. • Designing a stable 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"> • Designing a stable structure that is able to support weight (viking boat model) • Creating frame structure with focus on triangulation • Designing a structure featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs
	Make	<ul style="list-style-type: none"> • Making stable tudor buildings from card, tape and glue • Following instructions to cut and assemble a supporting structure. 	<ul style="list-style-type: none"> • Constructing a range of 3D geometric shapes using nets • Creating special features for individual designs 	<ul style="list-style-type: none"> • Selecting appropriate tools and equipment for particular tasks • Using the correct techniques to saws safely

		<ul style="list-style-type: none"> • Making a tudor building according to design criteria • Creating joints and structures from paper/card and tape 	<ul style="list-style-type: none"> • Making facades from a range of recycled materials • 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. • Creating a design in accordance with a plan • Learning to create different textural effects with materials • Making a range of different shaped beam bridges • 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 	<ul style="list-style-type: none"> • Identifying where a structure needs reinforcement. • Explaining why selecting appropriating materials is an important part of the design process <ul style="list-style-type: none"> • Understanding basic wood functional properties • Building a range of 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>Evaluate</p>	<ul style="list-style-type: none"> • Evaluating a tudor house according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't • Suggest points for 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Improving a design plan based on peer evaluation • Testing and adapting a design to improve it as it is developed

		<p>improvements</p> <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Describing what characteristics of a design and construction made it the most effective • 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 	<ul style="list-style-type: none"> • Identifying what makes a successful structure
<p>Mechanisms/ Mechanical systems</p>	<p>Design</p>	<ul style="list-style-type: none"> • Explaining how to adapt mechanisms • Designing a moving story book for a given audience • Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move • Creating clearly labelled drawings which illustrate movement • Creating a class design criteria for a space buggy • Designing a space buggy for a specific audience in accordance with a design criteria 	<p>Designing a toy which uses a pneumatic system</p> <ul style="list-style-type: none"> • 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 • Designing a shape that reduces air resistance • Drawing a net to create a structure from • Choosing shapes that increase or decrease speed as a result of air 	<ul style="list-style-type: none"> • 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 • Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement • Understanding how linkages change the direction of a force • Making things move at the same time • Understanding and drawing cross-sectional diagrams to show the inner-workings of the automata

		<ul style="list-style-type: none"> • Selecting a suitable linkage system to produce the desired motions <p>Designing a wheel Selecting appropriate materials based on their properties</p>	<p>resistance</p> <ul style="list-style-type: none"> • Personalising a design 	
	<p>Make</p>	<ul style="list-style-type: none"> • Following a design to create moving models that use levers and sliders • Adapting mechanisms • 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 • Selecting materials according to their characteristics • Follow 	<ul style="list-style-type: none"> • Creating a pneumatic system to create a desired motion • 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 • Measuring, marking, cutting and assembling with increasing accuracy • Making a model based on a chosen design 	<ul style="list-style-type: none"> • 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 checking the accuracy of the jelutong and dowel pieces required • 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>Evaluate</p>	<ul style="list-style-type: none"> • 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 • Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move • Evaluating own designs against design criteria • Using peer feedback to modify a final design • Evaluating different designs • Testing and adapting a design 	<ul style="list-style-type: none"> • 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 • Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship 	<ul style="list-style-type: none"> • Evaluating the work of others and receiving feedback on own work • Suggesting points for improvement • Evaluating the work of others and receiving feedback on own work • Applying points of improvements • Describing changes they would make/do if they were to do the project again
	<p>Technical Knowledge</p>	<ul style="list-style-type: none"> • Learning that levers and sliders are mechanisms and can make things move • Identifying whether a mechanism is a lever or slider and determining what movement the mechanism will make • Using the vocabulary: up, down, left, right, vertical and horizontal to describe movement • Identifying what mechanism makes a toy or vehicle roll 	<ul style="list-style-type: none"> • Understanding how pneumatic systems work • Learning that mechanisms are a system of parts that work together to create motion • Understanding that pneumatic systems can be used as part of a mechanism • Learning that pneumatic systems force air over a distance to create movement 	<ul style="list-style-type: none"> • Knowing that an input is the motion used to start a mechanism • Knowing that output is the motion that happens as a result of starting the input • Knowing that mechanisms control movement • Describing mechanisms that can be used to change one kind of motion into another • Using a bench hook to saw safely and effectively • Exploring cams, learning that different

		<p>forwards</p> <ul style="list-style-type: none"> • Learning that for a wheel to move it must be attached to an axle • Learning that mechanisms are a collection of moving parts that work together in a machine • Learning that there is an input and output in a mechanism • Identifying mechanisms in everyday objects • Learning that a lever is something that turns on a pivot • Learning that a linkage is a system of levers that are connected by pivots • Exploring wheel mechanisms • Learning how axels help wheels to move a vehicle 	<ul style="list-style-type: none"> • Learning that products change and evolve over time • Learning that all moving things have kinetic energy • Understanding that kinetic energy is the energy that something (object person) has by being in motion 	<p>shaped cams produce different follower movements</p> <ul style="list-style-type: none"> • Exploring types of motions and direction of a motion
Electrical Systems (KS2)	Design		<ul style="list-style-type: none"> • 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 computer-aided design, to produce a point of sale badge. • Designing a torch, giving consideration to the target audience and creating both design and success 	<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. • Designing a steady hand game - identifying and naming the components required • Drawing a design from three different perspectives

			<p>criteria focusing on features of individual design ideas</p>	<ul style="list-style-type: none"> • Generating ideas through sketching and discussion • Modelling ideas through prototypes • Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'
	Make		<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. • 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 	<ul style="list-style-type: none"> • 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. • 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
	Evaluate		<ul style="list-style-type: none"> • Analysing and evaluating an existing product. • Identifying the key features of a pouch. <p>Learning to give constructive criticism on own work and the work of others</p> <ul style="list-style-type: none"> • Testing the success of a product against the original design criteria and justifying opinions 	<ul style="list-style-type: none"> • 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. • Testing own and others finished games, identifying what went well and making suggestions for improvement

			<ul style="list-style-type: none"> • Evaluating electrical products • Testing and evaluating the success of a final product and taking inspiration from the work of peers 	<ul style="list-style-type: none"> • Gathering images and information about existing children's toys • Analysing a selection of existing children's toys
	Technical Knowledge		<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. • Understanding that a battery contains stored electricity and can be used to power products • Identifying the features of a torch • Understanding how a torch works • Articulating the positives and negatives about different torches 	<ul style="list-style-type: none"> • 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. • Learning that batteries contain acid, which can be dangerous if they leak • Identifying and naming the circuit components in a steady hand game
Cooking and Nutrition	Design	<ul style="list-style-type: none"> • Designing smoothie carton packaging by-hand or on ICT software • Designing a healthy wrap based on a food combination which work well together 	<ul style="list-style-type: none"> • Creating a healthy and nutritious recipe for a savoury dish using seasonal ingredients, considering the taste, texture, smell and appearance of the dish • Designing a within a given budget, drawing upon previous taste testing 	<ul style="list-style-type: none"> • 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 • Writing a recipe, explaining the key steps, method and ingredients • Including facts and drawings from research undertaken.
	Make	<ul style="list-style-type: none"> • Chopping fruit and vegetables safely to make a smoothie • Identifying if a food is a fruit or a vegetable 	<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 	<ul style="list-style-type: none"> • Cutting and preparing vegetables safely • Using equipment safely, including knives, hot pans and hobs • Knowing how to avoid

		<ul style="list-style-type: none"> • Learning where and how fruits and vegetables grow • Slicing food safely using the bridge or claw grip • Constructing a wrap that meets a design brief 	<ul style="list-style-type: none"> • Following the instructions within a recipe • Following a baking recipe • Cooking safely, following basic hygiene rules • Adapting a recipe 	<ul style="list-style-type: none"> cross-contamination • Following a step by step method carefully to make a recipe • Following a recipe, including using the correct quantities of each ingredient • Adapting a recipe based on research Working to a given timescale • Working safely and hygienically with independence
	Evaluation	<ul style="list-style-type: none"> • Tasting and evaluating different food combinations • Describing appearance, smell and taste • Suggesting information to be included on packaging • 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 	<ul style="list-style-type: none"> • 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 recipe • 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 products • Suggesting modifications 	<ul style="list-style-type: none"> • Identifying the nutritional differences between different products and recipes • Identifying and describing healthy benefits of food groups • Evaluating a recipe, considering: taste, smell, texture and origin of the food group • Taste testing and scoring final products
	Technical Knowledge	<ul style="list-style-type: none"> • Understanding the difference between fruits and vegetables • Describing and grouping fruits by texture and taste • Understanding what makes a balanced diet • Knowing where to find the nutritional information on packaging • Knowing the five food groups 	<ul style="list-style-type: none"> • Learning that climate affects food growth • Working with cooking equipment safely and hygienically • Learning that imported foods travel from far away and this can negatively impact the environment 	<ul style="list-style-type: none"> • Understanding where food comes from - • Understanding what constitutes a balanced diet • Learning to adapt a recipe to make it healthier • Comparing two adapted recipes using a nutritional calculator and then identifying the healthier option • Learning how to research a recipe by ingredient

			<ul style="list-style-type: none"> • Learning that vegetables and fruit grow in certain seasons • Learning that each fruit and vegetable gives us nutritional benefits • Learning to use, store and clean a knife safely • Understanding the impact of the cost and importance of budgeting while planning ingredients for a dish • Understanding the environmental impact on future product and cost of production 	<ul style="list-style-type: none"> • Recording the relevant ingredients and equipment needed for a recipe • Understanding the combinations of food that will complement one another • Understanding where food comes from, describing the process of 'Farm to Fork' for a given ingredient
Textiles	Design	<ul style="list-style-type: none"> • Using a plan to create a design for a christmas decoration • Designing a christmas decoration 	<p>Designing and making a template from an existing cushion and applying individual design criteria</p> <ul style="list-style-type: none"> • Writing design criteria for a product, articulating decisions made • Designing a personalised Book sleeve 	<ul style="list-style-type: none"> • Designing a phone case considering the main component shapes required and creating an appropriate template • Considering the proportions of individual components Annotating designs
	Make	<ul style="list-style-type: none"> • Cutting fabric neatly with scissors • Using joining methods to decorate a christmas decoration • Sequencing steps for construction • Selecting and cutting fabrics for sewing • Decorate using fabric glue or running stitch 	<ul style="list-style-type: none"> • Following design criteria to create a garment • Selecting and cutting fabrics with ease using fabric scissors • Sewing cross stitch to join fabric • Decorating fabric using appliqué 	<ul style="list-style-type: none"> • Creating a product • Measuring, marking and cutting fabric accurately and independently • Creating strong and secure blanket stitches when joining fabric • Using applique to attach pieces of fabric decoration • Using a template when pinning panels onto fabric • Marking and cutting fabric accurately, in

		<ul style="list-style-type: none"> • 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 	<p>accordance with a design</p> <ul style="list-style-type: none"> • Sewing a strong running stitch, making small, neat stitches and following the edge • Tying strong knots • Decorating a garment-attaching objects using thread and adding a secure fastening
Evaluate	<ul style="list-style-type: none"> • Reflecting on a finished product, explaining likes and dislikes • Evaluating the quality of the stitching on others' work <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Testing and evaluating an end product and giving point for further improvements • Evaluating work continually as it is created
Technical Knowledge	<ul style="list-style-type: none"> • Learning different ways in which to join fabrics together: pinning, stapling, gluing • Joining items using fabric glue or stitching Identifying benefits of these techniques • Threading a needle • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric • Neatly pinning and cutting fabric using a template 	<ul style="list-style-type: none"> • Threading needles with greater independence • Tying knots with greater independence • Sewing cross stitch and appliqué • Understanding that fabrics can be layered for affect • Understanding that there are different types of fastenings and what they are 	<ul style="list-style-type: none"> • Learning to sew blanket stitch to join fabric • Applying blanket stitch so the space between the stitches are even and regular • Threading needles independently • Learning different decorative stitches • Application and outcome of the individual technique • Sewing accurately with even regularity of stitches

			<ul style="list-style-type: none"> • Articulating the benefits and disadvantages of different fastening types 	
Digital world (KS2) Cover in computing	Design		<ul style="list-style-type: none"> • 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 computer-aided design, to produce a point of sale badge • Writing design criteria for a programmed timer (Micro:bit) • Exploring different mindfulness strategies • Applying the results of my research to further inform my design criteria • Developing a prototype case for my mindful moment timer • Using and manipulating shapes and clipart, using computer-aided design (CAD), to produce a logo • Following a list of design requirements 	<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
	Make		<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 • 	<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

		Applying functional features such as using foam to create soft buttons • Developing a prototype case for my mindful moment timer • Creating a 3D structure using a net	of a product concept
	Evaluate	<ul style="list-style-type: none"> • Analysing and evaluating an existing product • Identifying the key features of a pouch • Investigating and analysing a range of timers by identifying and comparing their advantages and disadvantages • Evaluating my micro:bit program against points on my design criteria and amending them to include any changes I made • Documenting and evaluating my project • Understanding what a logo is and why they are important in the world of design and business 	<ul style="list-style-type: none"> • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool • Developing an awareness of sustainable design • Identifying key industries that utilise 3D CAD modelling and explain why • Describing how the product concept fits the client's request and how it will benefit the customers
	Technical Knowledge	<ul style="list-style-type: none"> • Identifying key product developments that occurred as a result of the digital revolution • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm • Understanding what a loop is in programming • Explaining the basic functionality of my eCharm program • Understanding what is meant by 	<ul style="list-style-type: none"> • Programming an N,E, S,W cardinal compass • Explaining the key functions in my program, including any additions • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch • Demonstrating a functional program as part of a product concept

			<p>'point of sale display'</p> <ul style="list-style-type: none">• Writing design criteria for a programmed timer (Micro:bit)• Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press• Testing my program for bugs (errors in the code) • Finding and fixing the bugs (debug) in my code	
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