

DT Skills Progression Map



	Year 3	Year 4	Year 5	Year 6
Design	<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 need and colours • 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 • Designing a game that works using static electricity, including the instructions for playing the game • Identifying a design criteria and a target audience 	<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 • 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 resistance • Personalising a design • Designing a biscuit within a given budget, drawing upon previous taste testing • Writing design criteria for a product, articulating decisions made • Designing a personalised Book sleeve 	<ul style="list-style-type: none"> • Designing a popup book which uses a mixture of structures and mechanisms • Naming each mechanism, input and output accurately • Storyboarding ideas for a book • 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 • Designing a stuffed toy considering the main component shapes required and creating an appropriate template • Considering proportions of individual components 	<ul style="list-style-type: none"> • After 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 • Designing a steady hand game - identifying and naming the components required • Drawing a design from three different perspectives • Generating ideas through sketching and discussion • Modelling ideas through prototypes • Writing a recipe, explaining the key steps, method and ingredients

	<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 • Designing and making a template from an existing cushion and applying individual design criteria 	<ul style="list-style-type: none"> • 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 by using computer-aided design (CAD), to produce a logo. • Following a list of design requirements. 	<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 • 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. 	<ul style="list-style-type: none"> • Including facts and drawings from research undertaken • Designing a waistcoat in accordance to specification linked to set of design criteria to fit a specific theme • Annotating designs • 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 combining one or more 3D objects, using CAD.
Make	<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"> • Creating a range of different shaped frame structures • Making a variety of free standing frame structures of different shapes and sizes 	<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 	<ul style="list-style-type: none"> • Making electromagnetic motors and tweaking the motor to improve its function • Constructing a stable base for an electromagnetic game

<ul style="list-style-type: none"> • Making facades from a range of recycled materials • 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 • Making an electrostatic game, referring to the design criteria • Using a wider range of materials and equipment safely • Using electrostatic energy to move objects in isolation as well as in part of a system • 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"> • 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 • Measuring, marking, cutting and assembling with increasing accuracy • Making a model based on a chosen design • Following a baking recipe • Cooking safely, following basic hygiene rules • Adapting a recipe • 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 	<ul style="list-style-type: none"> • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result • 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 • 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 	<ul style="list-style-type: none"> • 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 • 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 • Using template pinning panels onto fabric • Marking and cutting fabric accurately, in accordance with a design • Sewing a strong running stitch, making small, neat stitches and following the edge • Tying strong knots
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	<ul style="list-style-type: none"> • Following the instructions within a recipe • Following design criteria to create a cushion • Selecting and cutting fabrics with ease using fabric scissors • Sewing cross stitch to join fabric • Decorating fabric using appliqué • Completing design ideas with stuffing and sewing the edges 	<ul style="list-style-type: none"> • Incorporating fastening to a design • Developing a prototype case for my mindful moment timer. • Creating 3D structures using modelling materials. • Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press. 	<ul style="list-style-type: none"> • Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set • 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 • 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 • Using applique to attach pieces of fabric decoration • Understanding the functional and aesthetic properties of plastics. 	<ul style="list-style-type: none"> • Decorating a waistcoat - attaching objects using thread and adding a secure fastening
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Evaluate	<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 • 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 • Using the views of others to improve designs • Testing and modifying the outcome, suggesting improvements 	<ul style="list-style-type: none"> • Evaluating structures made by the class • Describing what characteristics of a design and construction made it the most effective • Considering effective and ineffective designs • 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 • Evaluating the speed of a final product based on: the affect of shape on speed and the accuracy of workmanship on performance • Testing and evaluating the success of a final product and 	<ul style="list-style-type: none"> • Identifying the nutritional differences between different products and recipes • Identifying and describing healthy benefits of food groups • Evaluating the work of others and receiving feedback on own work • Suggesting points for improvement • Evaluating a completed product against the original design sheet and looking at modifications that could be made to improve the reliability or aesthetics of it or to incorporate another type of electronic device, eg: buzzer • Testing and evaluating an end product and giving point for further improvements • Improving a design plan based on peer evaluation • Testing and adapting a design to improve it as it is developed 	<ul style="list-style-type: none"> • Evaluating a recipe, considering: taste, smell, texture and origin of the food group • Taste testing and scoring final products • Suggesting and writing up points of improvements in productions • Evaluating health and safety in production to minimise cross contamination • 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 • Testing own and others finished games, identifying what went well and making suggestions for improvement

	<ul style="list-style-type: none"> • Learning to give constructive criticism on own work and the work of others • Testing the success of a product against the original design criteria and justifying opinions • Evaluating an end product and thinking of other ways in which to create similar items 	<p>taking inspiration from the work of peers</p> <ul style="list-style-type: none"> • 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 • 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. • Testing my program for bugs (errors in the code). • Finding and fixing the bugs (debug) in my code. 	<ul style="list-style-type: none"> • Identifying what makes a successful structure • 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. 	<ul style="list-style-type: none"> • Evaluating work continually as it is created • 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. • 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 explaining why. • Describing how the product concept fits the client's request and how it will benefit the customers. • Explaining the key functions in my program, including any additions.
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Technical Knowledge	<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 • 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 <p>Understanding how pneumatic systems work</p>	<p>Understanding the impact of the cost and importance of budgeting while planning ingredients for biscuits</p> <ul style="list-style-type: none"> • Understanding the environmental impact on future product and cost of production • 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 • Learning what pavilions are and their purpose 	<ul style="list-style-type: none"> • Understanding where food comes from - learning that beef is from cattle and how beef is reared and processed • 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 • 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 	<p>Learning how to research a recipe by ingredient</p> <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 • Using a bench hook to saw safely and effectively • Exploring cams, learning that different shaped cams produce different follower movements

<ul style="list-style-type: none"> • 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 • Identifying features of a castle • Identifying suitable materials to be selected and used for a castle, considering weight, compression, tension • Extending the knowledge of wide and flat based objects are more stable • Understanding the terminology of strut, tie, span, beam • Understanding the difference between frame and shell structure • Threading needles with greater independence • Tying knots with greater independence • Sewing cross stitch and appliqué 	<ul style="list-style-type: none"> • Building on prior knowledge of net structures and broadening knowledge of frame structures • Learning that architects consider light, shadow and patterns when designing • Implementing frame and shell structure knowledge • Considering effective and ineffective designs • Understanding that there are different types of fastenings and what they are • Articulating the benefits and disadvantages of different fastening types • Learning how electrical items work • Identifying electrical products • Learning what electrical conductors and insulators are • Understanding that a battery contains stored electricity and can be used to power products • Identifying the features of a torch 	<ul style="list-style-type: none"> • Describing mechanisms that can be used to change one kind of motion into another • Exploring how to create a strong beam • Identifying arch and beam bridges and understanding the terms: compression and tension • Identifying stronger and weaker structures • Finding different ways to reinforce structures • Understanding how triangles can be used to reinforce bridges • Articulating the difference between beam, arch, truss and suspension bridges • 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 the key components used to create a functioning circuit 	<ul style="list-style-type: none"> • Exploring types of motions and direction of a motion • Knowing that structures can be strengthened by manipulating materials and shapes • Identifying the shell structure in everyday life (cars, aeroplanes, tins, cans) • Understanding man made and natural structures • Learning different decorative stitches • Application and outcome of the individual technique • Sewing accurately with even regularity of stitches • Understanding how electromagnetic motors work • Learning that batteries contain acid, which can be dangerous if they leak • Learning that when electricity enters a magnetic field it can make a motor • To know that accelerometers can detect movement.
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