



DT Learning Progression

F2 to Y6

Key Area	F2	Y1	Y2	Y3	Y4	Y5	Y6
Design	<ul style="list-style-type: none"> • Begin to show accuracy and care when drawing. • Begin to experiment with colour, design, texture, form and function. • Describe their immediate environment and understand the difference between natural environments and manufactured objects. 	<ul style="list-style-type: none"> • Know that before something is made, it has to be designed. • Know that products are usually made in factories, often by machinery but sometimes by hand (people). • Know that drawings are useful when designing. • Know what a template is and how it can be used. 	<ul style="list-style-type: none"> • Know that a product has to be designed for a reason, purpose and audience • Know that designs are always discussed and improved before the final design is chosen. • Know that products are usually made in factories, often by machinery but sometimes by hand. • Know how to communicate ideas through talking, mock-ups and drawing. • Know that certain materials are chosen for their properties. 	<ul style="list-style-type: none"> • Know that a product is designed for different reasons, purposes and target groups and understand the reasons why. • Know how to start using research to inform basic design criteria. • Know that designs are always discussed and improved before the final design is chosen. • Know that 2D and 3D shapes are important to consider during design. • Know that different types of drawing are used in design. 	<ul style="list-style-type: none"> • Know what design criteria are. • Know how to carry out own research in order to inform the design of a product. • Know how to annotate a design to ensure the criteria have been met. • Understand ways in which a design can be modified and improved. • Know that designs may look different but can still meet the design criteria. • Know how nets can help design at the drawing stage. • Know that budget must be considered when designing. 	<ul style="list-style-type: none"> • Know and understand the target group in order to develop a suitable product. • Know how to use a set of design criteria based on research from the target group. • Know that a design must be fit for purpose. • Know about triangulation and where and how it helps products. • Know how to adapt existing designs and amend them to create new versions. • Know how to create own template to implement design. • Understand what a virtual model is and the pros and cons of traditional 	<ul style="list-style-type: none"> • Know that the customer must be considered in creating designs. Know what cross sectional exploded diagrams and prototypes are. • Know how to use diagrams and prototypes in the design process. • Know about different views and perspectives when planning and drawing. • Know how to design a variety of products to create a 'whole'. • Know how different sizes and shapes of cams can change the movement of a mechanism. • Know how to use Computer Aided

				<ul style="list-style-type: none"> • Know that design criteria can be developed. • Know that existing products can be disassembled to help with design. 		<p>and CAD modelling.</p> <ul style="list-style-type: none"> • Know how to use research to inform design. 	<p>Design to make a 2D or 3D design.</p> <ul style="list-style-type: none"> • Know how to place and manoeuvre 3D objects, using CAD.
Make	<ul style="list-style-type: none"> • Use a range of small tools, including scissors, paint brushes and cutlery. • Safely use and explore a variety of materials, tools and techniques. • Know that materials can be joined together. • Create collaboratively - sharing ideas, resources and skills. 	<ul style="list-style-type: none"> • Begin to measure, mark out, cut and shape a range of materials. • Know how to hold a pair of scissors correctly. • Know how to cut accurately along different sizes and shapes of lines. • Know how to chop a range of fruit and vegetables. • Know that there are different ways to join materials e.g. glue, Sellotape and Blu-tack. • Know how to make a simple lever and slider. • Know how to use finishing techniques to improve the 	<ul style="list-style-type: none"> • Know that products can be made out of a range of materials. • Know that certain materials are used for a specific purpose and are chosen for those reasons. • Know the correct names for basic tools. • Understand that different tools have different jobs, and which would be best for their task. • Know how to use basic hand tools safely. • Know how to slice food safely using the bridge or claw grip • Know how to join paper and card 	<ul style="list-style-type: none"> • Know how to cut, fold, trace and shape accurately in order to produce a finished product. • Know what reclaimed and recycled materials are. • Know how to create simple levers and sliders. • Know how to join and finish accurately by selecting and using a wide range of tools and equipment. • Explain their choice of tools and equipment in relation to the skills and techniques they will use. • Know how to measure, mark 	<ul style="list-style-type: none"> • Understand how to select a wider range of tools and techniques for making their product safely. • Know how to reinforce structures and mechanisms. • Understand how to use a hot glue gun safely. • Follow a recipe. • Know how to create and use a paper template in making. • Know how to select the most appropriate stitch or sewing technique from a range. • Know how to add a fastening to their textile project. 	<ul style="list-style-type: none"> • Understand how to produce a list of tools, equipment and materials. • Know how to formulate step by step plans as a guide to making. • Know how to use a range of techniques involving a number of steps. • Be resourceful in solving practical problems. • Know how to create a number of different beam bridges including triangulation and use of prototypes. • Know and use correct sawing techniques and use bench hooks and hot glue guns safely. 	<ul style="list-style-type: none"> • Know how to assemble, join and combine materials and components accurately. • Consider functional and aesthetic properties, including those from art and design. • Understand what needs to be modified when making a product, based on information from the prototype. • Know how to create something with own ideas generated from exploration. • Use a craft knife safely to cut shapes accurately.

		<p>appearance of their product.</p>	<p>accurately with tape and glue</p> <ul style="list-style-type: none"> • Know that tracing can be used to make a template. • Know how to create differently shaped templates. • Know how to cut accurately along lines and around templates. • Know how to make linkages using card for levers, and split pins for pivots • Know how to use finishing techniques to improve the appearance of their product based on their own ideas. • Know about and begin to use fabric glue or running stitch to decorate. 	<p>out, cut, score and assemble components.</p> <ul style="list-style-type: none"> • Understand that designs can change in the process of making where this helps to improve them. • Construct a range of 3D geometric shapes from nets. • Select materials due to their functional and aesthetic characteristics. • Manipulate materials to create different effects by cutting, creasing, folding or weaving. • Know what a pneumatic system is and begin to create one. • Know about electrostatic energy and use it in a product. • Know about basic food safety rules. • Use cross stitch and applique to 	<ul style="list-style-type: none"> • Know how to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT. • Create a 3D structure using a net. • Use and manipulate shapes and clipart, using computer-aided design (CAD). 	<ul style="list-style-type: none"> • Use sliders, pivots and folds to produce Movement. • Know why it is necessary to hide mechanisms for aesthetic reasons. • Know how to make a working circuit. • Know how to use equipment safely, including knives, hot pans and hobs. • Create strong and secure blanket stitches when joining fabric. • Know how to apply a range of finishing techniques accurately, including those from art and design. • Know what a virtual model is and the pros and cons of traditional and CAD modelling. • Place and manoeuvre 3D objects, using CAD. 	<ul style="list-style-type: none"> • Use a hand drill safely to drill holes accurately in project pieces. Know how to make electromagnetic motors and tweak the motor to improve its function. • Accurately cut, fold and assemble a net and disassemble a 3D geometric shape. • Know how to make and test a circuit. • Work to a given timescale, safely and hygienically with increasing independence. • Use templates and pinning panels onto fabric. • Mark and cut fabric accurately, in accordance with a design. • Sew a strong running stitch, making small, neat stitches and following the edge. • Tie strong knots.
--	--	-------------------------------------	---	--	---	---	---

				join and decorate fabric. <ul style="list-style-type: none"> • Manipulate 2D shapes, using computer-aided design. 		<ul style="list-style-type: none"> • Know the functional and aesthetic properties of plastics. 	<ul style="list-style-type: none"> • Know about materials and their functional properties, especially those that are sustainable and recyclable.
Evaluate	<ul style="list-style-type: none"> • Share their creations, explaining the process they have used. • Give their verbal opinion on an outcome. • Return to previous learning to build on concepts and refine ideas. 	<ul style="list-style-type: none"> • Learn to evaluate an outcome according to the design criteria. • Know that a product or outcome needs to be tested to be evaluated. • Understand how to express likes or dislikes about an outcome. • Suggest points for improvements (this may be verbal). 	<ul style="list-style-type: none"> • Explore the features of their outcome against the design criteria. • Know they can test their own products and outcomes and adapt them. • Identify the weakest part of a design or product once made. • Learn to identify the strengths of the outcome (may be verbal). • Know that their peers' feedback can help to modify a design. • Evaluate different designs. • Know that different techniques can be used and begin to favour some. 	<ul style="list-style-type: none"> • Know how to evaluate their own and others' work based on the finished product and in comparison to the original design. • Know how to test the success of a product against the original design criteria and justify opinions. • Suggest points for modification of their individual designs. • Know that views of others can be key to adapting and modifying designs. 	<ul style="list-style-type: none"> • Know how to evaluate outcomes made by the class. • Know which characteristics of a design and construction make it most effective and justify this. • Understand effective and ineffective designs with reasons. • Know that budget has to be considered when testing, evaluating and modifying a product or outcome. • Compare and evaluate a range of different products. 	<ul style="list-style-type: none"> • Know that modifications can be made to their own work as they are working. • Understand how to give and receive constructive criticism in order to make improvements. • Know how to evaluate a completed product against the original design sheet and suggest modifications to improve its reliability or aesthetics or to incorporate other features. • Know about sustainable choices. 	<ul style="list-style-type: none"> • Know that a design plan can be modified based on peer evaluation. • Know how to test and adapt a design to improve it as it is developed (at any stage). • Identify what makes a successful outcome. • Confidently suggest what they would change if they were to do this, or a similar project, again. • Know about health and safety processes in DT. • Know how to record necessary information such as resource lists and health and safety measures.

							<ul style="list-style-type: none"> • Know how to make sustainable design choices.
Technical Knowledge Structures	<ul style="list-style-type: none"> • Balance blocks to build a bridge. • Show increasing control over an object in pushing and patting etc.. • Push and pull apart larger construction pieces e.g. Duplo. • Begin to test out materials for building houses and castles. • Explore materials for building houses. • Explore which materials to use when building bridges and structures that would help meet criteria e.g. fit a billy goat on the bridge and a troll underneath. 	<ul style="list-style-type: none"> • Describe the purpose of structures including windmills and lighthouses. • Learn how to turn 2D nets into 3D structures. • Learn that the shape of materials can be changed to improve the strength and stiffness of structures. • Understand that cylinders are a strong type of structure that are often used for windmills and lighthouses. • Understand that windmill turbines use wind to turn and make the machines inside work. • Understand that axles are used in structures and mechanisms to 	<ul style="list-style-type: none"> • Identify natural and man-made structures. • Identify when a structure is more or less stable than another. • Know that shapes and structures with wide, flat bases or legs are the most stable. • Understand that the shape of a structure affects its strength. • Use the vocabulary strength, stiffness and stability. • Know that materials can be manipulated to improve strength and stiffness. • Build a strong and stiff structure by folding paper (Stixx machine). 	<ul style="list-style-type: none"> • Identify features of a structure e.g. a castle. <ul style="list-style-type: none"> • Identify suitable materials to be selected and used for a structure, considering weight, compression and tension. • Extend the knowledge of wide and flat based objects being more stable. • Understand the terminology of strut, tie, span, beam. • Understand the difference between frame and shell structure. 	<ul style="list-style-type: none"> • Learn what pavilions are (amongst other structures) and their purpose(s). • Build on prior knowledge of net structures and broaden knowledge of frame structures. • Learn that architects consider light, shadow and patterns when designing. • Implement frame and shell structure knowledge. • Consider effective and ineffective designs. 	<ul style="list-style-type: none"> • Explore how to create a strong beam. • Identify arch and beam bridges and understand the terms tension and compression. • Identify stronger and weaker structures with reasons. • Find different ways to reinforce structures. • Understand how triangles can be used to reinforce bridges. • Articulate the difference between beam, arch, truss and suspension bridges. 	<ul style="list-style-type: none"> • Know that structures can be strengthened by manipulating materials and shapes. • Identify the shell structure in everyday life e.g. cars, aeroplanes, tins, cans. • Understand man-made and natural structures.

		<p>make parts turn in a circle.</p> <ul style="list-style-type: none"> • Develop awareness of different structures for different purposes. 					
<p>Technical Knowledge</p> <p>Mechanisms</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. • Know the properties of some materials and which might be suitable for a certain job. 	<ul style="list-style-type: none"> • Learn that levers and sliders are mechanisms and can make things move. • Identify whether a mechanism is a lever or slider and determine what movement the mechanism will make. • Use the vocabulary up, down, left, right, vertical and horizontal to describe movement. • Identify what mechanism makes a toy or vehicle roll forwards (through exploration). • Learn that for a wheel to move it must be attached to an axle. 	<ul style="list-style-type: none"> • Learn that mechanisms are a collection of moving parts that work together in a machine. • Learn that there is an input and an output in a mechanism. • Identify mechanisms in everyday objects. • Learn that a lever is something that turns on a pivot. • Learn that a linkage is a system of levers that are connected by pivots. • Explore wheel mechanisms. • Learn how axels help wheels to move a vehicle. 	<ul style="list-style-type: none"> • Understand how pneumatic systems work. • Learn that mechanisms are a system of parts that work together to create motion. • Understand that pneumatic systems can be used as part of a mechanism. • Learn that pneumatic systems force air over a distance to create movement. 	<ul style="list-style-type: none"> • Learn that products change and evolve over time. • Learn that all moving things have kinetic energy. • Understand that kinetic energy is the energy that something an (object, person) when it is in motion. 	<ul style="list-style-type: none"> • Know that an input is the motion used to start a mechanism. • Know that output is the motion that happens as a result of starting the input. • Know that mechanisms control movement. • Describe mechanisms that can be used to change one kind of motion into another. 	<ul style="list-style-type: none"> • Use a bench hook to saw safely and effectively. • Explore cams, learning that different shaped cams produce different follower movements. • Explore types of motions and direction of a motion.

<p>Technical Knowledge</p> <p>Electrical Systems</p>	N/A	N/A	N/A	<ul style="list-style-type: none"> • Understand what static electricity is and how it moves objects through attraction or repulsion. • Generate static electricity independently. • Use static electricity to make objects move in a desired way. 	<ul style="list-style-type: none"> • Identify electrical products and learn how they work. • Learn what electrical conductors and insulators are. • Understand that a battery contains stored electricity and can be used to power products. • Identify the features of a torch and understand how it works. • Articulate the positives and negatives about different torches. 	<ul style="list-style-type: none"> • Learn the key components used to create a functioning circuit. • Learn that graphite is a conductor and can be used as part of a circuit. • Learn the difference between series and parallel circuits. • Understand that breaks in a circuit will stop it from working. 	<ul style="list-style-type: none"> • Understand how electromagnetic motors work. • Learn that batteries contain acid, which can be dangerous if they leak. • Learn that when electricity enters a magnetic field it can make a motor.
<p>Technical Knowledge</p> <p>Cooking and Nutrition</p>	<ul style="list-style-type: none"> • Know the importance of a healthy lifestyle • Know how and when to add more liquid to something to make it less dry and add more of something to make it less wet e.g. water and flour with dough. 	<ul style="list-style-type: none"> • Understand the difference between fruits and vegetables. • Describe and group fruits by texture and taste. 	<ul style="list-style-type: none"> • Understand what makes a simple balanced diet. • Know the five food groups. • Know where to find the nutritional information on packaging. 	<ul style="list-style-type: none"> • Learn that climate affects food growth. • Use cooking equipment safely and hygienically. • Learn that imported foods travel from far away and this can negatively impact the environment. • Learn that vegetables and fruit grow in certain seasons. 	<ul style="list-style-type: none"> • Understand cost and the importance of budgeting when planning ingredients for dishes. • Understand the environmental impact on products and cost of production. 	<ul style="list-style-type: none"> • Understand where food comes from e.g. that beef is from cattle and how cattle are reared and processed. • Understand what constitutes a balanced diet. • Adapt a recipe to make it healthier. • Compare two adapted recipes using a nutritional calculator and 	<ul style="list-style-type: none"> • Research a recipe by ingredients. • Record the relevant ingredients and equipment needed for a recipe. • Understand the combinations of food that will complement one another. • Understand where food comes from, describing

				<ul style="list-style-type: none"> • Learn that each fruit and vegetable have nutritional benefits. • Learn to use, store and clean a knife safely. 		identify the healthier option.	the process of 'Farm to Fork' for a given ingredient.
Technical Knowledge Textiles	<ul style="list-style-type: none"> • Learn about some different textiles. 	<ul style="list-style-type: none"> • Learn different ways in which to join fabrics together e.g. pinning, stapling, gluing. 	<ul style="list-style-type: none"> • Join items using fabric glue or stitching. • Identify the benefits of these techniques. • Thread a needle with support. • Sew running stitch, with evenly spaced, neat stitches to join fabric. • Neatly pin and cut fabric using a template. 	<ul style="list-style-type: none"> • Thread needles with greater independence. • Tie knots with greater independence. • Sew cross stitch and appliqué. • Understand the need to count threads on a piece of even weave fabric in each direction to create uniform size and appearance. • Understand that fabrics can be layered for effect. 	<ul style="list-style-type: none"> • Know there are different types of fastenings and what they are. • Articulate the benefits and disadvantages of different fastening types. 	<ul style="list-style-type: none"> • Learn to sew blanket stitch to join fabric. • Sew blanket stitch so the space between the stitches is even and regular. • Thread needles independently. 	<ul style="list-style-type: none"> • Learn different decorative stitches and the effects they give. • Sew accurately with even regularity of stitches. • Select from a range of known stitches to best suit the task.
Technical Knowledge Digital World (New)	N/A	N/A	N/A	<ul style="list-style-type: none"> • Identify key product developments that occurred as a result of the digital revolution. • Write a program to control (button press) and/or monitor (sense 	<ul style="list-style-type: none"> • Write design criteria for Micro:bit programmed timer • Programme Micro:bit in Microsoft Micro:bit editor to time a set number of seconds or 	<ul style="list-style-type: none"> • Describe key developments in thermometer history. • Programme to monitor the ambient temperature and code an (audible or visual) alert when 	<ul style="list-style-type: none"> • Programme an N, E, S,W cardinal compass. • Explain the key functions in their program, including any additions. • Explain how their program fits the design criteria and

				<p>light) a flashing LED algorithm.</p> <ul style="list-style-type: none"> • Understand what a loop is in programming. • Explain the basic functionality of the eCharm program. • Understand what is meant by 'point of sale display'. 	<p>minutes on a button press.</p> <ul style="list-style-type: none"> • Test my program for bugs (errors in the code). • Find and fix the bugs (debug) in my code. 	<p>the temperature rises above or falls below a specified range.</p> <ul style="list-style-type: none"> • Explain key functions in their program e.g. audible alerts, visuals. • Explain how their product would be useful for an animal carer including programmed features. 	<p>how it would be useful as part of a navigation tool.</p> <ul style="list-style-type: none"> • Explain the key functions and features of their navigation tool to a client as part of a product concept pitch. • Demonstrate a functional program as part of a product concept.
--	--	--	--	---	---	---	---