

St Sebastian's Primary School – Design and Technology Knowledge Progression

EYFS DT Knowledge		
Expressive Art and Design	3&4-year-olds will be learning to:	Children in reception will be learning to:
	- 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. - Join different materials and explore different textures. - Create closed shapes with continuous lines and begin to use these shapes to represent objects.	- Return to and build on their previous learning, refining ideas and developing their ability to represent them. - Know how to use a range of materials to construct with - Know different techniques for joining materials using tape and different sorts of glue - Create collaboratively, sharing ideas, resources and skills to construct - Develop their small motor skills so that they can use a range of tools competently, safely and confidently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors - Know how to use a range of materials and tools with care and precision

Design						
National Curriculum Aims:	KS1 - design purposeful, functional, appealing products for themselves and other users based on design criteria - generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology					
	KS2 - use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups - generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design					
	Y1	Y2	Y3	Y4	Y5	Y6
Structures		Know how to generate and communicate ideas using sketching and modelling Know about different types of structures found in C17th London.		Know how to design a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect Know how to build frame structures		Know how to design a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.

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				designed to support weight, with focus on triangulation.		Know how to design a stable structure that is able to support weight.
Mechanisms	Know how to design a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move Know how to clearly label drawings which illustrate movement	Know how to create a class design criteria for a moving monster Know how to design a moving monster for a specific audience in accordance with a design criteria Know how to select a suitable linkage system to produce the desired motions Know how to select appropriate materials based on their properties	Know how to design a toy which uses a pneumatic system Know how to develop design criteria from a design brief Know how to generate ideas using thumbnail sketches and exploded diagrams Know that different types of drawings are used in design to explain ideas clearly		Know how to experiment with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement Know how to understand how linkages change the direction of a force Know how to make things move at the same time Know how to name each mechanism, input and output accurately.	
Electrical Systems				Know how to design a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas		Know how to design a steady hand game - identifying and naming the components required Know how to draw a design from three different perspectives

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						Know how to generate ideas through sketching and discussion Know how to model ideas through prototypes
Cooking and nutrition		Know how to design a healthy wrap based on a food combination which work well together. Know how to label ingredients on a design.		Know how to adapt a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients Know how to write an amended method for a recipe to incorporate the relevant changes to ingredients Know how to design an appealing packaging to reflect a recipe Know how to consider the taste, texture, smell and appearance when designing a dish.		Know how to write a recipe, explaining the key steps, method and ingredients Know how to include facts and drawings from research undertaken Know how to design within a budget.

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Textiles	Know the importance of a clear design criteria Know how to include individual preferences and requirements in a design Know how to use a template to create a design for a puppet		Know how to design and make a template from an existing cushion and apply individual design criteria.		Know how to design a stuffed toy considering the main component shapes required and creating an appropriate template Know how to consider proportions of individual components Know how write a design criteria for a product, articulating decisions made.	Know how to design a waistcoat in accordance to specification linked to set of design criteria to fit a specific theme Know how to annotate designs
Digital Communications			Know the impact of the digital revolution in the world of (D&T) product design Know how to develop design ideas for a technology pouch		Know how to carry out research to develop design criteria. Know how to generate multiple housing ideas using building bricks	

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Make							
National Curriculum Aims:	KS1 - select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishings] - select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics						
	KS2 - select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately - select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities						
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Structures			Know how to make a structure according to design criteria Know how to create joints and structures from paper/card and tape. Know how to make stable structures from card, tape and glue. Know how to follow instructions to cut and assemble.		Know how to construct a range of 3D geometric shapes using nets Know how to create special features for individual designs Know how to create a range of different shaped frame structures Know how to make a variety of free standing frame structures of different shapes and sizes Know how select appropriate materials to build a		Know how to build a range of play apparatus structures drawing upon new and prior knowledge of structures Know how to measure, mark and cut wood to create a range of structures Know how to use a range of materials to reinforce and add decoration to structures

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					strong structure and for the cladding Know how to reinforce corners to strengthen a structure Know how to create a design in accordance with a plan Know how to create different textural effects with materials		
Mechanisms		Know how to follow a design to create moving models that use wheels and axles Know how to adapt mechanisms	Know how to make linkages using card for levers and split pins for pivots Know how to experiment with linkages adjusting the widths, lengths and thicknesses of card used Know how to cut and assemble components neatly	Know how to create a pneumatic system to create a desired motion Know how to secure housing for a pneumatic system Know how to use syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy		Know how to measure, mark and check the accuracy of the jelutong and dowel pieces required Know how to measure, mark and cut components accurately using a ruler and scissors Know how to assemble components accurately to make a stable frame	

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			Know how to select materials according to their characteristics Know how to follow a design brief	Know to select materials due to their functional and aesthetic characteristics Know how to manipulate materials to create different effects by cutting, creasing, folding, weaving		Know how to understand that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles Know how to select appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set Know how to follow a design brief Know how to make mechanisms and/or structures using slider, pivots and folds to produce movement	
Electrical Systems					Know how to use a wider range of materials and equipment safely Know how to make a torch with a		Know how to make electromagnetic motors and tweak the motor to improve its function

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					working electrical circuit and switch Know how to use appropriate equipment to cut and attach materials Know how to assemble a torch according to the design and success criteria		Know how to construct a stable base for an electromagnetic game Know how to accurately cut, fold and assemble a net Know how to decorate the base of game to a high-quality finish Know how to make and test a circuit Know how to incorporate a circuit into a base
Cooking and nutrition		Know how to chop fruit and vegetables safely to make a smoothie Know how to identify if a food is a fruit or a vegetable Know where and how fruits and vegetables grow	Know how to slice food safely using the bridge or claw grip Know how to construct a wrap that meets a design brief		Know how to cut and prepare vegetables safely Know how to use equipment safely, including knives, hot pans and hobs Know how to avoid cross-contamination Know how to follow a step		Know how to follow a recipe, including using the correct quantities of each ingredient Know how to adapt a recipe based on research Know how work to given timescale Know how to work safely and

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					by step method carefully to make a recipe Know how to cook safely, following basic hygiene rules Know how to adapt a recipe Know how to follow the instructions withing a recipe		hygienically with independence
Textiles		Know how to cut fabric neatly with scissors Know how to use joining methods to decorate a puppet Know how to sequence steps for construction		Know how to follow design criteria to create a cushion Know how to select and cut fabrics with ease using fabric scissors Know how to sew cross stitch to join fabric Know how to decorate fabric using appliqué Know how to complete design ideas with stuffing and sewing the		Know how to create a 3D stuffed toy from a 2D design Know how to measure, mark and cut fabric accurately and independently Know how to create strong and secure blanket stitches when joining fabric Know how to use applique to attach pieces of fabric decoration	Know how to use template pinning panels onto fabric Know how to mark and cut fabric accurately, in accordance with a design Know how to sew a strong running stitch, making small, neat stitches and following the edge Know how to tie strong knots

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				edges			Know how to decorate a waistcoat - attaching objects using thread and adding a secure fastening
Digital Communications				Know how to create and decorate a foam pouch for the eCharm, using a template Know how to use a template when cutting and assembling the pouch Know how follow a list of design requirements		Know how to generate creative and unique micro:bit case, stand and/or housing ideas Know how to place and manoeuvre 3D objects, using computer-aided design Know how to change the properties of, or combine one or more 3D objects, using computer-aided design	

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Evaluation							
National Curriculum Aims:	KS1: • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria						
	KS2: • investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • understand how key events and individuals in design and technology have helped shape the world						
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Structures			Know how to explore the features of structures Know how to compare the stability of different shapes Know how to test the strength of own structures Know how to identify the weakest part of a structure Know how to evaluate the strength, stiffness and stability of own structure		Know how to evaluate their own work and the work of others based on the aesthetic of the finished product and in comparison to the original design Know how to suggest points for modification of the individual designs Know how to evaluate structures made by the class Know how to describe what characteristics of a design and construction made		Know how to improve a design plan based on peer evaluation Know how to test and adapt a design to improve it as it is developed Know how identify what makes a successful structure

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			Know how to suggest points for improvements Know how to evaluate according to the design criteria		it the most effective Know how to consider effective and ineffective designs		
Food		Know how to taste and evaluate different food combinations Know how to describe appearance, smell and taste Know how to suggest information to be included on packaging	Know how to describe the taste, texture and smell of fruit and vegetables Know how to taste testing food combinations and final products Know how to describe the information that should be included on a label Know how to evaluate which grip was most effective		Know how to identify the nutritional differences between different products and recipes Know how to identify and describe healthy benefits of food groups Know how to establish and use design criteria to help test and review dishes Know how to describe the benefits of seasonal fruits and vegetables and the impact on the environment Know how to evaluate a recipe		Know how to evaluate a recipe, considering: taste, smell, texture and origin of the food group Know how to taste testing and scoring final products Know how to suggest and write up points of improvements in productions Evaluate health and safety in production to minimise cross contamination

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					considering: taste, smell, texture and appearance		
Mechanisms		Know how to test a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed Know how to review the success of a product by testing it with its intended audience Know how to test mechanisms, identifying what stops wheels from turning, knowing Know that a wheel needs an axle in order to move	Know how to evaluate own design against design criteria Know how to use peer feedback to modify Know how to evaluate different designs Know how to test and adapt a design	Know how to use the views of others to improve designs Know how to test and modify the outcome, suggesting improvements		Know how to evaluate the work of others and receive feedback on own work Know how to suggest and apply points for improvements Know how to describe changes they would make/do if they were to do the project again	
Electrical Systems					Know how to evaluate electrical products Know how to test and evaluate the success of a final product and taking		Know how to test own and others finished games, identifying what went well and make suggestions for improvements

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					inspiration from the work of peers Know how to give constructive criticism on own work and the work of others Know how to test the success of a product against the original design criteria and justify opinions		Know how to evaluate a completed product against the original design sheet and look at modifications that could be made to improve the reliability or aesthetics of it Know how to gather images and information about existing children's toys Know how to analyse a selection of existing children's toys
Textiles		Know how to reflect on a finished product, explaining likes and dislikes Know how to discuss, as a class, the success of their stitching against the success criteria Know how to identify aspects of		Know how to evaluate an end product and think of the other ways in which to create similar items Know how to troubleshoot scenarios posed by a teacher Know how to evaluate the quality of the		Know how to test and evaluate an end product and give points for further improvements	Know how to evaluate the work continually as it is created.

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		their peers' work that they particularly like and why		stitching on other's work			
Digital Communications				Know how to evaluate if the POS badges fulfil the design requirements Know how to analyse and evaluate an existing product		Know how to evaluate what new knowledge I have learnt. Know how to consider how CAD could be used elsewhere in school.	

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Technical Knowledge							
National Curriculum Aims:	KS1: • build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.						
	KS2: • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • apply their understanding of computing to program, monitor and control their products.						
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Structures			Know how to describe the purpose of structures Know how to turn 2D nets into 3D structures Know natural and man-made materials Know 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 Know that the shape of a		Know what pavilions are and their purpose Know and build on their prior knowledge of net structures and broaden knowledge of frame structures. Know that architects consider light, shadow and patterns when designing Know how to implement frame and shell structure knowledge Know and consider effective and ineffective designs		Know that structures can be strengthened by manipulating materials and shapes Know and identify shell structure in everyday life (cars, aeroplanes, tins, cans) Know and understand man made and natural structures Know and identify stronger and weaker structures Know different ways to reinforce structures

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			structures affects its strength Know the vocabulary: strength, stiffness and stability Know that materials can be manipulated to improve strength and stiffness Know how to build a strong and stiff structure by folding paper Know how the terminology of strut, tie, span, beam				
Food		Know the difference between fruits and vegetables Know how to describe and group fruits by texture and taste Know that fruits and vegetables grow in one of three places: on	Know what makes a balanced diet Know where to find the nutritional information on packaging Know the five food groups Know that vegetables and		Know that climate affects food growth Know how to work with cooking equipment safely and hygienically Know that imported food travel from far away and this can negatively impact		Know and understand the impact of the cost and importance of budgeting while planning Know how to research a recipe by ingredient Know how to record the relevant

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		trees or vines, above the ground and below the ground	fruit grow in certain seasons Know that each fruit and vegetable gives us nutritional benefits		on the environment Know how to use, store and clean a knife safely. Know where food comes from – learning that beef is from cattle and how beef is reared and process Know what constitutes a balanced diet (Y2 recap) Know how to adapt a recipe to make it healthier Know how to compare two adapted recipes using a nutritional calculator and then identify the healthier option		ingredients and equipment needed for a recipe Know and understand the combinations of food that will complement one another Know and understand where food comes from, describing the process of 'Farm to Fork' for a given ingredient
Mechanisms		Know the vocabulary: up, down, left, right, vertical and horizontal to describe movement	Know that mechanisms are a collection of moving parts that work together in a machine	Know how pneumatic systems work Know that mechanisms are a system of parts		Know that an input is the motion used to start and mechanism Know that output is the motion that	

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		Know what mechanism makes a toy or vehicle roll forwards Know that for a wheel to move it must be attached to an axle	Know that there is an input and output in a mechanism Know how to identify mechanisms in everyday objects Know that a lever is something that turns on a pivot Know that a linkage is a system of levers that are connected by pivots	that work to create motion Know that pneumatic systems can be used as part of a mechanism Know that pneumatic systems force air over a distance to create movement Know that products evolve and change over time		happens as a result of starting the input Know that mechanisms control movement Know how to use a bench hook to saw safely and effectively Know how to explore cams, learning that different shaped cams produce different follower movements Know and explore types of motions and directions of motion	
Electrical Systems					Know how electrical systems work Know and identify electrical products Know what electrical conductors and insulators are		Know how electromagnetic motors work Know that batteries contain acid, which can be dangerous if they leak Know that when electricity enters a

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					Know that a battery contains stored electricity and can be used to power products Know how to identify the features of a torch Know how a torch works Know how to articulate the positives and negatives about different torches		magnetic field it can make a motor
Textiles		Know different ways in which to join fabrics together: pinning, stapling, gluing. Know how to sew running stitch to join fabric		Know how to thread needles with greater independence Know how to tie knots with greater independence Know how to sew cross stitch and applique Know how to count the thread on a piece of even weave fabric in each direction to create uniform		Know how to sew blanket stitch to join fabric Know how to apply blanket stitch so the spaces between the stitches are even and regular Know how to thread needles independently	Know and understand that there are different types of fastenings and what they are Know and articulate the benefits and disadvantages of different fastening types Know different decorative stitches Know how to sew accurately with

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				size and appearance Know that fabrics can be layered for affect Know how to join items using fabric glue or stitching Know how to sew running stitch, with evenly spaced, neat, even stitches to join fabric Know how to neatly pin and cut fabric using a template			even regularity of stiches. Know the application and outcome of the individual technique.
Digital Communications				Know how to apply understanding of computing to program, monitor and control their products Know what a loop is in programming Know and explain the basic		Know how to apply knowledge to write a program to monitor the ambient temperature including an alert Know how to apply their understanding of how to strengthen, stiffen and reinforce	

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				functionality of my eCharm program Know how to draw and manipulate 2D shapes, using computer-aided design, to produce a point-of-sale badge Know what is meant by 'point of sale display'		more complex structures Know key developments in thermometer history Know the key functions of a program (audible alert, visuals) Know how plastic is affecting planet Earth and suggest ways to make more sustainable choices	
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