



Love, Learn, Live

Design and Technology – Progression of Skills

EYFS				
	Personal, Social and Emotional Development (PSED)	Physical Development (PD)	Understanding the World (U&W)	Expressive Arts and Design (EAD)
Three and Four- Year- Old's	Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them.	Use large-muscle movements to wave flags and streamers, paint and make marks. Choose the right resources to carry out their own plan. Use one-handed tools and equipment, for example, making snips in paper with scissors.	Explore how things work.	Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. Explore different materials freely, in order to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Create closed shapes with continuous lines, and begin to use these shapes to represent objects.
Reception		Progress towards a more fluent style of moving, with developing control and grace. Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.		Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills
Early Learning Goals (ELG)		Use a range of small tools, including scissors, paintbrushes and cutlery.		Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations, explaining the process they have used.

Structures			
		Years 1&2 Baby bear's Chair	Years 5&6 Bridges
		KS1	KS2
Skills	Design	Generating and communicating ideas using sketching and modelling. Learning about different types of structures, found in the natural world and in everyday objects.	Designing a stable structure that is able to support weight. Creating a frame structure with a focus on triangulation.
	Make	<ul style="list-style-type: none"> Making a structure according to design criteria. Creating joints and structures from paper/card and tape. Building a strong and stiff structure by folding paper.	Making a range of different shaped beam bridges. Using triangles to create truss bridges that span a given distance and support a load. Building a wooden bridge structure. Independently measuring and marking wood accurately. Selecting appropriate tools and equipment for particular tasks. Using the correct techniques to saw safely. Identifying where a structure needs reinforcement and using card corners for support. Explaining why selecting appropriate materials is an important part of the design process. Understanding basic wood functional properties.
	Evaluate	<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.	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.
Knowledge	Technical	<ul style="list-style-type: none"> To know that shapes and structures with wide, flat bases or legs are the most stable. To understand that the shape of a structure affects its strength. To know that materials can be manipulated to improve strength and stiffness. To know that a structure is something which has been formed or made from parts. To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. To know that a 'strong' structure is one which does not break easily. To know that a 'stiff' structure or material is one which does not bend easily. 	To understand some different ways to reinforce structures. To understand how triangles can be used to reinforce bridges. To know that properties are words that describe the form and function of materials. To understand why material selection is important based on properties. To understand the material (functional and aesthetic) properties of wood.
	Additional	<ul style="list-style-type: none"> To know that natural structures are those found in nature. To know that man-made structures are those made by people. 	To understand the difference between arch, beam, truss and suspension bridges. To understand how to carry and use a saw safely.

Mechanisms				
		Years 1&2 Making a moving storybook	Years 1&2 Fairgrounds	Years 3&4 Pneumatic Toys
		KS1	KS1	KS2
Skills	Design	Explaining how to adapt mechanisms, using bridges or guides to control the movement. Designing a moving story book for a given audience.	Creating a class design criteria for a moving monster. Designing a moving monster for a specific audience in accordance with a design criteria.	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.
	Make	Following a design to create moving models that use levers and sliders.	Making linkages using card for levers and split pins for pivots. Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. <ul style="list-style-type: none"> • Cutting and assembling components neatly. 	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 and weaving.
	Evaluate	Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. Reviewing the success of a product by testing it with its intended audience.	Evaluating own designs against design criteria. Using peer feedback to modify a final design.	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.
Knowledge	Technical	To know that a mechanism is the parts of an object that move together. To know that a slider mechanism moves an object from side to side. To know that a slider mechanism has a slider, slots, guides and an object. To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.	To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. To know that there is always an input and output in a mechanism. To know that an input is the energy that is used to start something working. To know that an output is the movement that happens as a result of the input. To know that a lever is something that turns on a pivot. To know that a linkage mechanism is made up of a series of levers.	To understand how pneumatic systems work. To understand that pneumatic systems can be used as part of a mechanism. To know that pneumatic systems operate by drawing in, releasing and compressing air.
	Additional	To know that in Design and technology we call a plan a 'design'.	To know some real-life objects that contain mechanisms.	To understand how sketches, drawings and diagrams can be used to communicate design ideas. To know that exploded-diagrams are used to show how different parts of a product fit together. To know that thumbnail sketches are small drawings to get ideas down on paper quickly.

Electrical systems

Years 3&4 Electric poster		Years 5&6 Steady hand games	
KS2		KS2	
Skills	Design	<p>Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas.</p> <p>Generate a final design for the electric poster with consideration to the client's needs and design criteria.</p> <p>Design an electric poster that fits the requirements of a given brief.</p> <p>Plan the positioning of the bulb (circuit component) and its purpose.</p>	<p>Designing a steady hand game - identifying and naming the components required.</p> <p>Drawing a design from three different perspectives.</p> <p>Generating ideas through sketching and discussion.</p> <p>Modelling ideas through prototypes.</p> <p>Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'.</p>
	Make	<p>Create a final design for the electric poster.</p> <p>Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear.</p> <p>Measure and mark materials out using a template or ruler.</p> <p>Fit an electrical component (bulb).</p> <p>Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge).</p>	<p>Constructing a stable base for a game.</p> <p>Accurately cutting, folding and assembling a net.</p> <p>Decorating the base of the game to a high quality finish.</p> <p>Making and testing a circuit.</p> <p>Incorporating a circuit into a base.</p>
	Evaluate	<p>Learning to give and accept constructive criticism on own work and the work of others.</p> <p>Testing the success of initial ideas against the design criteria and justifying opinions.</p> <p>Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs.</p>	<p>Testing own and others finished games, identifying what went well and making suggestions for improvement.</p> <p>Gathering images and information about existing children's toys.</p> <p>Analysing a selection of existing children's toys.</p>
Knowledge	Technical	<p>To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit.</p> <p>To understand common features of an electric product (switch, battery or plug, dials, buttons etc.).</p> <p>To list examples of common electric products (kettle, remote control etc.).</p> <p>To understand that an electric product uses an electrical system to work (function).</p> <p>To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.</p>	<p>To know that batteries contain acid, which can be dangerous if they leak.</p> <p>To know the names of the components in a basic series circuit, including a buzzer.</p>
	Additional	<p>To understand the importance and purpose of information design.</p> <p>To understand how material choices (such as mounting paper to corrugated card) can improve a product to serve its purpose (remain rigid without bending when the electrical circuit is attached).</p>	<p>To know that 'form' means the shape and appearance of an object.</p> <p>To know the difference between 'form' and 'function'.</p> <p>To understand that 'fit for purpose' means that a product works how it should and is easy to use.</p> <p>To know that form over purpose means that a product looks good but does not work very well. To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind.</p> <p>To understand the diagram perspectives 'top view', 'side view' and 'back'.</p>

Textiles				
		Years 1&2 Puppets	Years 1&2 Cross-stitch applique	Years 5&6 Waistcoats
		KS1	KS2	KS2
Skills	Design	Using a template to create a design for a puppet.	Designing and making a template from an existing cushion and applying individual design criteria.	Designing a waistcoat in accordance to a specification linked to set of design criteria. Annotating designs, to explain their decisions.
	Make	Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. Sequencing the steps taken during construction.	Following design criteria to create a cushion or Egyptian collar. Selecting and cutting fabrics with ease using fabric scissors. Threading needles with greater independence. Tying knots with greater independence. Sewing cross stitch to join fabric. Decorating fabric using appliqué. Completing design ideas with stuffing and sewing the edges (Cushions) <i>or</i> embellishing the collars based on design ideas (Egyptian collars).	Using a template when cutting fabric to ensure they achieve the correct shape. Using pins effectively to secure a template to fabric without creases or bulges. Marking and cutting fabric accurately, in accordance with their design. Sewing a strong running stitch, making small, neat stitches and following the edge. Tying strong knots. Decorating a waistcoat, attaching features (such as appliqué) using thread. Finishing the waistcoat with a secure fastening (such as buttons). Learning different decorative stitches. Sewing accurately with evenly spaced, neat stitches.
	Evaluate	Reflecting on a finished product, explaining likes and dislikes.	Evaluating an end product and thinking of other ways in which to create similar items.	Reflecting on their work continually throughout the design, make and evaluate process.
Knowledge		To know that 'joining technique' means connecting two pieces of material together. To know that there are various temporary methods of joining fabric by using staples, glue or pins. To understand that different techniques for joining materials can be used for different purposes. To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. To know that drawing a design idea is useful to see how an idea will look.	To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. To know that when two edges of fabric have been joined together it is called a seam. To know that it is important to leave space on the fabric for the seam. To understand that some products are turned inside out after sewing so the stitching is hidden.	To understand that it is important to design clothing with the client/ target customer in mind. To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. To understand the importance of consistently sized stitches.

Digital World
Years 5&6 Monitoring devices

KS2

Skills	Design	<p>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.</p>
	Make	<p>Understanding the functional and aesthetic properties of plastics. Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range.</p>
	Evaluate	<p>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.</p>
Knowledge	Technical	<p>To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record. To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose. To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.</p>
	Additional	<p>To understand key developments in thermometer history. To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future. To know the 6Rs of sustainability. To understand what a virtual model is and the pros and cons of traditional vs CAD modelling.</p>

Food – cooking and nutrition

		Years 1&2 Fruit and Vegetables	Years 1&2 A Balanced Diet
		KS1	KS1
Skills	Design	Designing smoothie carton packaging by-hand or on ICT software.	Designing a healthy wrap based on a food combination which works well together.
	Make	Chopping fruit and vegetables safely to make a smoothie. Identifying if a food is a fruit or a vegetable. 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.
	Evaluate	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.
Knowledge		<p>Understanding the difference between fruits and vegetables.</p> <p>To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).</p> <p>To know that a blender is a machine which mixes ingredients together into a smooth liquid.</p> <p>To know that a fruit has seeds and a vegetable does not.</p> <p>To know that fruits grow on trees or vines.</p> <p>To know that vegetables can grow either above or below ground.</p> <p>To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).</p>	<p>To know that 'diet' means the food and drink that a person or animal usually eats.</p> <p>To understand what makes a balanced diet.</p> <p>To know where to find the nutritional information on packaging.</p> <p>To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.</p> <p>To understand that I should eat a range of different foods from each food group, and roughly how much of each food group.</p> <p>To know that nutrients are substances in food that all living things need to make energy, grow and develop.</p> <p>To know that 'ingredients' means the items in a mixture or recipe.</p> <p>To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy.</p> <p>To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.</p>

Food – cooking and nutrition

		Years 3&4 Eating Seasonally	Years 3&4 Adapting a Recipe
		KS2	KS2
Skills	Design	Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.	Designing a biscuit within a given budget, drawing upon previous taste testing judgements.
	Make	Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. Following the instructions within a recipe.	Following a baking recipe, from start to finish, including the preparation of ingredients. Cooking safely, following basic hygiene rules. Adapting a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet).
	Evaluate	Establishing and using design criteria to help test and review dishes. Describing the benefits of seasonal fruits and vegetables and the impact on the environment. Suggesting points for improvement when making a seasonal tart.	Evaluating a recipe, considering: taste, smell, texture and appearance. Describing the impact of the budget on the selection of ingredients. Evaluating and comparing a range of food products. Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins.).
Knowledge		<p>To know that not all fruits and vegetables can be grown in the UK.</p> <p>To know that climate affects food growth.</p> <p>To know that vegetables and fruit grow in certain seasons.</p> <p>To know that cooking instructions are known as a 'recipe'.</p> <p>To know that imported food is food which has been brought into the country.</p> <p>To know that exported food is food which has been sent to another country..</p> <p>To understand that imported foods travel from far away and this can negatively impact the environment.</p> <p>To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre.</p> <p>To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health.</p> <p>To know safety rules for using, storing and cleaning a knife safely.</p> <p>To know that similar coloured fruits and vegetables often have similar nutritional benefits.</p>	<p>To know that the amount of an ingredient in a recipe is known as the 'quantity.'</p> <p>To know that it is important to use oven gloves when removing hot food from an oven.</p> <p>To know the following cooking techniques: sieving, creaming, rubbing method, cooling.</p> <p>To understand the importance of budgeting while planning ingredients for biscuits.</p>

Food – cooking and nutrition

		Years 5&6 What could be healthier?	Years 5&6 Come dine with me
		KS2	KS2
Skills	Design	<p>Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients.</p> <p>Writing an amended method for a recipe to incorporate the relevant changes to ingredients.</p> <p>Designing appealing packaging to reflect a recipe.</p>	<p>Writing a recipe, explaining the key steps, method and ingredients.</p> <p>Including facts and drawings from research undertaken.</p>
	Make	<p>Cutting and preparing vegetables safely.</p> <p>Using equipment safely, including knives, hot pans and hobs.</p> <p>Knowing how to avoid cross-contamination.</p> <p>Following a step by step method carefully to make a recipe.</p>	<p>Following a recipe, including using the correct quantities of each ingredient.</p> <p>Adapting a recipe based on research.</p> <p>Working to a given timescale.</p> <p>Working safely and hygienically with independence.</p>
	Evaluate	<p>Identifying the nutritional differences between different products and recipes.</p> <p>Identifying and describing healthy benefits of food groups.</p>	<p>Evaluating a recipe, considering: taste, smell, texture and origin of the food group.</p> <p>Taste testing and scoring final products.</p> <p>Suggesting and writing up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process.</p> <p>Evaluating health and safety in production to minimise cross contamination.</p>
Knowledge		<p>To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues.</p> <p>To know that I can adapt a recipe to make it healthier by substituting ingredients.</p> <p>To know that I can use a nutritional calculator to see how healthy a food option is.</p> <p>To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.</p>	<p>To know that 'flavour' is how a food or drink tastes.</p> <p>To know that many countries have 'national dishes' which are recipes associated with that country.</p> <p>To know that 'processed food' means food that has been put through multiple changes in a factory.</p> <p>To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides.</p> <p>To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).</p>