

Design Technology Progression



INTENT	IMPLEMENTATION	IMPACT
<p>We aim to inspire pupils to be innovative and creative thinkers who have an appreciation for the product design cycle through ideation, creation and evaluation. We want pupils to develop the confidence to take risks, through drafting design concepts, modelling and testing and to be reflective learners. We want to build an awareness of the impact of design technology on our lives to enable the pupils to 'shine' as enterprising citizens. Our intent enables pupils to meet the end of keys stage attainment targets in the National Curriculum.</p>	<p>Using the Kpow scheme as a base, with adaptations to link to other curriculum areas, Design Technology is taught once a term. Skills and knowledge are progressively taught using this progressions grid and children develop their skills in:</p> <p style="text-align: center;">Mechanisms , Structures, Textiles, Cooking and Nutrition and Electrical systems (KS2)</p> <p>Lessons incorporate a range of teaching strategies from independent, paired and group work. Opportunities are used to support and stretch. Knowledge organisers are used in each unit to support pupils building a factual knowledge by encouraging recall of facts and vocabulary.</p>	<p>The impact of our curriculum will be continuously monitored in day to day lessons and will be reported summatively at the end of each unit using 'Insight' tracking system.</p> <p style="text-align: center;">The expected income is that children will:</p> <ul style="list-style-type: none"> - Understand the functional and aesthetic properties of a range of materials - Understand how to use tools to carry out different processes - Understand and apply the principles of healthy eating - Recognise where our decisions can impact the wider world <ul style="list-style-type: none"> - Self evaluate and reflect - Meet end of Key Stage expectations

Knowledge and skills- General Design and Make				
	EYFS	Year 1	Year 2	Year 3
Design- general	<p>*Select appropriate resources *Use gestures, talking and arrangements of materials and components to show design * Use contexts set by the teacher and myself *Use language of designing and making (join, build, shape, longer, shorter, heavier etc.</p>	<p>* have own ideas * explain what I want to do *explain what my product is for, and how it will work * use pictures and words to plan, begin to use models * design a product for myself following design criteria *research similar existing products</p>	<p>have own ideas and plan what to do next * explain what I want to do and describe how I may do it * explain purpose of product, how it will work and how it will be suitable for the user * describe design using pictures, words, models, diagrams, begin to use ICT * design products for myself and others following design criteria * choose best tools and materials, and explain choices * use knowledge of existing products to produce ideas</p>	<p>begin to research others' needs * show design meets a range of requirements * describe purpose of product * follow a given design criteria * have at least one idea about how to create product * create a plan which shows order, equipment and tools *describe design using an accurately labelled sketch and words * make design decisions *explain how product will work * make a prototype * begin to use computers to show design</p>
Make - general	<p>Construct with a purpose, using a variety of resources *Use simple tools and techniques *Build / construct with a wide range of objects *Select tools & techniques to shape, assemble and join *Replicate structures with materials / components *Discuss how to make an activity safe and hygienic *Record experiences by drawing, writing, voice recording *Understand different media can be combined for a purpose</p>	<p>explain what I'm making and why *consider what I need to do next *select tools/equipment to cut, shape, join, finish and explain choices *measure, mark out, cut and shape, with support *choose suitable materials and explain choices *try to use finishing techniques to make product look good *work in a safe and hygienic manner</p>	<p>*explain what I am making and why it fits the purpose *make suggestions as to what I need to do next. *join materials/components together in different ways *measure, mark out, cut and shape materials and components, with support. *describe which tools I'm using and why *choose suitable materials and explain choices depending on characteristics. *use finishing techniques to make product look good *work safely and hygienically</p>	<p>select suitable tools/equipment, explain choices; begin to use them accurately * select appropriate materials, fit for purpose. * work through plan in order *consider how good product will be * begin to measure, mark out, cut and shape materials/components with some accuracy * begin to assemble, join and combine materials and components with some accuracy * begin to apply a range of finishing techniques with some accuracy</p>
Evaluate-general	<p>Adapt work if necessary *Dismantle, examine, talk about existing objects/structures *Consider and manage some risks *Practise some appropriate safety measures independently *Talk about how things work *Look at similarities and differences between existing objects / materials / tools *Show an interest in technological toys *Describe textures</p>	<p>*talk about my work, linking it to what I was asked to do * talk about existing products considering: use, materials, how they work, audience, where they might be used *talk about existing products, and say what is and isn't good * talk about things that other people have made *begin to talk about what could make product better</p>	<p>* describe what went well, thinking about design criteria * talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion *evaluate how good existing products are *talk about what I would do differently if I were to do it again and why</p>	<p>look at design criteria while designing and making *use design criteria to evaluate finished product * say what I would change to make design better *begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose * begin to understand by whom, when and where products were designed * learn about some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products</p>
		Year 4	Year 5	Year 6
Design- general	<p>* use research for design ideas * show design meets a range of requirements and is fit for purpose *begin to create own design criteria *have at least one idea about how to create product and suggest improvements for design. * produce a plan and explain it to others *say how realistic plan is. *include an annotated sketch *make and explain design decisions considering availability of resources *explain how product will work * make a prototype *begin to use computers to show design.</p>	<p>use internet and questionnaires for research and design ideas *take a user's view into account when designing * begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose *create own design criteria * have a range of ideas *produce a logical, realistic plan and explain it to others. *use cross-sectional planning and annotated sketches * make design decisions considering time and resources. *clearly explain how parts of product will work. *model and refine design ideas by making prototypes and using pattern pieces. *use computer-aided designs</p>	<p>* draw on market research to inform design * use research of user's individual needs, wants, requirements for design * identify features of design that will appeal to the intended user * create own design criteria and specification * come up with innovative design ideas *follow and refine a logical plan. *use annotated sketches, cross sectional planning and exploded diagrams * make design decisions, considering, resources and cost * clearly explain how parts of design will work, and how they are fit for purpose * independently model and refine design ideas by making prototypes and using pattern pieces * use computer-aided designs</p>	
Make - general	<p>select suitable tools and equipment, explain choices in relation to required techniques and use accurately *select appropriate materials, fit for purpose; explain choices * work through plan in order. * realise if product is going to be good quality * measure, mark out, cut and shape materials/components with some accuracy *assemble, join and combine materials and components with some accuracy *apply a range of finishing techniques with some accuracy</p>	<p>* use selected tools/equipment with good level of precision * produce suitable lists of tools, equipment/materials needed *select appropriate materials, fit for purpose; explain choices, considering functionality * create and follow detailed step-by-step plan * explain how product will appeal to an audience * mainly accurately measure, mark out, cut and shape materials/components *mainly accurately assemble, join and combine materials/components * mainly accurately apply a range of finishing techniques * use techniques that involve a small number of steps * begin to be resourceful with practical problems</p>	<p>* use selected tools and equipment precisely *produce suitable lists of tools, equipment, materials needed, considering constraints * select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics * create, follow, and adapt detailed step-by-step plans *explain how product will appeal to audience; make changes to improve quality * accurately measure, mark out, cut and shape materials/components * accurately assemble, join and combine materials/components * accurately apply a range of finishing techniques * use techniques that involve a number of steps * be resourceful with practical problems</p>	

Evaluate-general	*refer to design criteria while designing and making *use criteria to evaluate product * begin to explain how I could improve original design *evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose * discuss by whom, when and where products were designed * research whether products can be recycled or reused * know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products	evaluate quality of design while designing and making *evaluate ideas and finished product against specification, considering purpose and appearance. *test and evaluate final product * evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose * begin to evaluate how much products cost to make and how innovative they are *research how sustainable materials are *talk about some key inventors/designers/ engineers/ chefs/manufacturers o	*evaluate quality of design while designing and making; is it fit for purpose? * keep checking design is best it can be. *evaluate ideas and finished product against specification, stating if it's fit for purpose *test and evaluate final product; explain what would improve it and the effect different resources may have had *do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose *evaluate how much products cost to make and how innovative they are *research and discuss how sustainable materials are *consider the impact of products beyond their intended purpose *discuss some key inventors/designers/ engineers/ chefs/manufacturers of groundbreaking products			
	Y1/Y2		Y6			
Cooking and Nutrition	Fruit and Vegetables Designing smoothie carton packaging by-hand or on ICT software 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 Tasting and evaluating different food combinations • Describing appearance, smell and taste • Suggesting information to be included on packaging	A Balanced Diet Designing a healthy wrap based on a food combination which work well together Slicing food safely using the bridge or claw grip • Constructing a wrap that meets a design brief • 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	What could be healthier? 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 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 • Identifying the nutritional differences between different products and recipes • Identifying and describing healthy benefits of food groups	Eating Seasonally • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish • 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 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	Adapting a recipe • Following a baking recipe • Cooking safely, following basic hygiene rules • Adapting a recipe Evaluating a recipe, considering: taste, smell, texture and appearance • Describing the impact of the budget on the selection of ingredients • Evaluating and comparing a range of products • Suggesting modifications	Come dine with Me Writing a recipe, explaining the key steps, method and ingredients • Including facts and drawings from research undertaken • 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 • 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
Structures	Construct a windmill/Baby Bear's chair • Making stable structures from card, tape and glue • Learning how to turn 2D nets into 3D structures • Following instructions to cut and assemble the supporting structure of a windmill • Making functioning turbines and axles which are assembled into a main supporting structure	• 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 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	Construct a Castle • Designing with key features to appeal to a specific person/purpose • Drawing and labelling design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours Constructing a range of 3D geometric shapes using nets • Creating special features for individual designs • Making facades from a range of recycled materials • 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 • To understand that wide and flat based objects are more stable • To understand the importance of strength and stiffness in structures	Pyramids (Pavilions) Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect • Building frame structures designed to support weight Creating a range of different shaped frame structures • Making a variety of free standing frame structures of different shapes and sizes • Selecting appropriate materials to build a strong structure 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 • To understand what a frame structure is • To know that a 'free-standing' structure is one which can stand on its own	Frame Structures (Shelters/Bridges) • Selecting appropriate tools and equipment for particular tasks • Using the correct techniques to saws safely • Identifying where a structure needs reinforcement and using card corners for support • Explaining why selecting appropriating materials is an important part of the design process • To understand some different ways to reinforce structures • To understand how triangles can be used to reinforce • To know that properties are words that describe the form and function of materials • To understand why material selection is important based on their properties •	
Mechanisms	Moving Story Book • Following a design to create moving models that use levers and sliders (Y2 pivots) • 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	Wheels and Axles • Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move • Creating clearly labelled drawings which illustrate movement • Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move	Pop up Book/ Levers • Designing a pop-up book which uses a mixture of structures and mechanisms • Naming each mechanism, input and output accurately • Storyboarding ideas for a book • Following a design brief to make a pop up book, neatly and with focus on accuracy • Making mechanisms and/or structures using	Pneumatics Draw accurate diagrams with correct labels, arrows and explanations. Correctly identify definitions for key terms. Identify five appropriate design criteria.	Automata Toys Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement • Understanding how linkages change the direction of a force • Making things move at the same time • Understanding and drawing cross-sectional diagrams to show the inner-working	

	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> To know that different materials have different properties and are therefore suitable for different uses 	<p>sliders, pivots and folds to produce movement</p> <ul style="list-style-type: none"> Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result <p>To know that mechanisms control movement</p> <ul style="list-style-type: none"> To understand that mechanisms that can be used to change one kind of motion into another To understand how to use sliders, pivots and folds to create paper-based mechanisms 	<p>Communicate two ideas using thumbnail sketches.</p> <p>Communicate and develop one idea using an exploded diagram.</p> <p>Select appropriate equipment and materials to build a working pneumatic system.</p> <p>Assemble their pneumatic system within the housing to create the desired motion.</p> <p>Create a finished pneumatic toy that fulfills the design brief</p>	<p>Measuring, marking and checking the accuracy of the jelutong and dowel pieces required</p> <ul style="list-style-type: none"> Measuring, marking and cutting components accurately using a ruler and scissors Assembling components accurately to make a stable frame Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set
<h1>Textiles</h1>	<p>Puppets/Pouches</p> <ul style="list-style-type: none"> 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 	<p>Selecting and cutting fabrics for sewing</p> <ul style="list-style-type: none"> Decorating a pouch using fabric glue or running stitch Threading a needle Sewing running stitch, with evenly spaced, neat, even stitches to join fabric Neatly pinning and cutting fabric using a template 	<p>Cushions</p> <p>Designing and making a template from an existing cushion and applying individual design criteria</p> <p>Following design criteria to create a cushion</p> <ul style="list-style-type: none"> 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 edge To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric 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 	<p>Fastenings</p> <p>Making and testing a paper template with accuracy and in keeping with the design criteria</p> <ul style="list-style-type: none"> Measuring, marking and cutting fabric using a paper template Selecting a stitch style to join fabric, working neatly sewing small neat stitches Incorporating fastening to a design To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro To know that different fastening types are useful for different purposes To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions 	<p>Textiles- Draft Excluder</p> <ul style="list-style-type: none"> Using a template when 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 Decorating -attaching objects using thread and adding a secure fastening Learning different decorative stitches Sewing accurately with even regularity of stitches To understand that it is important to design 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
<h1>Electrical Systems KS2</h1>			<p>Electrical Systems :Fairgrounds</p> <ul style="list-style-type: none"> Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas Making a ride with a working electrical circuit and switch Using appropriate equipment to cut and attach materials Assemble according to the design and success criteria Evaluating electrical products Testing and evaluating the success of a final product 		<p>Steady Hand Game</p> <ul style="list-style-type: none"> 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 Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function' To know that 'form' means the shape and appearance of an object To know the difference between 'form' and 'function' To understand that 'fit for purpose' means that a product works how it should and is easy to use 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 To understand the diagram perspectives 'top view', 'side view' and 'back'