

Design & Technology Progression of Knowledge and Skills

Key to understanding this document: Black = National Curriculum objectives Red = Skills to be taught Blue = Knowledge Green = Resources to be used

<i>At The Discovery School we understand the importance of our children knowing more, remembering more and doing more. With this in mind, we teach the children the knowledge they require, ensuring they have opportunities for the retrieval of knowledge and the chance to apply new skills during their learning.</i>							
	EYFS Links	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Constructs with a purpose in mind using a variety of materials	<p>Consider the purpose of the product and what it will have to do to be a 'good' one</p> <p>Use a range of practical activities to generate, develop, model, and communicate their ideas (based on their own experiences) through talking, drawing and mock-ups.</p> <p>Use ICT where appropriate to generate, develop, and communicate ideas</p> <p>Use 2Animate to design a background and character for the levers and sliders unit.</p>	<p>Identify the intended user and use and what they would need the product to be like.</p> <p>Communicate their ideas through talking and through increasingly accurate drawing (with appropriate labels) showing an understanding between drawings for art and design diagram</p> <p>Use ICT where appropriate to generate, develop, and communicate ideas.</p> <p>Use Paint to design bags.</p> <p>Choose fabrics and embellishments according to their characteristics</p>	<p>Gather information about the intended user to inform the design criteria – self, historical figure, imaginary figure</p> <p>Describe how the product is fit for purpose.</p> <p>Indicate the design features of their product that will appeal to the intended user.</p> <p>Develop and use pattern pieces to develop the product and enable accurate manufacture.</p> <p>Explain how particular parts of their product will function.</p>	<p>Develop and use own design criteria</p> <p>Generate realistic ideas</p> <p>Develop and use a prototype to explore the functionality of the design.</p> <p>Use computer aided design to develop ideas.</p>	<p>Gather information including web-based sources to inform own design criteria</p> <p>Begin to use cross-sectional diagrams and exploded diagrams.</p>	<p>Develop accurate design criteria / specification based on a range of research into existing products and intended users.</p> <p>Work in a range of relevant contexts: Enterprise, industry, home Enterprise Week: questionnaires, costings, sustainability</p> <p>Independently use cross-sectional diagrams and exploded diagrams.</p>
Make	<p>Uses simple tools and techniques competently and appropriately.</p> <p>Selects appropriate resources and adapts where necessary.</p>	<ul style="list-style-type: none"> • Follow procedures for safety and hygiene. • Measure, mark out, cut and shape paper and card components: ruler, pencil, saw, scissors 	<ul style="list-style-type: none"> • Suggest procedures for safety and hygiene. • Use Running stitch / glue to join two fabrics. thread, split pins, PVA glue, paperclips, sticky tape 	<p>Pupils should: Begin to order the main stages of making.</p> <ul style="list-style-type: none"> • Highlight and follow procedures for safety and hygiene. 	<p>Pupils should: Independently order the main stages of making.</p> <ul style="list-style-type: none"> • Measure, mark out, cut and shape resistant materials and components with more accuracy. 	<ul style="list-style-type: none"> *Begin to formulate simple step by step plans as a guide to making. • Assemble, join and combine materials and components accurately 	<p>Pupils should: List tools, equipment and materials needed.</p> <p>Independently formulate detailed step by step plans as a guide to making.</p>

		<ul style="list-style-type: none"> Assemble, join and combine materials and components: blutac, a gluestick, masking tape, sticky tape, Select from and use a wide range of materials and components: cardboard, cotton wheels, wood, including construction materials and kits (LEGO) according to their characteristics. 		<ul style="list-style-type: none"> Measure, mark out, cut and shape fabric and components with some accuracy: ruler, scissors, pencil, chalk, needle, pins Join fabric with increased accuracy and independence – smaller more neat & careful stitches. 	<ul style="list-style-type: none"> Assemble, join and combine materials and components with some accuracy. 	<ul style="list-style-type: none"> cut (using craft knife / saw / drill) Use a wider range of materials and components including construction materials and kits, and mechanical components (K'nex) Use a wider range of finishing techniques accurately – sanding, rendering 	<ul style="list-style-type: none"> Measure, mark out, cut and shape materials and components accurately Combine the use of a range of materials and electrical components. Demonstrate resourcefulness when tackling practical problems.
Evaluate	<ul style="list-style-type: none"> What products are and what they are for. Who products are for and how they are used. Identify basic materials What they like and dislike about products. 	<ul style="list-style-type: none"> Who products are for and how do you know? How products work What materials products are made from. What elements of each product make it successful? 	<ul style="list-style-type: none"> How well do they achieve their <i>purpose</i> and meet the user's needs and wants? Compare products and discuss why one is more successful than another. How have key events and individuals helped shape the world? Focus: Archimedes What was the impact of pulleys? 	<ul style="list-style-type: none"> Why materials have been chosen and why– what properties do they have? What are the views and evaluations of others? How can I use these to improve my work? Focus: Robert William Thomson of Scotland; the inventor of the pneumatic tyre. What was the impact of the pneumatic tyre? 	<ul style="list-style-type: none"> Evaluate the functionality and aesthetics of a product – are they equally successful? How well have the products meet the design brief? Focus: Eduardo San Juan the designer of the Lunar Rover. What was the impact of the Lunar Rover design and what did it mean for the world? 	<ul style="list-style-type: none"> How well have the products been designed and made? How well does the product meet the design spec? What improvements could be suggested? How have key events and individuals helped shape the world? Focus: Samuel Morse the inventor of the telegraph. What was the impact of the telegraph? 	
Technical Knowledge	<ul style="list-style-type: none"> MATERIALS: To build structures, exploring how they can be made stronger, stiffer and more stable. 	<ul style="list-style-type: none"> MECHANISMS: Explore and use mechanisms, e.g. levers, sliders and, in their products. BOOK COVER Use lever and linkages board 	<ul style="list-style-type: none"> MECHANISMS: Understand and use wheels, axels and pulley systems in their products. That mechanical systems have an input, process and output and create movement 	<ul style="list-style-type: none"> MECHANISMS: How pneumatic systems create movement. ANIMAL MATERIALS: To understand and use simple electrical systems in their products e.g. series 	<ul style="list-style-type: none"> MECAHNISMS: Understand how cams, gears create movement and use them in their products. Apply their understanding of how to strengthen and stiffen more complex structures. 	<ul style="list-style-type: none"> MATERIALS & ELECTRICAL / CONTROL: Understand and use more complex electrical systems in their products e.g. series circuits incorporating switches, bulbs, buzzers and motors. MORSE CODE MACHINE 	

				At least three different types of stitches used to combine fabrics and what the functions are of each.	circuits incorporating switches, bulbs, buzzers and motors. LIGHT	(Use cams/gears board) TOY/LUNAR BUGGY ELECTRICAL / CONTROL: To apply their understanding of computing to program, monitor and control their products. K'nex Challenge	
Cooking and Nutrition	Eats a healthy range of foodstuffs and understands need for variety in food. Shows some understanding that good practices with regard to exercise, eating, sleeping and hygiene can contribute to good health. Understand that equipment and tools have to be used safely	<ul style="list-style-type: none"> •That all food comes from plants or animals. •Pupils should be taught that everyone should eat five portions of fruit and veg a day. • Pupils should be taught to safely and hygienically prepare a sandwich which includes something from each of the 5 food groups. • Pupils should be taught how to use the techniques of cutting & spreading 	<ul style="list-style-type: none"> •That food must be farmed, grown or caught. • Pupils should be taught how to name and sort food into the five groups on the eat well plate. • Pupils should be taught how to use the techniques peeling and grating to make wraps or a layered springtime salad in a jar. Select from and use a wide range of ingredients according to their characteristics. 	<ul style="list-style-type: none"> •How to prepare and cook a savoury dish safely and hygienically using a heat source and boiling to make soup. To understand seasonality. •How to use the techniques of peeling and chopping. 	<ul style="list-style-type: none"> •Identify where different types of food are grown, reared and caught. (using a world map) To use food packaging to find out where the food they eat comes from. That a recipe can be adapted by adding or substituting one or more ingredients. •How to prepare and cook a savoury dish safely and hygienically using a heat source and baking to make pizza. How to use the techniques slicing and grating 	<ul style="list-style-type: none"> •To understand the principles of organic farming. •To understand what Fairtrade is. •How food is processed and preserved into ingredients that can be eaten or used in cooking. To know that people may have allergies/intolerances and what the alternatives are. •How to prepare and cook a savoury dish safely and hygienically using a heat source and melting, kneading and baking to make bread. 	
Key Vocabulary		fruit and vegetable names, names of equipment and utensils, cutting, healthy diet, ingredients. Materials Purpose Product	flesh, skin, seed, pip, core, peeling, grating, user diagram cut, fold, join, fix	name of products, names of equipment, utensils, texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, healthy/varied diet	appearance, smell, fresh, savoury, hygienic, edible, reared, caught, seasonal, harvested healthy/varied diet. Function Prototype Computer aided design	ingredients, yeast, dough, flour, wholemeal, spice, herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, combine, fold, knead, stir, pour, shape, frozen, dried, tinned, allergy, intolerance, savoury,	Exploded diagram seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings,

		<p>structure, wall, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved,</p>	<p>purpose, pulley, wheel, axel, input, output, mechanism, lever, linkage, pivot, slot, input, process, output linear, rotary, oscillating, reciprocating</p> <p>design criteria pattern piece</p>	<p>source, seasonality, organic, pesticides, fibre</p> <p>functionality aesthetics cross sectional diagram</p> <p>pulley, drive belt, gear, rotation, spindle, driver, follower, ratio,</p>	<p>reed switch, toggle switch, push-to-make switch, push-to-break switch, light light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series circuit, parallel circuit</p>
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