



St Paul's C of E Primary School



Design & Technology Subject Pathway

	North Gate (N/R)	East Gate (1/2)	South Gate (3/4)	West Gate (5/6)
	Through exploration and application of the essential concepts, pupils will:			
Key Pathway 1: Understanding the properties of materials and where they are from	To recognise different materials	To verbally identify materials as plastics, metals, woods, textiles, building materials and organic matter and begin to understand that there can be differences e.g. lighter, shinier stronger etc and that some metals are stronger than other metals, some plastics are hard and some are soft and bendy. [Science Curriculum]	To start to understand within known groups of materials, that there can be differences and that some metals are stronger than other metals, plastics can exist in different forms e.g. flexible or set [Science Curriculum]	To relate the properties of materials to their different uses within leisure, industry and environmental effects e.g. single use plastic is a fantastic versatile material in hospitals and hospitality but is having a disastrous effect on the planet and our oceans. Consider which materials could have similar properties but are more environmentally friendly e.g. bamboo instead of plastics. [Science Curriculum]
		To describe the functional properties of wood, plastics, textiles, building materials and organic matter to include but not limited to hard, soft, stretchy, stiff, shiny/dull, rough/smooth, waterproof, opaque/transparent [Science Curriculum]	To apply their knowledge of materials (including wood, metal, plastic, glass, brick, rock, paper and cardboard) to choose an appropriate material for an appropriate task e.g. a soft textile is better for a blanket than a roll of foil, when designing and making	To consider cost, function and aesthetics when combining materials at the point of design as well as making and CAM. (Computer aided manufacturing)
	To think about why an object is made from a certain material	To begin to relate these different materials to their immediate environment: home/school/garden. To know and recognise that wood comes from trees, wool comes from sheep, plastics come from oil in the ground, and metal comes from the ground.	To begin to apply knowledge of above to combine properties e.g. a deck chair needs to be comfortable to sit on but also have a firm support. To consider function when combining materials at the point of making.	To know and recognise common materials within each group. Metals = steel, aluminium, copper, titanium

	<p>To start to consider aesthetics when choosing materials in making</p> <p>To understand the life cycle of materials e.g. that wood also comes from recycling old materials, fabric comes from a range of sources such as silk worms, oil, plants and metal come from ore, most often found in rocks.</p> <p>To begin to recognise some appropriate materials choices for CAM. (Computer aided manufacturing)</p>	<p>To begin to understand the processes involved in extracting materials from this planet e.g. Wood is debarked, rough sawn, dried, cut, planed. Metal ore is mined, crushed, separated (magnets), smelted, mixed (alloy), casted/welded/formed. Plastics from crude oil are distilled, separated and then joined (LINK TO SCIENCE SOLIDS/LIQUIDS/GAS)</p>
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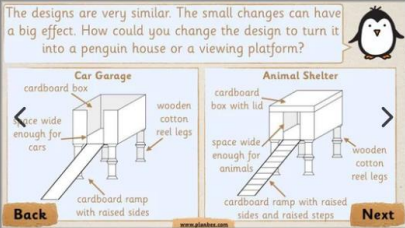
VISITS

<p>Farm/ greenhouse/ allotment In-house bakeries at supermarkets (Lidl, Sainsburys)</p>	<p>Bakeries/Restaurants (Pizza Express, Wagamamas etc)</p>	<p>3D Printer companies to see printers in action. Renishaw PLC (Stroud & Stonehouse)</p> <p>Suggested: Local companies: Safran (Glos), Thermoformed Packaging, Futura Foods (Dursley, Phoenix Factory (Food), Unilever (Glos – icecream)</p>
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CONTINUOUS PROVISION

<p>Any construction materials:</p> <ul style="list-style-type: none"> • Lego • Crates and planks • Junk Modelling • Carpentry materials • Investigation of materials through play (plastics, woods, fabrics, metal) • Investigation of materials that can be used to join materials together (glue, tape, nails, screws) 	<ul style="list-style-type: none"> • Investigation tables (what would/would not work) • Interactive displays • Pose a design question with a blank detailed brief • Set up design problem – why will it not work? 	<ul style="list-style-type: none"> • Laptop/s set up with CAD programme and list of school needs or problems for children to have a go at solving. • Open ended design items for solving e.g. what to do with old car tyres... How to make this radiator transfer more heat... • Justification points e.g. why should Ferrari use carbon fibre chassis rather than aluminium? Why should crockery be ceramic rather than plastic?
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Design & Technology Subject Pathway 2: Design and Make

	North Gate (N/R)	East Gate (1/2)	South Gate (3/4)	West Gate (5/6)
Key Pathway 2: Design and make for a wide range of contexts		<p>To begin to participate in teacher-led class discussion to brainstorm ideas for a product, based on a specific design brief, using examples of a range of products</p> <p>To begin to work independently to design and make a simple object eg pen holder – what are the criteria for success.</p> <p>Suggestion: Adapt garage to animal shelter</p>  <p>To work with a partner to create 2D drawings, use templates and make, as a means, to design (link literacy labels and captions)</p> <p>To stick to a design brief with 1-2 points, such as aesthetics and size e.g. design a chair to hold a medium sized teddy bear</p> <p>To identify a range of tools that can be used to perform practical tasks</p>	<p>To make, by following own design brief, a product taking consideration of functionality, aesthetics and target market by investigating and analysing a range of existing products, e.g. a desk tidy with 2 sections to keep classroom resources in.</p> <p>To use model mock ups, templates and annotated sketches to help design and create ideas</p> <p>To stick to a design brief with 1-3 points, such as aesthetics, target market and size e.g. design a chair to hold a medium sized teddy bear</p> <p>To use a range of tools to cut, join and shape materials for a designed product</p>	<p>To research, compare and contrast, and design existing products against a design brief with multiple factors; functionality, aesthetics, target market, company/logo, cost effectiveness, ease of transport and packaging.</p> <p>To identify key events and people within the world of design technology whose ideas have shaped the world e.g. James Dysons vacuum cleaners – Bristol based.</p> <p>To begin to use accurate diagrams to model and communicate creative ideas.</p> <p>Use CAD, model mock-ups, templates, rendering, 3D drawing, cross-sectional and exploded diagrams to help innovate creative design and communicate ideas. To incorporate electronics into design where appropriate. eg. WeDo Lego, MBOTs</p> <p>To use a wider range of tools to finish a product with attention to detail</p>
	<p>Based on a story, draw an invention or product to make, following adult discussion</p>			
	<p>Discuss what the product will be made of and begin to give reasons for this</p>			
	<p>To use a hammer and nails to join two pieces of material together (wood) in a supervised area</p>			

	<p>To begin to safely explore other tools that can be used to create/break down products</p> <p>In a group, or with an adult, discuss what has been made and discuss the process that was followed to make the object</p>	<p>To use a range of tools, with close supervision, to perform a task, based on a design (above)</p> <p>To choose a suitable material to add detail to their product</p> <p>To begin to explore how a wheel or lever might improve or change a product</p> <p>To identify what is positive and negative about products (evaluation) in relation to a set criteria (how to make stronger, stiffer, more stable)</p>	<p>To choose a range of textiles and construction materials to add detail to a finished product</p> <p>To design and build a model to include electrical systems e.g. bulbs, buzzers and motors</p> <p>To identify what is successful and further adapt their own work against a set design criterion</p> <p>To be exposed to CAD as a method for design e.g. TinkerCAD / Minecraft/ WeDoLego etc</p>	<p>To use construction materials to improve their product, thinking carefully about their aesthetic properties</p> <p>To design and build a model to include more than one mechanism e.g. gear, pulley, cams</p> <p>To use computing skills to program, monitor and control a product</p> <p>To make prototypes to test workability and evaluate with a view to re-designing with improvements.</p> <p>To critically evaluate their own and others' designs and products and to use the feedback of others to improve their own designs</p> <p>To generate, model and communicate ideas through CAD. WeDoLego, Minecraft</p>
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VISITS

	Carpenters/ Workshop (role play?)	Factories Electrical components factories	3D Printer companies to see printers in action. Local companies: Safran (Glos), Dyson, Bristol
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CONTINUOUS PROVISION

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Design & Technology Subject Pathway 3: Diet, Nutrition and Hygiene

	North Gate (N/R)	East Gate (1/2)	South Gate (3/4)	West Gate (5/6)
Key Pathway 3: Diet, Nutrition and hygiene	<p>To understand that we must wash our hands before eating and the reasons for this</p> <p>To know which foods are healthy and which are not</p> <p>To know the importance of eating fruit and vegetables</p>	<p>To understand basic kitchen and hand hygiene and know kitchen safety rules. To be introduced to basic kitchen skills under supervision: grating, mixing, crushing, spreading, chopping soft food into large dice and Batonnet.</p> <p>To understand the difference between healthy and non-healthy foods.</p> <p>To use the Eat Well plate to understand healthy portion sizes.</p> <p>To begin to understand the role of food for growth and development.</p> <p>To be introduced to different food groups for appearance, feel, smell and taste.</p> <p>To have an understanding of the farm to plate journey.</p>	<p>To build upon previous basic kitchen skills: chopping food into medium and small dice and Julienne, slicing, mashing, beating, using heat with the supervision of a responsible adult</p> <p>To identify the five main food groups grains and starches, fruits and vegetables, meat and fish, dairy, fats and sugars</p> <p>To begin to relate the five main food groups to the food pyramid and be able to relate this to appropriate portion sizing.</p> <p>To relate food choices and consumption to exercise and lifestyle choices e.g. <i>a rugby player is likely to need more calories than an office worker</i></p> <p>To begin to consider what affects food taste and how this can be changed e.g use of salt/ acid/ fat/heat</p> <p>To know some different styles of food eaten around the globe and be able to name examples e.g. <i>pizza is Italian</i></p> <p>To recognise that food travels from different countries and this impacts on Global Warming (food miles)</p>	<p>To apply practical skills to develop a repertoire of predominantly savoury dishes to feed themselves and others.</p> <p>To differentiate between a healthy and an unhealthy diet relating to required energy intake, activity levels and lifestyle choices</p> <p>To have an awareness and understanding of calories and relate this to energy expenditure e.g. <i>how many calories are in a chocolate bar? How long would you have to run/walk/ cycle to spend these?</i></p> <p>To understand food seasonality and how the food we eat affects</p>

	<p>To know that some foods can be grown on a farm and some comes from animals</p>	<p>To be able to orally describe and share foods commonly eaten in your home and at celebrations.</p> <p>To know that food travels from different countries, and can be grown in the UK – discuss which is better for the environment</p>		<p>our world in terms of environmental impact</p>
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VISITS			
	<p>FARM – ESSENTIAL VISIT In-house bakeries at supermarkets (Lidl, Sainsburys)</p>	<p>Bakeries/Restaurants (Pizza Express, Wagamamas etc)</p>	<p>Thermoformed Packaging, Futura Foods (Dursley, Phoenix Factory (Food), Unilever (Glos – icecream</p>