



Queens Road Academy DT Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	<ul style="list-style-type: none"> • 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 		<ul style="list-style-type: none"> • 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 			
School	<p>Think of own ideas for design.</p> <p>Use pictures and words to plan.</p> <p>Design a product with guidance, following design criteria.</p>	<p>Think of own ideas and plan what to do next.</p> <p>Describe designs using pictures, diagrams, models, mock-ups, words and ICT.</p> <p>Design a product following design criteria.</p>	<p>Create a design that meets a range of requirements.</p> <p>Consider the equipment and tools needed when planning.</p> <p>Describe a design, in detail, using accurately labelled diagrams, and words.</p>	<p>Generate more than one idea for how to create a product.</p> <p>Gather information to help design a successful product (i.e. by asking others' views).</p> <p>Produce a detailed plan with labelled diagrams, a written explanation and step-by-step guide.</p> <p>Suggest improvements to develop and refine a planned idea.</p>	<p>Generate a range of ideas after collating relevant information (i.e. users' views).</p> <p>Produce a detailed plan, with step-by-step instructions, cross-sectional diagrams and prototypes.</p> <p>Suggest alternative plans, considering the positive aspects and drawbacks of each.</p>	<p>Use a range of information to inform a design (i.e. market research using surveys, interviews, questionnaires or web-based resources).</p> <p>Produce a detailed plan, with cross-sectional diagrams and computer-generated designs).</p> <p>Work within constraints, refining and justifying plans as necessary.</p>
Vocabulary	<p>idea, shape, make, construct, purpose, customer, aim, develop, template, use, appearance, transparent, opaque, wood, plastic, absorbent, wheel, wool, decoration, pattern, style, lever, survey</p>		<p>functional, appealing, aesthetic, ergonomic, brief, construction, client, purpose, criteria, usability, develop, dimension, evaluate, innovate, manufacture, material, modification, modify, process, product, prototype, quality, research, safety, specification, suitable, cross-section, consumer, dismantle, enlarged, exploded drawing, malleable, market research, proportion, circuit, friction, force, linear, linkage, pulleys, resistance, questionnaire</p>			

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Evaluate	<ul style="list-style-type: none"> Explore and evaluate a range of existing products Evaluate their ideas and products against design criteria 		<ul style="list-style-type: none"> 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 			
Vocabulary	review, improve		evaluate, illustrate, critical, analyse			
School	<p>Talk about own and pre-existing products, saying what is good or bad about them.</p> <p>Say whether their product does what it is meant to and how it could be improved</p>	<p>Describe how pre-existing products work and simply evaluate them.</p> <p>Suggest what went well and what could be done differently when evaluating their own product.</p>	<p>Evaluate own and pre-existing products.</p> <p>Suggest what could be changed to improve a design, beginning to link this to the design brief.</p>	<p>Evaluate the appearance and usability of own and pre-existing products.</p> <p>Explain how the original design could be improved, considering the appearance and usability and linking this to the design brief.</p>	<p>Evaluate the appearance and test the function of a product (own and pre-existing) against the original criteria, saying whether it is fit for purpose.</p> <p>Suggest improvements that could be made, considering materials and methods that have been used.</p>	<p>Evaluate the appearance and test the function of a product (own and pre-existing) against the original criteria, saying whether it is fit for purpose.</p> <p>Suggest improvements that could be made, considering materials, methods, sustainability of the product and how much a product costs to make.</p>

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Make	<ul style="list-style-type: none"> Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics 		<ul style="list-style-type: none"> 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 			
School Tools	<p>Use the senses to explore and talk about materials.</p> <p>Use simple tools and materials with support.</p> <p>Cut paper/card using scissors.</p> <p>Join with tape or glue.</p> <p>Roll paper and card to form a tube.</p> <p>Add paper and card shapes to products.</p> <p>Apply simple finishes e.g. paint, PVA glue glaze.</p>	<p>Explore and talk about the characteristics of an increasing range of materials.</p> <p>Select and use simple tools to cut and join a range of materials.</p> <p>Use a straight edge to mark lines for cutting.</p> <p>Join edge to edge using glue.</p> <p>Use a hole punch and stapler.</p> <p>Select from a range a finish to improve the appearance of a product.</p>	<p>Select materials and components according to known characteristics and functions.</p> <p>Select tools to cut, shape and join materials and components.</p> <p>Use a ruler to measure and mark lines for cutting.</p> <p>Make and use gluing tabs.</p> <p>Make simple paper models, mock-ups and templates.</p> <p>Select an appropriate way to improve the appearance of a product.</p>	<p>Select from and use a wide range of materials and components according to both functional and aesthetic qualities.</p> <p>Use a hack saw and bench hook safely.</p> <p>Make increasingly complex paper models, mock-ups and templates.</p> <p>Select the most effective finish to enhance the appearance of a product.</p>	<p>Select a range of appropriate tools to cut, shape and join materials and components effectively.</p> <p>Use a G clamp effectively.</p> <p>Join and combine materials and components in permanent and temporary ways.</p> <p>Make a range of complex paper models, mock-ups and templates.</p> <p>Produce a well-finished product that fulfils the functional and aesthetic design criteria.</p>	<p>Select a range of appropriate tools to cut, shape and join materials and components with accuracy and precision.</p> <p>Use a drill to make an off-centre hole.</p> <p>Make and adapt where necessary complex mock-ups and templates.</p> <p>Identify and apply an appropriate finishing technique to ensure a high quality end product which meeting the design criteria.</p>
School Textiles	<p>Colour fabrics using fabric paints, printing and painting.</p> <p>Join fabrics with glue.</p> <p>Decorate fabrics with buttons, beads, sequins, braids and ribbons.</p>	<p>Colour fabrics using dyeing techniques.</p> <p>Cut out shapes which have been created by drawing around a template onto the fabric.</p> <p>Join textiles using simple running stitch.</p>	<p>Join fabrics using over stitch and back stitch.</p> <p>Create a simple pattern using stitches.</p> <p>Add decoration to work using beads, sequins etc.</p>	<p>Add a fastening to products. e.g. sew on buttons and make loops.</p> <p>Understand the need for patterns.</p> <p>Use applique to decorate.</p>	<p>Join fabrics using over sewing, back stitch and blanket stitch.</p> <p>Understand pattern layout.</p> <p>Use seam allowance.</p>	<p>Follow a pattern confidently and accurately.</p> <p>Pin and tack fabric pieces together.</p> <p>Use a machine to sew.</p>
School Construction	<p>Explore and investigate a range of simple, large scale construction materials, e.g. cardboard boxes.</p> <p>Explore building, bridges and towers using large and small-scale construction materials.</p> <p>Make simple 2D structures using straws.</p>	<p>Construct a range of simple structures using simple construction kits.</p> <p>Make a structure more stable by widening the base.</p> <p>Make a square frame from strip wood using triangular card joints.</p>	<p>Create nets of increasingly complex 3D shapes which include the addition of gluing tabs.</p> <p>Reinforce and strengthen 3D framework using the concept of 'triangulation'.</p> <p>Use a range of materials to make joints.</p>	<p>Explain why some structures fail.</p> <p>Investigate measure and record the load tolerance of different structures and find ways of improving a structures loadbearing capacity.</p> <p>Build a range of structures using a wide range of effective materials.</p>		
Vocabulary	equipment, tools, saw, cut, join, finish, construct, material, sew, glue, attach, stable, axle, glue gun, joint, scissors, screwdriver, ruler.		carpentry, timber, grain, screw, nails, glue, hinges, chisel, hammer, bench hook, glass paper, smoothing plane, knot, strengthening, right angle, assemble, adhesive, acrylic, dowel, laminate, coping saw			

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<p>Technical Skills</p>	<ul style="list-style-type: none"> • 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. 		<ul style="list-style-type: none"> • 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 	
<p>Vocabulary</p>	<p>Lever, sliders, wheels, axles, structures, stronger, stiffer, stable, reinforce, mechanisms, vehicle, chassis,</p>		<p>reinforces, gears, cams, linkages, pulleys, levers, complex, series circuit, horizontal movement, vertical movement, right angle, teeth, cogs, belt, fulcrum, lever arm, load, effort, Newton, force, friction, mechanism,</p>	
<p>Mechanical Systems/ Mechanisms</p>	<p>Use simple construction materials to make a vehicle.</p> <p>Attach wheels to a chassis using an axle, e.g. cotton reels and dowel.</p> <p>Use pencils or tubes as rollers to move an object across the floor.</p> <p>Explore and talk about books containing flaps and moving pictures.</p> <p>Deconstruct a simple slider and talk about how it works.</p> <p>Construct a simple slider with support.</p>	<p>Deconstruct and reconstruct boxes accurately.</p> <p>With support attach a fixed axle to a chassis and add wheels ensuring that they can move freely.</p> <p>Deconstruct a range of levers and describe how they work.</p> <p>Make a lever by joining card strips with paper fasteners.</p> <p>Join levers to make linkages to create moving parts.</p>	<p>Use construction kits with gears to construct a line of gears that turn.</p> <p>Use construction kits with gears to mesh gears at right angles.</p> <p>Explain how the number of teeth of a gear affects the speed of rotation.</p> <p>Construct a simple pneumatic system with one moving part.</p> <p>Construct a simple pneumatic system with two moving parts.</p> <p>Generate questions to investigate and compare the efficiency of pneumatic systems.</p>	<p>Construct a simple pulley using rope over a horizontal bar to raise an object off the ground.</p> <p>Construct a pulley that allows a load to travel horizontally along a rope.</p> <p>Identify, describe and evaluate products that contain pulleys and drive belts.</p> <p>Create pulleys and drive systems that can be driven by motor and computer.</p> <p>Explain how a belt and pulley system can be used to reverse the direction of rotation, and alter the plane of rotation by 90 degrees.</p> <p>Identify the cam within a simple mechanism and explain how movement is changed.</p> <p>Describe the way in which a cam changes rotary motion into linear motion.</p> <p>Discuss the relationship between a cam and follower, an off-centre cam, a peg cam, a pear-shaped cam and a snail cam.</p>
<p>Electrical Systems & Control</p>	<p></p>		<p></p>	<p>Explore and describe how electrical circuits can be created and controlled.</p> <p>Explore and explain how the direction and speed of an electrical motor can be controlled.</p> <p>Explore and describe how switches can be used in a range of circuits to control components.</p> <p>Apply appropriate safety measures when constructing circuits.</p> <p>Explore and use an increasing range of complex control system, e.g., a light sensor.</p>

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Cooking & Nutrition	<ul style="list-style-type: none"> • Use the basic principles of a healthy and varied diet to prepare dishes • Understand where food comes from. 		<ul style="list-style-type: none"> • Understand and apply the principles of a healthy and varied diet • Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. • Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. 			
School	<p>Know that everyone should eat at least five portions of fruit and vegetables every day.</p> <p>Sort and classify food into food groups, e.g. vegetables, pulses, cereals, dairy etc.</p> <p>Prepare simple dishes safely and hygienically, without using a heat source.</p> <p>Demonstrate how to use techniques such as cutting, peeling and grating.</p> <p>Explore common food sources and understand most foods come from plants or animals.</p> <p>Research about and make dishes from other countries.</p>		<p>Know how a healthy diet is made up from a variety and balance of different food and drink.</p> <p>Explain why a healthy diet is important.</p> <p>Sort and classify an increasing range of food according to specific food groups, e.g. proteins, carbohydrates, fats etc.</p> <p>Prepare and cook dishes including experience of using a heat source.</p> <p>Be able to identify foods which come from the UK and other countries in the world.</p>		<p>Evaluate a meal and consider if they contribute towards a balanced diet.</p> <p>Plan a healthy and affordable diet.</p> <p>Use a range of cooking techniques, e.g. selecting and preparing ingredients, application of heat, seasoning dishes, combining ingredients.</p> <p>Understand the principles of cleaning to prevent cross contamination, chilling foods thoroughly and reheating food until steaming hot.</p> <p>Understand the source, seasonality and characteristics of a broad range of ingredients.</p> <p>Make simple 2D structures using straws.</p>	
Vocabulary	<p>fruit, vegetable, healthy, portion, look, taste, texture, smell, size, shape, colour, ingredients, techniques, chopping, peeling, grating, measure, weigh, safety, hygiene, non-standard, farmed, caught, grown, prepare, cook, recipe, heat source, sweet, savoury, recipe, dough, knead</p>		<p>diet, variety, carbohydrate, protein, dairy, fat, vitamin, mineral, calories, energy, savoury, balanced, nutritious, nutrition, method, prepare, quantity, sensory characteristics, raw, slicing, mixing, spreading, kneading, baking, starchy, stodgy, cubing, creaming, melting, boiling, simmering, additives, batch production, quality control, specification.</p>		<p>food poisoning, bacteria, grown, reared, caught, seasonality, source, processed, organic, vegetarian, vegan, pescatarian, sustainability, allergies, intolerance, free range, budget, affordability, value, aesthetics, consumer, cross-contamination, organoleptic, traceability, shelf life</p>	