

Design Technology Year 5	Autumn	Spring	Summer
	Building Bridges (structures)	Chinese inventions (structures/textiles)	Automata Animals (mechanical systems)
Final Outcome	Design a bridge that meets a defined design specification	To design and make a kite.	Design and create an Automata Animal
Key Skills taught	<ul style="list-style-type: none"> - Explore and investigate existing products (focus on: different bridges- old and new-, and labelling parts) - Develop understanding of structures support: design different cross sections of beams and test their strength - Develop understanding of using different structural supports: develop, design and test trusses - Develop understanding of structural support: develop, design and test drawstring bridges - Design final outcome: using key skills design bridge to withstand traffic - Produce final outcome: produce bridge that can withstand traffic - Evaluate final design- use reflection sheet 	<ul style="list-style-type: none"> - Explore and investigate existing products (focus on: history of 4 great inventions in China, kites: joining, material, structure, parts of a kite) - Develop understanding of structures: shape and ability to fly - Develop understanding of structure: identify key structure of kite base - Design final outcome: using key knowledge of structure and material - Produce final outcome: produce a kite that can fly - Evaluate final design- use reflection sheet 	<ul style="list-style-type: none"> - Explore and investigate existing products (focus on: joints, materials, structures) - Develop understanding of systems: understand how cams work to move objects - Develop understanding of systems: understand how shapes of cams effect movements - Develop understanding for joining and cutting: understand how to cut and join wooden structures - Design final outcome: design a final moving animal product to encourage people to think about endangered animals using cams - Produce final outcome: produce moving structure to the design brief using wood - Evaluate final design- use reflection sheet
Key Vocabulary	Pillar, beam, cross-section, load, truss, ladder, arch, suspension, deck, scale model, clearance	Invention, gears, pulleys, lever, cams, crank, linkages, sail, spine, frame, cross spar, tail, line	Mechanisms, cam mechanism, components, construction, properties, aesthetics, functional, Automata Animals, framework, joints, hacksaw, join, cut, saw, notch, shaft, prototype, dowel, mechanical systems
<p><u>N.C</u></p> <p>A) 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</p> <p>B) generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>C) select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>D) 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</p> <p>E) investigate and analyse a range of existing products</p> <p>F) evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>G) understand how key events and individuals in design and technology have helped shape the world</p> <p>H) apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p>	<p style="text-align: center;"><u>(A, B, D, F, G, I)</u></p> <p>I know what beams and pillars are and how they are used in bridge construction.</p> <ul style="list-style-type: none"> • I can predict which beams will be strongest from their cross-section. • I can test the strength of different beam shapes using paper and card. • I can explain what a truss is and how trusses make bridges stronger. • I can identify the three types of trusses commonly used in bridge design. • I can build a truss bridge spanning a width of 40cm using paper straws. • I can use a fair test to evaluate the strength of my truss bridge. • I can explain how arches work to make bridges stronger. • I can test the arch heights to see which can bear the most load. • I can make an arch frame. • I can explain how suspension bridges use tension forces to work. 	<p style="text-align: center;"><u>(A, B, D, F, G, I)</u></p> <ul style="list-style-type: none"> • I can explain how the invention of paper helped shape the world. • I can explain the traditional method for making paper. • I can test a variety of types of paper for strength, absorbency, opacity, etc. • I can make recycled paper. • I know how gunpowder was invented. • I can explain how the invention of gunpowder helped shape the world. • I can explain how the invention of the compass changed the world. • I can make a hanging/floating compass. • I can design and label my own compass. • I can explain what water-powered machines are and how they helped change the world. • I can explain why kites were first invented and how they were made. • I can make a variety of kite prototypes and test their effectiveness. 	<p style="text-align: center;"><u>(A, C, D, F, H, I)</u></p> <ul style="list-style-type: none"> • use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market; • explain how particular parts of their products work; • use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas; • work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment. • independently plan by suggesting what to do next • with growing confidence, select from a wide range of tools and equipment, explaining their choices • select from a range of materials and components according to their functional properties and aesthetic qualities; • learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures; • independently take exact measurements and mark out, to within 1 millimetre

<p>I) understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] J) understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] K) apply their understanding of computing to program, monitor and control their products L) understand and apply the principles of a healthy and varied diet M) prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques N) understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed</p>	<p>• I can design, make and evaluate a prototype suspension bridge using a scale of 1:100 according to specific design criteria.</p>	<p>• I can design, make and evaluate a kite according to specific design criteria.</p>	<ul style="list-style-type: none"> • use a full range of materials and components, including construction materials and kits, textiles, and mechanical components; • cut a range of materials with precision and accuracy • assemble, join and combine materials and components with accuracy; • refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.
Design Technology Year 6	Autumn	Spring	Summer
	Fashion and Textiles (textiles)	Programming Pioneers (programming)	Burgers (cooking and nutrition)
Final Outcome	Create a drawstring bag using hand sewing techniques	To create a computer programmed product- fairground ride	To design, cook, taste and evaluate burgers.
Key Skills taught	<ul style="list-style-type: none"> - Explore and investigate existing products (focus on: joining techniques, materials used, decorations) - Develop understanding of joining different techniques: sewing techniques (running stitch, hem stitch, whip stitch, basting stitch) - Develop understanding of using different stitches for design: sewing techniques (back stitch and blanket stitch, adding appliqué) - Develop designs to produce end outcome: understand that pattern pieces are used to develop an end outcome. Design, measure and create pattern pieces. - Produce final outcome: produce drawstring bag - Evaluate final design- use reflection sheet 	<ul style="list-style-type: none"> - Explore and investigate existing products (focus on: fair ground rides, movement, systems, historical computer programmers) - Develop understanding of programming systems: explore how micro controllers work and create a series of instructions to create movement and for lights to light - Develop understanding of programming systems: debug algorithms to produce a fairground ride - Design final outcome: design structure and algorithm to create a fairground ride. - Produce final outcome: produce a fairground ride - Evaluate final design- use reflection sheet 	<ul style="list-style-type: none"> - Explore and investigate existing products (focus on: different burger patties and sauces and their nutritional value) - Explore and investigate existing products (focus on: different burger buns- shape, texture, flavour, suitability) - Develop understanding of how burger patties are formed: chopping, mixing, measuring, frying, grilling, tasting, evaluating - Develop understanding of how sauces are formed: chopping, mixing, measuring, tasting, evaluating - Design final outcome: design burger thinking about patty type, sauce and bun - Produce final outcome: produce a burger - Evaluate final outcome- using reflection sheet
Key Vocabulary	Fabric, measure, sewing, whip stitch, back stitch, straight stitch, thread, needle, fabric	Component, computer, programme, memory chips, switch, circuit, engineer, Alan Turing, software, hardware, debug, embedded system	Cuisine, product, patty, nutrition, pan-fried, barbequed, over-baked, steamed, carbohydrate, protein, fat, calories, ingredient,

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