

Design and Technology

Rationale behind the sequencing and structure of the Design and Technology curriculum

Key points to note:

- During each phase (KS1, LKS2 and UKS2) all pupils will have the opportunity to develop their skills and knowledge in design, structures, mechanisms, electrical control and a range of materials including food.
- Pupils will be given the opportunity to develop skills, knowledge and understanding of designing and making functional products.
- In each design and technology project, there will be three core activities which are combined into a sequence to create a project: activities which involve investigating and evaluating existing products; focused tasks in which children develop particular aspects of knowledge and skills; designing and making activities in which children design and make 'something' for 'somebody' for 'some purpose'.
- The school ethos of BASICS is a positive undercurrent and is referenced throughout units
- Building Learning Power skills are incorporated in all units to support pupils to reflect and evaluate on their own habits of learning in design and technology

Year R

Salt dough – Children design and make their own hanging decorations. They design the shape and colour and whether they would like to use glitter or not. They then make and decorate their decoration. Once they have completed the making process, they evaluate their final product against their design, comparing whether they were the same or not. They also design and make a minibeast paperweight during the summer term following a similar layout to the decoration. When evaluating, they write a sentence rather than using a tick box.

Construction – This happens daily in Reception. Children have access a range of large and small construction resources, both inside and outside. During the spring and summer terms, we encourage the children to write a label about what they have created so it can be placed on display.

Cooking – We cook at various times of the year. When we cover The Very Hungry Caterpillar, the children have the opportunity to make their own fruit salad/kebab by cutting their own fruit and trying new ones. During the summer term, the children make gingerbread men during our fairytales topic. They take part in the weighing and measuring of ingredients, mixing and combining and roll out their own 'man'.

Junk modelling – During various topics, we complete large and small junk modelling. The children create castles, rockets and small towns with resources brought in from home.

	<p>EYFS objectives (Statutory framework):</p> <ul style="list-style-type: none"> It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. <p>ELG:</p> <ul style="list-style-type: none"> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function Share their creations, explaining the process they have used 		
	Autumn	Spring	Summer
PROJECTS, OBJECTIVES AND VOCABULARY			
Year 1	<p>Strand: Freestanding structures</p> <p>Project title: To design, make and evaluate a bedroom for a lego character</p> <p>National Curriculum link: History unit- homes from the past</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To design purposeful, functional, appealing products for themselves and other users based on design criteria. To select from and use a range of tools and equipment to perform practical tasks e.g. cutting, joining. To evaluate their ideas and products against design criteria. To build structures, exploring how they can be made stronger, stiffer and more stable. <p>Vocabulary: Vocabulary: design brief, user, purpose</p> <p>Cut, fold, join, fix, structure, freestanding structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface,</p>	<p>Strand: Cooking and nutrition</p> <p>Project title: To design, make and evaluate a sample of biscuits for Mr Grinling</p> <p>National Curriculum link: English unit- ‘The Lighthouse Keeper’s Lunch’ by David Armitage and Ronda Armitage</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To design purposeful, functional, appealing products for themselves and other users based on design criteria. To select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics To explore and evaluate a range of existing products <p>Vocabulary: design brief, user, purpose</p> <p>Fruit, vegetable, equipment, utensils, sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard</p>	<p>Strand: Mechanical systems</p> <p>Project title: To design, make and evaluate an African moving picture book about African animals</p> <p>National Curriculum link: Geography unit- Africa</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To design purposeful, functional, appealing products for themselves and other users based on design criteria. To explore and use mechanisms [for example, levers, sliders, wheels and axles] in their products. To select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. To evaluate their ideas and products against design criteria. <p>Vocabulary: design brief, user, purpose</p>

	<p>thinner, thicker, corner, point, straight, curved, metal, wood, plastic, circle, triangle, square, rectangle, cube, cuboid, cylinder</p>	<p>Flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing ingredients, planning, investigating, tasting, arranging</p>	<p>Slider, lever, pivot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, curve, forwards, backwards</p>
<p>Year 2</p>	<p>Strand: Cooking and Nutrition</p> <p>Project title: To design, make and evaluate a bread product for Thomas Farynor to sell in his bakery</p> <p>National Curriculum link: History Unit- Great Fire of London</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To use the basic principles of a healthy and varied diet to prepare dishes. To understand where food comes from. <p>Vocabulary: design brief, user, purpose</p> <p>Fruit, vegetable, equipment, utensils, sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard</p> <p>Flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing ingredients, planning, investigating, tasting, arranging</p>	<p>Strand: Mechanisms</p> <p>Project title: To design, make and evaluate a push/pull toy to transport a miniature figure</p> <p>National Curriculum link: English- ‘Where the Wild Things Are’ by Maurice Sendak and History unit- Transport</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To design purposeful, functional, appealing products for themselves and other users based on design criteria. To generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. To select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] To explore and evaluate a range of existing products To evaluate their ideas and products against design criteria To build structures, exploring how they can be made stronger, stiffer and more stable <p>Vocabulary: design brief, user, purpose, product function</p>	<p>Strand: Textiles</p> <p>Project title: To design, make and evaluate a glove puppet</p> <p>National Curriculum link: English- traditional tales</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To design purposeful, functional, appealing products for themselves and other users based on design criteria. To generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. To select from and use a wide range of materials and components, including construction materials, textiles, according to their characteristics. To evaluate their ideas and products against design criteria. To select from and use a range of tools and equipment to perform practical tasks e.g. joining - sewing. <p>Vocabulary: design brief, user, purpose</p> <p>Products, joining and finishing techniques, tools, fabrics, components, template, pattern pieces,</p>

		Cut, fold, join, fix, structure,, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic, circle, triangle, square, rectangle, cube, cuboid, cylinder	mark out, join, decorate, finish, features, suitable, quality mock-up
Year 3	<p>Strand: Structures</p> <p>Project title: To design, make and evaluate a lunch box for a trip to Skara Brae</p> <p>National Curriculum link: English unit- Skara Brae</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To 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. To select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. To investigate and analyse a range of existing products. To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work To apply their understanding of how to strengthen, stiffen and reinforce more complex structures <p>Vocabulary: function, innovative, design specification, design brief, user, purpose</p>	<p>Strand: Cooking and Nutrition</p> <p>Project title: To design, make and evaluate a healthy and nutritious sandwich/wrap for the Greek gods.</p> <p>National Curriculum link: History unit- Greeks</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To understand and apply the principles of a healthy and varied diet. To prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. To understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. <p>Vocabulary: function, innovative, design specification, design brief, user, purpose</p> <p>Products, equipment, utensils, techniques, ingredients, texture, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, seasonal, harvested, healthy, diet</p>	<p>Strand: Textiles</p> <p>Project title: To design, make, and evaluate an apron for future use</p> <p>National Curriculum link: English- The Day I Swapped my Dad for Two Goldfish</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To 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. To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. To select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. To investigate and analyse a range of existing products. <p>Vocabulary: function, innovative, design specification, design brief, user, purpose</p> <p>Fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique,</p>

	Shell structure, three-dimensional, shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, graphics		strength, weakness, stiffening, templates, stitch, seam, seam allowance
Year 4	<p>Strand: Mechanical Systems</p> <p>Project title: To design, make, and evaluate a moving picture using levers and linkages for younger pupils</p> <p>National Curriculum link: History link- Romans</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> • To 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. • To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. • To 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>Vocabulary: function, innovative, design specification, design brief, user, purpose</p> <p>Mechanism, lever, linkage, pivot, slot, bridge, guide, linear, rotary, oscillating, reciprocating, prototype</p>	<p>Strand: Cooking and nutrition</p> <p>Project title: To design, make and evaluate a sample of hot cross buns for an Easter celebration/charity event</p> <p>National Curriculum link: R.E. Unit- What is the significance of Easter within Christianity?</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> • To 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 • To 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 • To investigate and analyse a range of existing products • To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • To understand and apply the principles of a healthy and varied diet • To prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques 	<p>Strand: Electrical Systems</p> <p>Project title: To design, make, and evaluate a torch for future use</p> <p>National Curriculum link: Science unit- Light</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> • To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design. • To select from a wider range of tools and equipment to perform practical tasks (cutting, shaping, joining and finishing) accurately. • To understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. • To investigate and analyse a range of existing products. • To understand how key events and individuals in design and technology have helped shape the world. • To apply their understanding of computing to program, monitor and control their products.

		<ul style="list-style-type: none"> To understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. <p>Vocabulary: function, innovative, design specification, design brief, user, purpose</p> <p>Utensils, techniques, ingredients, texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, seasonal, harvested, healthy, diet</p>	<p>Vocabulary: function, innovative, design specification, design brief, user, purpose</p> <p>Series circuit, fault connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device</p>
Year 5	<p>Strand: Mechanical systems</p> <p>Project title: To design, make and evaluate a dragster for a Formula One team</p> <p>National Curriculum link: Science- Forces</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To 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 To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design To 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>Strand: Textiles</p> <p>Project title: To design, make and evaluate a phone case for a person who has an interest in space</p> <p>National Curriculum link: Science unit- Space</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To 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. To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. To select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. <p>Vocabulary: function, innovative, design specification, design brief, user, purpose</p>	<p>Strand: Structures</p> <p>Project title: To design, make and evaluate a bridge to allow people to cross a river</p> <p>National Curriculum link: Geography unit- Rivers</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To 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. To select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. To apply their understanding of how to strengthen, stiffen and reinforce more complex structures. To understand how key events and individuals in design and technology have helped shape the world.

	<ul style="list-style-type: none"> To investigate and analyse a range of existing products To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work To understand how key events and individuals in design and technology have helped shape the world <p>Vocabulary: function, innovative, design specification, design brief, user, purpose</p> <p>Pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, wheels</p>	<p>Textiles, sewing, fabric sheets, fabric, embellish, thread, pattern ,pins, fabric glue, seam, fastenings, aesthetics</p>	<p>Vocabulary: function, innovative, design specification, design brief, user, purpose</p> <p>Frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, prototype, annotated sketch</p>
Year 6	<p>Strand: Electrical systems</p> <p>Project title: To design, make and evaluate an alarm for a safe room</p> <p>National Curriculum link: Science- Electricity</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design. To select from a wider range of tools and equipment to perform practical tasks (cutting, shaping, joining and finishing) accurately. 	<p>Strand: Cooking and Nutrition</p> <p>Project title: To design, make and evaluate a sample of muffins for a supermarket</p> <p>National Curriculum link: PSHE- Healthy Eating</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To understand and apply the principles of a healthy and varied diet. To prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. To understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. 	<p>Strand: Electrical systems- Control</p> <p>Project title: To design, make and evaluate wearable devices to help young people to 'Be Safe: Be Seen!'</p> <p>https://microbit.org/projects/design-challenges/</p> <p>National Curriculum link: Transitioning to secondary school- safety</p> <p>National Curriculum objectives:</p> <ul style="list-style-type: none"> To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design. To select from a wider range of tools and equipment to perform practical tasks

	<ul style="list-style-type: none"> To understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. To investigate and analyse a range of existing products. To understand how key events and individuals in design and technology have helped shape the world. <p>Vocabulary: function, innovative, design specification, design brief, user, purpose</p> <p>Series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart</p>	<ul style="list-style-type: none"> To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. <p>Vocabulary: function, innovative, design specification, design brief, user, purpose</p> <p>Fat, allergy, caster, carbohydrate, gluten, seasonality, savoury, self-raising flour, ingredients, source, oil, utensils, salt, eggs, nutrient</p>	<p>(cutting, shaping, joining and finishing) accurately.</p> <ul style="list-style-type: none"> To understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. To investigate and analyse a range of existing products. To understand how key events and individuals in design and technology have helped shape the world. <p>Vocabulary: function, innovative, design specification, design brief, user, purpose</p> <p>Wearable device, visual, audio, prototype, creative thinking, testing, presenting, control, program, system, input device, output device</p>
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Six, interrelated principles have been agreed by the National Curriculum Expert Group for D&T. They describe the features of a genuine D&T experience from the pupils' perspective and can be applied to all material areas and aspects of the subject School curriculum principles for design and technology. Each principle should be evident to a greater or lesser degree in each project that pupils undertake.

User Pupils should have a clear idea of who they are designing and making products for, considering their needs, wants, values, interests and preferences. The intended users could be themselves or others, an imaginary or story-based character, a client, a consumer or specific target group.

Purpose Pupils should be able to clearly communicate the purpose of the products they are designing and making. Each product they create should be designed to perform one or more defined tasks. Pupils' products should be evaluated through use.

Functionality Pupils should design and make products that work/function effectively in order to fulfil users' needs, wants and purposes.

Design decisions Pupils need opportunities to make their own design decisions. Making design decisions allows pupils to demonstrate their creative, technical and practical expertise, and draw on learning from other subjects. Through making design decisions pupils decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for.

Innovation When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging openended starting points for learning

Authenticity Pupils should design and make products that are believable, real and meaningful to themselves and others.