Design and Technology at St Nicholas CE Primary School

Intent

At St Nics we aim to provide children with a DT education that is relevant in our rapidly changing world. We want to encourage our children to become problem solvers who can work creatively on a shared project. Using the Cornerstones curriculum, design and technology is planned as a meaningful part of a wider project, to ensure children see the practical application of DT skills.

The use of the Cornerstones curriculum also ensures the progression of skills, as it builds upon the children's previous knowledge through a project-based approach. Our DT curriculum provides children with opportunities to research, represent their ideas, explore and investigate, make a product and evaluate their work. Children will be exposed to a wide range of media including textiles, food and woodwork; through this, children will develop their skills, vocabulary and resilience. As our children progress through the school, the Cornerstones curriculum ensures the children revisit techniques to help them to progress within the different areas and consolidate skills and knowledge.

Linked to our art curriculum, we think it is important that children study a range of designers and architects, both past and present, and that in particular we think it is essential they should learn about a range of diverse creatives who reflect the society and world in which we live, so we have incorporated within our art and DT curriculum.

Implementation

We have a clear and comprehensive scheme of work in line with the National Curriculum. Whilst the EYFS and National Curriculum forms the foundation of our curriculum, we make sure that children learn additional skills, knowledge and understanding and enhance our curriculum as and when necessary. Children have access to key knowledge, language and meanings to understand DT and to use these skills across the curriculum. In DT children are asked to solve problems and develop their learning independently. English, Maths and ICT skills are taught during discrete lessons but are revisited in Design Technology so children can apply and embed the skills they have learnt in a purposeful context. Our DT projects sit within cross curricular Cornerstones projects, which aim to help children see connections between subjects and work on meaningful projects that have practical applications.

Within food technology, in particular, we have attempted to bring meaning and purpose around cooking through such activities a whole school Mantle of the Expert project where each class focussed on a country from around the world and created food from that region to share with the school and a recent Family Tree project, where families were encouraged to talk about and explore favourite family recipes in order to create a whole school St Nics' Favourite Family Recipes book. The aim was to explore the meaning behind family recipes, whilst encouraging conversation around this, developing cooking skills at home, whilst exploring family food traditions.

Impact

Our DT curriculum is developing to provide well thought out lessons and topics that demonstrate progression. In addition, we measure the impact of our curriculum through the following methods: reflection on standards achieved against the planned outcomes using the Cornerstones assessments, pupil discussions about their learning, which includes discussion of their thoughts, ideas, processing and evaluations of work. As designers, the aim is for children to develop practical skills and attributes they can use beyond school and into adulthood, understanding the importance and meaning behind these.

St Nics Design and Technology Whole School Progression Map – Using Cornerstones Progression

Big idea	Aspect	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Humankind	Everyday products	Explore and evaluate a range of existing products. covered optional	Explore and evaluate a range of existing products. covered	Investigate and analyse a range of existing products. covered optional x 2	Investigate and analyse a range of existing products. covered x 5 optional	Investigate and analyse a range of existing products. covered optional x 2	Investigate and analyse a range of existing products. covered x 3 optional
	Staying safe	Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. covered breadth	Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. breadth Know about personal hygiene and germs including bacteria, viruses, how they are spread and treated, and the importance of handwashing. covered optional x 3	Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. covered optional x 3 breadth	Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. covered optional breadth	Critique, evaluate and test their ideas and products and the work of others. covered x 4 optional breadth	Critique, evaluate and test their ideas and products and the work of others. covered x 3 optional breadth
Processes	Electricity	Explore and evaluate a range of existing products. covered	Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. covered	Understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors). covered x 2 optional	Understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors). covered optional x 2	Understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors). covered	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. covered x 2
	Mechanisms and movement	Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products. covered x 2	Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products. covered	Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). covered x 2 optional x 2	Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). covered	Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). covered	Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). covered x 2 optional

Big idea	Aspect	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Creativity	Generation of ideas	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. covered x 4 optional x 6	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. covered x 3 optional	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. covered x 11 optional	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. covered x 6 optional x 2	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. covered x 3	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. covered x 7 optional x 2
	Use of ICT	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. covered x 2	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. covered x 2	Apply their understanding of computing to program, monitor and control their products. covered	Apply their understanding of computing to program, monitor and control their products. covered	Apply their understanding of computing to program, monitor and control their products. covered	Apply their understanding of computing to program, monitor and control their products. covered
	Structures	Build structures, exploring how they can be made stronger, stiffer and more stable. covered x 16 optional x 2	Build structures, exploring how they can be made stronger, stiffer and more stable. covered x 4 optional x 3	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. covered x 2 optional x 3	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. covered x 2	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. covered	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. covered x 4 optional x 2

Big idea	Aspect	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Investigation	Investigation	Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing). covered x 2 optional x 6	Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing). covered x 7 optional x 3	Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. covered x 3 optional x 8	Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. covered x 2 optional x 2	Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. covered x 2 optional x 9	Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. covered optional x 4
	Evaluation	Evaluate their ideas and products against design criteria. covered x 2 optional x 4	Evaluate their ideas and products against design criteria. covered x 2 optional x 3	Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. covered x 3 optional x 5	Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. covered x 7 optional x 5	Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. covered x 3	Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. covered x 2 optional x 2
Materials	Materials for purpose	Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. covered x 9 optional x 4	Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. covered x 15 optional x 7	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. covered x 14 optional x 4	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. covered x 17 optional x 5	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. covered x 16	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. covered x 11 optional x 6
Nature	Food preparation and cooking	Use the basic principles of a healthy and varied diet to prepare dishes. covered x 3	Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing). Use the basic principles of a healthy and varied diet to prepare dishes. covered x 2 optional	Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. covered x 5	Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. covered x 3 optional	Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. covered x 3 optional	Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. covered x 7 optional

Big idea	Aspect	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Nutrition	Use the basic principles of a healthy and varied diet to prepare dishes. Know what constitutes a healthy diet (including understanding calories and other nutritional content). Know the principles of planning and preparing a range of healthy meals. covered x 3	Use the basic principles of a healthy and varied diet to prepare dishes. Know what constitutes a healthy diet (including understanding calories and other nutritional content). Know the principles of planning and preparing a range of healthy meals. covered	Understand and apply the principles of a healthy and varied diet. Know what constitutes a healthy diet (including understanding calories and other nutritional content). covered optional	Understand and apply the principles of a healthy and varied diet. Know what constitutes a healthy diet (including understanding calories and other nutritional content). Know the principles of planning and preparing a range of healthy meals. covered x 2	Understand and apply the principles of a healthy and varied diet. Know what constitutes a healthy diet (including understanding calories and other nutritional content). covered optional	Understand and apply the principles of a healthy and varied diet. Know what constitutes a healthy diet (including understanding calories and other nutritional content). Know the principles of planning and preparing a range of healthy meals. covered optional
	Origins of food	Understand where food comes from. covered optional	Understand where food comes from. covered	Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. covered	Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. covered	Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. covered x 2	Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. covered
Comparison	Compare and contrast	Explore and evaluate a range of existing products. covered optional x 2	Explore and evaluate a range of existing products. covered	Understand how key events and individuals in design and technology have helped shape the world. covered	Investigate and analyse a range of existing products. covered	Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. covered	Investigate and analyse a range of existing products. covered optional
Significance	Significant people	Explore and evaluate a range of existing products. covered	Explore and evaluate a range of existing products. covered	Understand how key events and individuals in design and technology have helped shape the world. covered	Understand how key events and individuals in design and technology have helped shape the world. covered x 2 optional	Understand how key events and individuals in design and technology have helped shape the world. covered	Understand how key events and individuals in design and technology have helped shape the world. covered x 2

Design and Technology Vocabulary Progression – St Nics

Textiles						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Cutting Weave Rough Smooth	Fabric Colour Pattern Shape Texture Sew Weave Mixed media Collage Appliqué	Fabric Colour Pattern Shape Texture Sew Hessian Scraps Wool Yarn	Natural Synthetic Vat Bunching Threading Stitching Embroidery Cross stitch Running	Daub Stamp Emblem Motif Ornamentation Geometric Stylised Abstract	Manipulation Smocking Ruching Embellish Accentuate Enhance Detract	Manipulation Smocking Ruching Embellish Accentuate Enhance Detract

	Layers Combine Opinion Fur Silk Tweed Satin Net	Mixed media Weave Collage Appliqué Layers Combine Opinion Thread Net Fur Tweed Silk Satin	stitch Stem stitch Matting Shrunken Tease Wool tops Carding		Practicality Aesthetic Birds eye view	Practicality Aesthetic Birds eye view
Electrical Systems						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			User, fault, toggle switch, insulator, conductor, battery holder, crocodile clip	Series circuit, connection, push-to-make switch, pushto-break switch, innovative, appealing, control box, input device, output device, system	Parallel circuit, light emitting diode, monitor, flowchart, design specification, reed switch, tilt switch	Light dependent resistor, interface control, micro switch, latching switch
Mechanisms						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Joining, design, make, cutting, fix	Wheels & Axles: Wheel, axel, fixed, free, design, make, cutting, joining, hacksaw, vice, dowel, body, cab, shaping	Slider & Leavers: Mechanism, lever, slider, slot, pivot, guide/bridge, masking tape, fastener, pull/push, down, straight, work, design, evaluate, purpose	Leavers & linkages: Loose/fixed pivot, system, input, process	Leavers & Linkages: Loose pivot, fixed pivot, system, input, process, output, linear, rotary, reciprocating, innovative, appealing, linkage, oscillating	Pulleys or Gears: Pulley, gear, driver, follower, rotation, motor, belt, spindle, motor, circuit, switch, ratio, transmit, annotated drawings, exploded diagrams, functionality	Pulleys or Gears: Transmit, annotated drawings, exploded diagrams, functionality
Structures						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Cut, join, fix, weak, strong	Freestanding Structures: Cut, fold, join, fix, weak, strong	Freestanding Structures: Structure, base, underneath, thicker, thinner, corner, point,	Shell Structures: Shell, structure, net, marking out, material, joining, three dimensional, stiff	Shell Structures: Assemble, prism, vertex, breadth, capacity, scoring, adhesives, reduce, reuse, recycle,	Frame Structures: Reinforce, triangulation, stability, temporary, permanent, prototype, innovation, functional, design brief	

		straight, curved, rectangle, cube, cuboid, cylinder		corrugating, ribbing, laminating		
Nutrition						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Fruit, vegetables, soft, hard, juicy, crunchy, sweet, sour, cutting, smooth, rough	Preparing Fruit & Vegetables: Fruit, vegetables, soft, juicy, crunchy, sticky, smooth, sharp, crisp, sour hard, flesh, skin, seed pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, tasting, arranging		Healthy & Varied Diet: Texture, taste, appearance, preference, greasy, moist, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested		Celebrating Culture & Seasonality: Ingredients, yeast, dough, wholemeal, unleavened, baking soda, spice, herbs, carbohydrate, sugar, fat, protein, vitamins, nutrients, gluten, allergy, intolerance, savoury, seasonality, pour, mix, knead, whisk, beat, combine, fold, rubbing in	