

Design Technology

Lower KS2 is delivered on a 2-year rotation which supports mixed classes. Teachers are free to teach a chosen at any point in the year so as to best link the products made to the children's work in History, Geography and Science.

	Years 3/4	Years 5/6
Developing, planning and communicating ideas	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. Children 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. They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. Children can: • identify the design features of their products that will appeal to intended customers; • use their knowledge of a broad range of existing products to help generate their ideas; • design innovative and appealing products that have a clear purpose and are aimed at a specific user; • explain how particular parts of their products work; • use annotated sketches and cross-sectional drawings to develop and communicate their ideas; • when designing, explore different initial ideas before coming up with a final design; • when planning, start to explain their choice of materials and components including function and aesthetics; • test ideas out through using prototypes; • use computer-aided design to develop and communicate their ideas (see note on p. 1); • develop and follow simple design criteria; • work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment.	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. Children 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. They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. Children can: • 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; • use their knowledge of a broad range of existing products to help generate their ideas; • design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user; • 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; • generate a range of design ideas and clearly communicate final designs; • consider the availability and costings of resources when planning out designs; • work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.
Working with tools, equipment,	Through a variety of creative and practical activities, pupils should be	Through a variety of creative and practical activities, pupils should be taught the

materials and components to make quality products (inc food)	taught the knowledge, understanding and skills needed to engage in an iterative process of making. Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately. They 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. Children can: Plan • with growing confidence, carefully select from a range of tools and equipment, explaining their choices; • select from a range of materials and components according to their functional properties and aesthetic qualities; • place the main stages of making in a systematic order; Practical skills and techniques • learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures; • use a wider range of materials and components, including construction materials and kits, textiles and mechanical and electrical components; • with growing independence, measure and mark out to the nearest cm and millimetre; • cut, shape and score materials with some degree of accuracy; • assemble, join and combine material and components with some degree of accuracy; • demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product; • join textiles with an appropriate sewing technique; • begin to select and use different and appropriate finishing techniques to improve the appearance of a product such as hemming, tie-dye, fabric paints and digital graphics.	knowledge, understanding and skills needed to engage in an iterative process of making. Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. They 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. Children can: Planning • 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; • create step-by-step plans as a guide to making; Practical skills and techniques • 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; • 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; • shape and score materials with precision and accuracy; • assemble, join and combine materials and components with accuracy; • demonstrate how to measure, make a seam allowance, tape, pin, cut, shape and join fabric with precision to make a more complex product; • join textiles using a greater variety of stitches, such as backstitch, whip stitch, blanket stitch; • 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.
Evaluating processes and products	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. Children investigate and analyse a range of existing products. They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. They understand how key events and individuals in design and technology have helped shape the world.	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. Children investigate and analyse a range of existing products. They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. They understand how key events and individuals in design and technology have helped shape the world.

	Children can: • explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose; • explore what materials/ingredients products are made from and suggest reasons for this; • consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product; • evaluate their product against their original design criteria; • evaluate the key events, including technological developments, and designs of individuals in design and technology that have helped shape the world.	Children can: a complete detailed competitor analysis of other products on the market; b critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make; evaluate their ideas and products against the original design criteria, making changes as needed.
Technical Knowledge	Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures. They understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. They understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. They apply their understanding of computing to program, monitor and control their products. Children can: a understand that materials have both functional properties and aesthetic qualities; b apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; c understand and demonstrate how mechanical and electrical systems have an input and output process; d make and represent simple electrical circuits, such as a series and parallel, and components to create functional products; e explain how mechanical systems such as levers and linkages create movement; use mechanical systems in their products.	Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures. They understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. They understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. They apply their understanding of computing to program, monitor and control their products. Children can: a apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; b understand and demonstrate that mechanical and electrical systems have an input, process and output; c explain how mechanical systems, such as cams, create movement and use mechanical systems in their products; apply their understanding of computing to program, monitor and control a product.
Food and Nutrition	Children understand and apply the principles of a healthy and varied diet. They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Children can: a start to know when, where and how food is grown (such as herbs,	Children understand and apply the principles of a healthy and varied diet. They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Children can: a know, explain and give examples of food that is grown (such as pears, wheat

	tomatoes and strawberries) in the UK, Europe and the wider world; b understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically; c with support, use a heat source to cook ingredients showing awareness of the need to control the temperature of the hob and/or oven; d use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking; e explain that a healthy diet is made up of a variety and balance of different food and drink, as represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes; f understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body; g prepare ingredients using appropriate cooking utensils; h measure and weigh ingredients to the nearest gram and milliliter; i start to independently follow a recipe; start to understand seasonality.	and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world; b understand about seasonality, how this may affect the food availability and plan recipes according to seasonality; c understand that food is processed into ingredients that can be eaten or used in cooking; d demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source; e demonstrate how to use a range of cooking techniques, such as griddling, grilling, frying and boiling; f explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and preparing dishes; g adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma; h alter methods, cooking times and/or temperatures; i measure accurately and calculate ratios of ingredients to scale up or down from a recipe; j independently follow a recipe.
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3	 Jamie Oliver (1975-)	 Nadiya Hussain	 Eileen Gray (1878-1976)	 Antonio Gaudi	 Jonathan Ive (1967-)	 Lonnie Johnson (1978-2012)
	We are cooks • sensory vocabulary • analyse taste and appearance • follow instructions • balanced diet • join and combine ingredients • measure & weigh How can a single recipe tell a story about our family heritage and culture?		We are constructors • shell & frame structures • prototypes • measure & mark to 1cm accuracy • glue gun • cut internal shapes Can a colourful mosaic roof make a whole city feel like a celebration?		We are graphic designers • internet research • software design • create and print design • repeating pattern How does sustainable packaging design show wisdom and care for the planet we live on	
	Food		Textiles		Modelling	
4	 Ainsley Harriott (1957-)	 Tom Kerridge	 Nancy Nicholson	 Marion Tuu'luq (1910-2002)	 Bruce Foster	 Jennie Maizels

We are cooks • sensory vocabulary • analyse texture and smell • balanced diet • join and combine ingredients • measure & weigh Can a plate of simple, hearty comfort food feel like a warm hug on a rainy day?	We are textile designers • seam allowance • simple pattern • running stitch, over sewing, backstitch • prototypes • fastening • decoration How does a designer balance making a textile look beautiful with making it strong and durable?	We are card engineers • slots • internal shapes • levers & linkages • movement • complex pop ups When a 2D flat piece of card or wood suddenly transforms into a strong, weight-bearing 3D structure, how does that change your view of what is possible?
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	Food		Construction		Graphics/CAD	
5	 Sat Bains (1971-)	 Selin Kiazim	 David Hawcock	 Frederick Savage (1828 - 1897)	 William U Moody	 Ole Kirk Christiansen
	We are cooks • select & prepare food • use scales • cut and shape • beat, rub in • decorate • balanced diet Which brings you more joy: tasting a delicious final dish you have cooked from raw ingredients, or the messy process of mixing and creating it?		We are constructors • cut to 1mm • join appropriately • motor & switch • frameworks • bradawl • hand drill • glue gun How do we use wisdom to choose materials that are good for our project but also gentle and sustainable for God's planet?		We are graphic designers • computer generate design • plan to print • investigate ideas • model on computer • storyboard How does an inventor use faith—believing a prototype will work before they have even built it—to drive them toward an extraordinary breakthrough?	
	Food		Textiles		Modelling	
6	 Madhur (1933-)	 Sanjeev Kapoor	 Duro Olowu	 Zandra (b.1940)	 Keith Newstead (1956-)	 Kara Walker (b1969)

We are cooks • select & prepare food • use scales • cut and shape • beat, rub in • decorate • balanced diet Why do traditional recipes vary so much from region to region, and what does that tell us about geography and culture?	We are textile designers • 3D products • pattern • seam allowance • pin & tack • blanket stitch • machine stitching Which requires more wisdom: making a product look beautiful and stylish, or making sure it functions perfectly and safely?	We are modellers • slots • sheet materials • fixed and moving joinings • craft knives • cam mechanisms Why is it wise to build a rough prototype out of scrap materials before cutting into our final wood or plastic?
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