



Design Technology

Progression of Skills and Knowledge

Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

Below is the design cycle that is used at Westcourt Primary School that forms the process for all projects in DT.

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design		Pupils should be taught to: - Design purposeful, functional, appealing, products for themselves and others based on simple design criteria - Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and the use of ICT		Pupils should be taught 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 - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.			
	Contexts, uses and purposes	Explain what they are going to do and identify a target group for their product Explore materials that can be used for their product Create a basic mock-up of their product	Identify the purpose of the product and recognise simple design criteria Explore materials and draw on understanding of similar product templates Create a mock-up of the product and compare to design criteria	Identify a purpose and establish criteria for a successful product Gather information about the needs of the target group for their product Research potential designs for their product	Understand and demonstrate specific features of the product through the use of labelled drawings Gather information about the needs and wants of particular individuals and groups Research other existing designs and compare with design criteria and needs of target group	Draw up a specification for their design Carry out research using surveys and questionnaires; identify the needs, wants and preferences of targeted individuals and groups Compare different product designs and use knowledge from their research to support own product	Develop a detailed design specification based on research that has been carried out Carry out research using interviews, surveys and web-based resources; identify the preferences and values of particular individuals and groups Recognise when their products have

							to fulfil conflicting requirements
--	--	--	--	--	--	--	------------------------------------

		Draw on their own experiences to help generate ideas for their product Suggest ideas and explain in simple terms what they are going to do Develop their design ideas using earlier research of materials and audience to guide them Model ideas in card and paper	Generate ideas by drawing on their experiences and those of other people Suggest ideas and build on them through discussion, observation, and drawing Make simple drawing and label parts, explaining which materials and tools are best to use Model ideas and create basic prototypes based on design	Generate ideas for a product using discussion, and considering its purpose and its users Share and clarify ideas through discussion Make labelled sketches of their design, including materials and tools needed Explore and develop design proposals using prototypes and modelling ideas	Generate ideas and consider the purpose for which they are designing Share and clarify ideas drawing on understanding of product needs Identify most appropriate tools and materials for their product Use computer-aided design and cross-sectional drawings Use prototypes and pattern pieces to model ideas, developing ideas of how to use materials and processes to make their product	Generate ideas through brainstorming and identify a clear purpose for their product Generate innovative ideas based on research Use ICT and draw on research results to produce detailed designs and plans; create diagrams that include accurate measurements Produce prototypes and develop a clear idea of what has to be done to create the product, suggesting alternative methods of making if the first attempts are not successful	Communicate their ideas through labelled and detailed drawings Make critical decisions, considering constraints such as time, cost and resources Develop prototypes using computer-aided design and including accurate measurements Explore, develop and communicate aspects of their design proposals by creating prototypes and modelling their ideas in a variety of ways
--	--	--	---	--	--	--	--

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Make		Pupils should be taught to: • Select from and use a range of tools and equipment to perform practical tasks (e.g. 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		Pupils should be taught to: • Select from and use a wider range of tools and equipment to perform practical tasks (e.g. 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 characteristics			

		Choose materials and select from given tools, explaining their choices	Select equipment, tools and materials for their product according to characteristics, using vocab to name and describe them	Select tools and equipment suitable for the product	Select appropriate tools, materials and techniques for making their product, explaining their choices and functional properties	Select appropriate materials, tools and techniques for their product, explaining the functional and aesthetic properties of what they have chosen	Produce detailed lists of the appropriate tools, materials, components and techniques for their product; explain why the things they have chosen are most suitable
	Planning		Begin to order the main stages of making, with support	Order the main stages of making their product	Order and describe the main stages of making their product	Order and describe the stages of making their product, including tools needed for each step	Order and describe each stage of making their product, including tools and materials needed for each step
		Understand basic safety measures that need to be followed	Explain safety procedures that need to be adhered to	Explain safety procedures that need to be adhered to and understand potential risks	Understand safety hazards in relation to tools and equipment they are using	Understand safety hazards in relation to tools and equipment they are using	Follow all procedures for safety, include risks and hazards in written planning of their product

Practical Skills and Techniques	With support, cut and shape a range of materials	Measure, cut and shape with some accuracy	Measure using a ruler and cut components with more accuracy	Measure, mark out, cut and shape a range of materials, using appropriate tools	Measure, mark out, cut, score and shape their product using appropriate equipment and techniques	Measure, mark out, cut, score, shape and assemble components to make working models
	Use tools safely (e.g. scissors and hole punches)	Use tools safely and appropriately (e.g. scissors, hole punches and saws)	Work safely and accurately with a range of simple tools (e.g. needles, staples, scissors, saws, hole punches)	Work safely and accurately using a range of tools (e.g. saws, needles)	Use skills when using different tools and equipment safely and accurately (e.g. junior hacksaws and hammers)	Use a variety of tools safely and accurately (e.g. handheld drills, pliers and wire cutters)
	Assemble, join and combine materials using temporary methods (e.g. using glue or masking tape)	Assemble, join (edge to edge using glue) and combine materials in order to make a product (e.g. using glue or tape)	Assemble components with more accuracy (e.g. using glue, tape or thread)	Join and assemble components in temporary and permanent ways (e.g. using paper fasteners or different sewing stitches)	Assemble and join components in a range of ways, thinking about which technique is best	Construct products using the most effective temporary or permanent joining techniques
	Use simple finishing techniques to improve the appearance of their product (e.g. paint or PVA glue)	Choose and use appropriate finishing techniques for their product (e.g. paint, glitter or PVA glue)	Use finishing techniques to strengthen and improve the appearance of their product, using a range of equipment	Use finishing techniques to improve the appearance of their product, using equipment including ICT	Ensure a good-quality finish to the product with the use of finishing techniques learned in art and design lessons	Achieve a high-quality product, making modifications as they go

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
--	---------------	---------------	---------------	---------------	---------------	---------------

Evaluate		Pupils should be taught to: - Explore and evaluate a range of existing products - Evaluate their ideas and products against design criteria		Pupils should be taught to: - 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		
	Evaluate their product by discussing how well it works in relation to the purpose	Evaluate against the design criteria	Evaluate their product against the original design criteria (e.g. how well does it meet it's intended purpose)	Evaluate their work both during and at the end of the project	Evaluate their product against the original design specification	Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests
	Evaluate their products as they are made, identifying strengths and things that might need to be changed	Evaluate their products as they are developed, identifying strengths and possible changes they might make	Disassemble and evaluate familiar products against their own	Evaluate their products by carrying out appropriate tests	Evaluate their products personally and seek evaluation from others	Record their evaluations using drawings with labels
	Evaluate their product by asking questions about what they have made	Begin to think critically about their product, saying what they like and dislike about it	Investigate how well their products were designed and made through the use of peer discussion	Investigate and analyse how well their products have been designed and made, why certain materials were used and how well they meet user needs	Consider cost, sustainability and the impact of the product against their original criteria	Evaluate against their original criteria and suggest ways that their products could be improved Investigate product costs, sustainability and the impact beyond their intended purpose

Vocabulary		Planning, investigating design, evaluate, make, user, purpose, ideas, product	Investigating, planning, design, make, evaluate, user, purpose, ideas, design criteria, product, function	User, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, function, planning, design criteria, annotated sketch, appealing	Evaluating, design brief design criteria, innovative, prototype, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, planning, annotated sketch, sensory evaluations	Design decisions, functionality, authentic, user, purpose, design specification, design brief, innovative, research, evaluate, design criteria, annotate, evaluate, mock-up, prototype	Function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, prototype
------------	--	---	---	--	--	--	--

At Westcourt Primary School each year group covers 3 design task in an academic year.

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
--	--	---------------	---------------	---------------	---------------	---------------	---------------

Textiles			-Choose and explain textile choices -Measure and cut some textiles with support -Join together textiles and explain their method	-Choose textiles according to functionality and appearance -Measure, mark and cut materials using a given template - Join textiles together in different ways			-Consider the wants and needs of the user when choosing textiles -Make a prototype of the product -Use a range of joining techniques -Consider how the product may be sold -Think about what could improve the product
V O C A B U L A R Y			- Cut - Join - Fabric - Scissors - Glue - Mark out - Fabric - Join - Decorate	- names of fabrics, - fastening, - compartment, zip, - button, structure,			

Food And Nutrition		-Use basic hygienic food handling practises and understand personal hygiene -Describe textures -Say where some foods come from -Discuss how fruit and vegetables are healthy - Practise stirring, blending, mixing and pouring; cut, peel and grate, with support -Think of creative ways to decorate food	-	-Begin to demonstrate hygienic food preparation and follow safe procedures -Select ingredients for a recipe -Use equipment safely -Understand that food comes from the UK and the wider world -Explain food and drink are needed for healthy bodies -Prepare and cook some dishes safely -Grow in confidence when using cooking techniques	-Demonstrate understanding of hygienic food preparation and storage -Think about presenting food in interesting ways -Understand ingredients can be processed or fresh -Explain importance of food and drink for active, healthy bodies -Use some cooking techniques such as: peeling, chopping, slicing, grating, mixing, spreading and kneading	-Use simple graphical communication techniques to convey health and safety measures -Present food well -Begin to understand seasonality of foods -Describe how recipes can be adapted to change, taste, texture or aroma - Prepare and cook some savoury dishes safely -Use a range of cooking techniques	
--	--	---	----------	--	---	--	--

Vocabulary		Fruit and vegetable names, Textures: soft, juicy, crunchy, sweet, smooth, sharp, crisp, hard Stir Blend Mix Pour grate		Name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet	Name of products, names of equipment, utensils, techniques and ingredients, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet	Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble	
Mechanisms		-Begin to use slides and levers, with support	-Use slides and levers -Show an understanding of how to use wheels and axles, with support	-Select appropriate tools and techniques for product -Test product and make alterations accordingly -Use simple levers and linkages to create movement	-Explain any alterations to product -Experiment and try new ideas -Use levers and linkages to create movement -Use pneumatics to make movement		-Refine and adapt product to improve it, considering functionality, purpose and aesthetics -Include hydraulics and pneumatics -Have confidence to try new ideas -Use cams, pulleys and gears to create movement

Vocabulary		slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards	vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used	mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating	As yr 3 Alteration		As Yr 5 Adapt Functionality Hydraulics Pneumatics
Materials/Structures		-Describe differences in materials -Begin to join materials, with some support -Suggest ways to make a product stronger	-Describe some different characteristics of materials -Measure materials with support -Join materials in different ways -Use joining, rolling or folding to make it stronger		-Choose materials that are appropriate for the design criteria and product -Measure carefully to avoid mistakes -Try ways to make the product stronger -Continue adapting product if things are not working -Make strong, stiff structures	-Select materials carefully, thinking about use of product and appearance -Ensure precision when measuring -Ensure product is strong and fit for purpose -Begin to strengthen and reinforce a 3D frame -Explain how product meets design criteria	-Select materials carefully, thinking about functionality, aesthetics and intended use of product -Reinforce and strengthen a 3D frame -Explain how product meets design criteria
Electrical Systems					-Use a number of components in a circuit -Program a computer to control a product	-Include a switch into a product -Use a number of components in a circuit with confidence - Program a computer to control a product and make changes to it	-Use different types of circuit in a product -Think of ways to use a circuit to improve a product -Program a computer to monitor changes to a product

Vocabulary					Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, insulator, conductor, crocodile clip, Control, program, system, input device, output device	reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder,	USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series circuit, parallel circuit
Design Projects		Fruit salad Moving picture House design	Vehicle Sock puppet Structure: bridges	Eco-bags Moving pictures Healthy Sandwiches	Viking boats Cake making Shoe Box Habitats		Steady Hand games Cushion covers