Forest Town Primary School

Design and Technology Knowledge Progression Grid

Kind
Adventurous
Persevere
Responsible
Independent
Together

At Forest Town, we are designers! We want our children to be inspired by Design and Technology and be creative and imaginative in an increasingly technological world.
We want to enable our children to talk about how things work and apply a growing body of knowledge, understanding and skills in order to design and make prototypes and products for a wide range of users. We want to encourage children to select appropriate tools and techniques when making a product, whilst following safe procedures.
Through Design and Technology we aim to develop our children's understanding of technological processes and products, their manufacture and their contribution to our society.
We want to foster enjoyment, satisfaction and purpose for our children through designing and making things. We want our children to critique, evaluate and test their ideas and products, and the work of others. We aim for all children to understand and apply the principles of nutrition and to learn how to cook. We want our children to understand how key events and individuals in design and technology have helped shape the world they live in.

By the time our children leave us at the end of KS2 we would like to ensure that all children become:

- **Adventurous** and creative problem-solvers with the confidence to take risks when designing and making products that solve real and relevant problems that matter to them.
- **Independent** inspired innovators with a greater awareness and understanding of how everyday products are designed and made through opportunities to critically evaluate existing products, thinking about their own needs and those of others.
- **Responsible** for their work and talk about how they were influenced to create their final outcomes.
- able to **persevere** and develop different techniques and skills to complete a piece of work.
- able to work **together** to reflect on their own and other's work using **kindness** and constructive feedback.

DESIGN & TECHNOLOGY

CURRICULUM LEADERS

SARAH HANNANT & EMMA PALING

REVIEWED – SEPTEMBER 2024

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Design & Technology Knowledge & Skills Progression Grid
Reviewed 2024

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This is how our children's SUBJECT knowledge builds from EYFS to Year 6.

For pupils to become confident designers they need to become imaginative problem solvers who design and make products for a variety of needs, wants and values. They must acquire a wide range of subject knowledge through the key stage and draw on mathematical, computing, art and engineering knowledge. The progression plan will inform planning to ensure that learning is built within the lesson sequence, within the topic, within the year and overtime.
We want our children to move from being a novice to becoming an expert designer and assertive cook.
Our learning is supplemented and supported by the ***Design and Technology association scheme.***

Key Stage 1
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. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

The National Curriculum (KS2)
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. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry, and the wider environment]. When designing and making, pupils should be taught to:

RESEARCH & DESIGN	MAKE	EVALUATE	Cooking and Nutrition
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.	Select from and use a wider range of tools and equipment to perform practical tasks [for example, 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 functional properties and aesthetic qualities.	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.	As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Technical knowledge
Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers, and linkages].
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.

EYFS	*Year 1*	*Year 2*	*Year 3*	*Year 4*	*Year 5*	*Year 6*
Cooking and Nutrition	***Cooking and Nutrition*** Preparing fruit and vegetables	***Cooking and Nutrition*** Preparing fruit and vegetables	***Cooking and Nutrition*** Healthy and varied diet	***Cooking and Nutrition*** Healthy and varied diet	***Cooking and Nutrition*** Celebrating culture and seasonality	***Cooking and Nutrition*** Celebrating culture and seasonality
Mechanisms	***Mechanisms*** Levers and sliders	***Mechanisms*** Wheels and axels	***Mechanisms*** Levers and linkages		***Mechanisms*** Pulleys or gears	
Structures	***Structures*** Free standing		***Structures*** Shell Structures		***Structures*** Frame Structures	
		Textiles Templates and joining techniques		***Textiles*** 2D to 3D product		***Textiles*** Combining different fabrics
				Electrical Systems Simple circuits and switches		***Electrical Systems*** Using more complex circuits and switches

EYFS	Y1	Y2	Y3	Y4	Y5	Y6
RESEARCH AND DESIGN						
Knowledge: **Research** To talk about what they can see in different products.	**Build on prior knowledge and:** **Research** Know the different features of a card with a mechanism. Know that ideas can be 'borrowed' from other products.	**Build on prior knowledge and:** **Research** Know the different features of toy cars and how their wheels work. Know and explore different products that have been sewn.	**Build on prior knowledge and:** **Research** Know where to find examples of toys which use mechanisms. How toys have developed with the use of mechanisms.	**Build on prior knowledge and:** **Research** Know that products have developed overtime and use this information to inform planning. Know that ideas from other people can be used when designing	**Build on prior knowledge and:** **Research** Know and refer to real life examples of autometer's. Know and understand that views of the product will vary. Know that information from different sources can be used to inform designs.	**Build on prior knowledge and:** **Research** Use market research to inform plans and ideas. Know that culture and society is considered in plans and designs.
Design criteria	**Design criteria** Know how to experiment when designing	**Design criteria**	**Design criteria** Know that a design must meet a set criteria.	**Design criteria** Know how to produce a plan and explain the purpose of the product.	**Design criteria** Know and indicate the design features of their products that will appeal to intended	**Design criteria** Know that all aspects of a design must lead to the specific need/purpose.

To have a go at designing with different purposes.		With support, know how to design a purposeful, functional, appealing products for themselves other users based on design criteria.	Know that a product needs to look attractive.	Know and explain the key features of the design.	users, to include functions and why it is appealing.	Know how to identify and solve design problems. Know that ICT can enhance and develop the design process
Developing and communicating ideas Talk about how a design could be made better.	**Developing and communicating ideas** Know how to improve a design and ask others for their opinion.	**Developing and communicating ideas** Know how to generate, develop, model, and communicate their ideas through talking, drawing, templates, mock-ups.	**Developing and communicating ideas** Know about refining ideas and developing plans.	**Developing and communicating ideas** Know how to explain parts of their products and how they work. Know that original ideas may not work and can be adapted.	**Developing and communicating ideas** Explain in detail how particular parts of their products work. Know that original ideas may not work and can be adapted explaining why	**Developing and communicating ideas** Follow and refine original plans, explaining the rationale for changes and how these impacts on the final product.
MAKING						
Knowledge: **Tools** Choose appropriate tools to complete a task.	**Build on prior knowledge and:** **Tools** Know that different tools have different purposes – for example scissors for cutting.	**Build on prior knowledge and:** **Tools** Know how to select from and use a range of tools and equipment to perform a practical tasks [for example, cutting, shaping, joining, and finishing].	**Build on prior knowledge and:** **Tools** Know which tools and equipment are suitable for the task and use with increasing accuracy.	**Build on prior knowledge and:** **Tools** Know which tools and equipment are suitable for the task and explain why they have been chosen.	**Build on prior knowledge and:** **Tools** Know which tools and equipment are suitable for the task and understand the importance of accurate use. Explain how tools should be used with an understanding of health and safety	**Build on prior knowledge and:** **Tools** Know the assets and benefits of tools, explaining why a specific tool has been used. Use them confidently and justify their choices from a selection of a wide range of tools.
Components and materials Explore using construction materials.	**Components and materials** Know the different types of materials. Know what words can be used to describe different materials.	**Components and materials** Know how to select from and use a range of materials and components, including construction materials and textiles, according to their characteristics.	**Components and materials** Know that all components have a function. Know how to explain their choice of materials and components according to functional properties and aesthetic qualities.	**Components and materials** Know that all components have a function and explain what each component does when selecting.	**Components and materials** Explain their choice of materials and components according to functional properties and aesthetic qualities	**Components and materials** Confidently choose from a wide range of materials when planning a project and justify choices based on aesthetics and function
Health and Safety Know that we have to be careful when doing DT activities	**Health and Safety** Know what health and safety means. Know that rules are there to keep us safe.	**Health and Safety** Know and follow procedures for safety and hygiene with support.	**Health and Safety** Know and follow procedures for safety and hygiene.	**Health and Safety** Know and follow procedures for safety and hygiene.	**Health and Safety** Explain how tools should be used with an understanding of health and safety. Know and explain hygiene procedures.	**Health and Safety** Explain how a range of tools should be used with an understanding of health and safety. Know and explain hygiene procedures and justify why they are in place.
Evaluating						
Talk about what they have made or give feedback to a friend.	Know how to evaluate a piece of work that has been created. Know that people have different opinions about pieces of work.	Know how to evaluate their work against their design criteria with support. Look at a range of existing products explain what they like and dislike about the products and why. With some guidance know how to evaluate their products as they are developed, identifying what went well and possible changes they might make next time. Know how to talk about their ideas.	Know how to evaluate their work against a specific design criteria. Know how to investigate and analyse existing products and processes against a criteria and explaining why. Know how to improve work through peer evaluation. Know how well products meet user needs and wants. Know whether products can be recycled or reused.	Know how to evaluate their work and others against a specific design criteria Know how to investigate and analyse existing products and know their environmental impact. Know how to evaluate finished products against existing, key products and improve their work. Know how well products work and achieve their purposes. Know whether products can be recycled or reused and the impact on the environment.	Know how to test, evaluate their work and others against a specific design criteria and refine their ideas. Know how to investigate and analyse existing products and how well they have been made as well as methods of construction. Know how to evaluate finished products against existing, key products and improve their work. Explain why they have made their choices referring to existing products. Know how sustainable the materials in products are and the impact on the environment. Know how much products cost to make.	Know how to test, evaluate their work and others against a specific design criterion and refine their ideas taking into account the intended user or group. Know how to investigate and analyse existing products which are groundbreaking and learn about inventors relevant to the project. Know how to evaluate finished products against existing, key products and improve their work justifying what improvements they have made and why. Know how sustainable the materials in products are and what other choices of materials could be used instead. Know how much products cost to make.
EYFS	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
Technical Knowledge and Skills						
To explore how toys work and develop language related to moving parts.	**Build on prior knowledge and:** ***Mechanisms*** **Levers and sliders** Know that mechanisms are a collection of moving parts that work together in a machine. Know and identify mechanisms in everyday objects.	**Build on prior knowledge and:** ***Mechanisms*** **Wheels and axels** Know that an axle is a rod on which one or more wheels can rotate, either freely of fixed. Know that an axle holder is the component through which an axle fits and rotates.	**Build on prior knowledge and:** ***Mechanisms*** **Levers and linkages** Know that mechanisms create movement in a product. Know that a linkage is a system of levers that are connected by pivots.		**Build on prior knowledge and:** ***Mechanisms*** **Pulleys or gears** Know how mechanical systems work. Know what a pulley system is Know how motor driven gears work Know how to measure, mark, cut and saw accurately with wood.	

	Know that a lever is something that turns on a pivot. Know that levers and sliders can be used to create a moving picture.	Know the chassis is the frame on which a vehicle is built.	Know that levers and linkage can be linear, reciprocating, rotary and oscillating. Know that a system is a set of related parts or components used to create an outcome.		Know to strengthen, reinforce, and stiffen a 3D frame (car). Know how to use a workbench and tools safely.	
	Topic specific vocabulary *slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join pull, push, up, down, straight, curve, forwards, backwards design, make, evaluate, user, purpose, ideas, design criteria, product, function*	**Topic specific vocabulary** vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used design, make, evaluate, purpose, user, criteria, functional	**Topic specific vocabulary** *mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating user, purpose, function prototype, design criteria, innovative, appealing, design brief*		***Topic specific vocabulary*** Pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor circuit, switch, circuit diagram annotated drawings, exploded diagrams mechanical system, electrical system, input, process, output design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief	
To explore how to join different materials. To know how to thread a needle and sew stitches.		**Build on prior knowledge and:** ***Textiles*** **Templates and joining techniques** Know how to sew a running stitch, with evenly spaced, neat stitches to join fabric Know that you can decorate fabric with stitches (embroider) Know different ways of joining fabric (gluing, safety pins, pinning) Know that a template can be made to support the making process.		**Build on prior knowledge and:** ***Textiles*** **2D to 3D product** Know how to make a template/pattern for the design Know that a prototype is a model used to test whether a design will work. Know how to do a running stitch, backward stitch, and a cross stitch. Know that a seam allowance has to be left when sewing.		**Build on prior knowledge and:** ***Textiles*** **Combining different fabrics** Know the purpose of a 'mock up' Know that a 'mock up' is useful for checking proportions and scale. Know that a detailed drawing contains all information needed to make a product (but that it can be updated). Know how to do a stem stitch, satin stitch, chain stitch and a lazy daisy stitch Know that a seam allowance has to be 15mm for domestic patterns.
		Topic specific vocabulary *Names of existing products, joining and finishing techniques, tools, fabrics and components template, pattern pieces, mark out, join, decorate, finish features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function*		***Topic specific vocabulary*** *fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces*		***Topic specific vocabulary*** *seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces • name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper • design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype*
Structures To explore how different structures can be made when using construction toys.	***Structures*** **Free standing** Know how to build structures, exploring how they can be made stronger, stiffer, and more stable. Know and identify natural and man-made structures. Know that shapes and structures with wide, flat bases or legs are most stable. Know that the shape of a structure affects its strength.		***Structures*** **Shell Structures** Know what a net is. Know what laminating is when working with layers of card. Know how to reinforce card through corrugating Know that ribbing is another way of strengthening card. Apply knowledge of computer fonts when designing the product.		***Structures*** **Frame Structures** Know the different structures for building frames Know that creating triangles provides rigidity. Know that compression is a the application of pressure on an object. Know that a frame structure is a structure make from thin components. Know that 3D models can represent a structure or a product.	
	Topic specific vocabulary *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, cuboid, cube, cylinder design, make, evaluate, user, purpose, ideas, design criteria, product, function*		**Topic specific vocabulary** *shell structure, three-dimensional (3-D) 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, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype*		**Topic specific vocabulary** frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional	
				Electrical Systems **Simple circuits and switches** Know how to make a simple electrical circuit. Know how to make a switch.		***Electrical Systems*** **Using more complex circuits and switches** Know how to make a complex electrical circuit.

				Know that electricity flows through a circuit. Know how connect and disconnect the flow of electricity. Know how to work safely when working with electricity.		Know how to include a switch within the complex circuit. Know how to write instructions for the purpose of the switch. Know how connect and disconnect the flow of electricity as appropriate for the product design. Know how to create a high quality product. Know how to work safely when working with electricity.
				Topic specific vocabulary 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 user, purpose, function, prototype, design criteria, innovative, appealing, design brief		**Topic specific vocabulary** series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart function, innovative, design specification, design brief, user, purpose
Cooking and Nutrition						
Knowledge:	**Build on prior knowledge and:**	**Build on prior knowledge and:**	**Build on prior knowledge and:**	**Build on prior knowledge and:**	**Build on prior knowledge and:**	**Build on prior knowledge and:**
Cooking and Nutrition To explore how foods taste and how they might be created.	***Cooking and Nutrition*** **Preparing fruit and vegetables** Know that vegetables can be peeled, cut, sliced grated or squeezed. Know what a vegetable is Know what fruit is. Know that nutrients are important to keep us healthy Know that we all have different views about how things taste. Know what makes a balanced diet and know the five food groups Know how to prepare food safely and hygienically without using a heat source Know the ingredients used in creating a salad. Know the food groups (carbohydrates, protein, dairy, fruits and vegetables, fats, and sugars). Know that food needs to be prepared in a hygienic environment. On a cycle with Y1 – to alternate between vegetable and fruit salad.		***Cooking and Nutrition*** **Healthy and varied diet** **Sandwich**	***Cooking and Nutrition*** **Healthy and varied diet** **Wrap**	***Cooking and Nutrition*** **Celebrating culture and seasonality** **Ginger Bread**	***Cooking and Nutrition*** **Celebrating culture and seasonality** **Bread Roll**
			Know that the word texture is about how the food feels in your mouth. Know that the appearance of the food is important in our decision to eat it (or not). Know that preference may differ from another child. Justify preferences using appropriate vocabulary. Know that processed food has been changed in some way to enable them to be eaten in food preparation and cooking.		Know how to mix and combine ingredients when making savoury muffins or scones. Know how to mix fat and flour when making a yeast based product (rubbing in). Know that finishing a product is key to ensure the shape, decoration and colour are right. Know what 'kneading' is Know the difference between bread and unleavened bread	
	Topic specific vocabulary *fruit and vegetable names, names of equipment and utensils* *• sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard* *•flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria*		**Topic specific vocabulary** name of products, names of equipment, utensils, techniques and ingredients • texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury • hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet • planning, design criteria, purpose, user, annotated sketch, sensory evaluations		**Topic specific vocabulary** *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, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble design specification, innovative, research, evaluate, design brief*	