

Design and Technology

Intent:

Our curriculum intent for Design and Technology reflects the purpose and aims of the National Curriculum by helping our pupils to acquire knowledge and understanding of our world by developing a skillset associated with the process of enquiry. The curriculum is sequenced in long- and medium-term plans to help pupils accumulate knowledge of nutrition and cooking and experience using textiles, structures, mechanisms and electrical systems. The curriculum content is adapted to the context of our school and enhances pupils' moral, social, ethical and cultural development by leading pupils to discover their **ethical** responsibility in a time when our world is facing significant challenges. We encourage our pupils to question and discuss ways design technology can be used effectively in order to help us live sustainable full lives.

The curriculum design helps pupils to promoting independence and encouraged children to use a variety of different research sources in order to create their own **unique** designs. The systematic introduction of new vocabulary allows children to better communicate their ideas and discuss their own projects.

Implementation:

Teachers are committed to providing a stimulating, **adventurous,** and engaging design technology lessons which encourage children to discuss, question, research and evaluate both the designs and products they create in school and those in the wider world around them. Children develop an enthusiastic and confident approach to developing their own ideas.

In EYFS, DT is taught through children learning about the world around them. Practitioners stimulate curiosity and develop questioning through providing provocations. Children are scaffolded in their play; their ideas are challenged, and they are encouraged to verbalise their thoughts and ideas through adult interactions. Practitioners give the children the autonomy to investigate their own ideas and find solutions or different ways to complete a task. Children begin to consider and through adult scaffolding how they might solve a problem and evaluate these ideas.

To allow children to continue to develop in design technology, teaching and learning (including subject-specific vocabulary) is sequential and progressive across KS1 and KS2 to ensure consistency from year to year. In turn, Teachers are aware of pre-existing learning and use this to plan design technology lessons that use a range of high-quality resources to stretch and challenge the existing ideas of children. Design and technology skills and vocabulary are embedded in lessons to develop children as confident designers and creators who ask relevant questions, discuss their ideas and are able to objectively evaluate their work against a design brief.

Impact:

As a school, we encourage pupils to continually develop, review, and **connect** their existing ideas and working methods in order to make sense of the world in which they live. Teachers work to develop a strong sense of curiosity and give child the confidence to explore, develop and challenge their own ideas. The necessity to have a broad and comprehensive curriculum is vital for our pupils to develop their ability to work with others and independently to create a product.



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KS1	Year 1	Generating ideas and designing.	Making	Evaluating	Food	Structures	Textiles	Mechanisms	
	Year 2	Generating ideas and designing.	Making	Evaluating	Food	Structures		Mechanisms	
LKS2	Year 3	Generating ideas and designing.	Making	Evaluating	Food		Textiles	Mechanisms	
	Year 4	Generating ideas and designing.	Making	Evaluating	Food	Structures			Electrical systems
UKS2	Year 5	Generating ideas and designing.	Making	Evaluating	Food		Textiles	Mechanisms	
	Year 6	Generating ideas and designing.	Making	Evaluating	Food	Structures			Electrical systems

Design and Technology

		Plan	Do	Review
EYFS		• Show curiosity about objects events and people. • Thinking of ideas. • Children represent their own ideas, throughs and feelings through design technology. • Planning and making decisions on how to best approach a task.	• Choose resources needed for their chosen activity. • Handle equipment and tools effectively. • Children use and explore a variety of materials, tools and techniques safely. • Find ways to solve problems and test their ideas.	• Changing strategy as needed. • Reviewing how well an approach worked. • Question why things happen.
KS1 Vocabulary: product, material, make, textile, structure, model, join, mechanism, equipment, practical, shape, evaluate, develop, evaluate, plan, build, design, ingredient, construct, purpose, planning, user, ideas.				
KS1	Year 1	Design appealing products for a particular reason based on a specific criteria. Design products for themselves and others Communicate your ideas through drawings and talk.	Select and use simple utensils, tools and equipment for a specific purpose or practical task. (Cutting, shaping, marking, peeling.) Select materials, ingredients and parts to create their finished product. Build structures/products focussing on how they are made stronger/ more stable or better.	Taste, explore and evaluate a range of existing products to determine their preferences. Evaluate their ideas throughout its creation to make improvements and edit their initial design. Evaluate their ideas and finished products to consider its appropriateness for its intended purpose.
	Year 2	Generate and develop ideas based on a simple design criteria and their own experiences. Communicate their own explanations of their designs. Develop and share their ideas through templates, drawings, mock ups and talk.	To select from a wide use of materials and components (including construction materials, textiles and ingredients) to create a product. Plan by suggesting what to do next. Select and use equipment, techniques and skills to perform practical tasks. To be able to explain their design choices. To use and explore mechanisms within their products (e.g. wheels, levers, axles)	• Evaluate their ideas and products against design criteria. Explore and evaluate existing products related to their design criteria. Evaluate their product both during its creation and after its completion. To be able to discuss their product, considering how well it fits its purpose, if it meets the design criteria and how it could be best improved.



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		Plan	Do	Review
LKS2 Vocabulary: user, purpose, model, evaluating, design brief, design criteria, innovative, investigate, sketch, appealing, annotated sketch, sensory evaluations, design decisions, mock-up, prototype, design specification.				
LKS2	Year 3	Use research and design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. Generate appropriate ideas through discussion to design appealing, functional products fit for a specific purpose or target audience. Develop your ideas through the use of annotated sketches, prototypes, final product sketches and discussion. Use communication technology, such as web based recipes, to develop and communicate ideas.	Plan how you are going to make a product considering the tools you will need and the techniques you will use. 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 finishing techniques suitable for the product they are creating.	Investigate a variety of products which are relevant to your own product and may influence your design. Evaluate their product both during its creation and after its completion. To test own final products against the original design criteria to compare how appropriate the product is for its purpose. Consider if your final product meets the design criteria. Evaluate both ongoing work and final product using the design criteria and views of others to improve your design.
	Year 4	Generate and create ideas through discussion with peers and develop a specific design criteria in order to help you design a product for a specific purpose, individual or group. Develop your ideas through the use of annotated sketches, prototypes, final product sketches, cross sectional, exploded diagrams and discussion. Generate, communicate and design sensible products which meet the specifics of the design criteria.	Plan and order how you are going to make a product considering the tools you will need and the techniques you will use. Select from and use a wider range of tools, techniques and equipment to perform practical tasks accurately to create your final product. Explain and understand your choices during the creation of your product. Being able to explain your reasons for these decisions. Select ingredients, materials and construction components using your knowledge of their functions and properties.	Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] Investigate and evaluate a range of products related to your design brief considering the materials, components and techniques that are used to create them. To test and evaluate your own final products against the original design criteria to compare how appropriate the product is for its purpose. Consider if your final product meets the design criteria. Evaluate your final product considering its strengths and areas of improvement through self-reflection, consideration of the design criteria and discussion with peers.



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		Plan	Do	Review
UKS2 Vocabulary: design decisions, functionality, authentic, user, purpose, design brief, design specifications, annotate, prototype, user, mock-up, evaluate, innovative.				
UKS2	Year 5	Generate and develop ideas through research (surveys, questionnaires, interviews) and discussion with peers to create a product for a specific reason, individual or group. Design purposeful functional and appealing products and develop your ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Create a design brief and specification to create a product fit for a specific purpose. Understand how key events and individuals in design and technology have helped shape the world.	Select from and use a wider range of tools and equipment that will allow you to accurately measure/ create your product. Produce detailed lists of the materials and equipment you will require and the techniques you will use to create your product. Create a step by step plan for how you are going to make a product considering the tools you will need and the techniques you will use. Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].	Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Investigate and analyse products linked to their final product considering the materials, components and techniques that are used to create them. Compare the final product to the original design and design specification. Consider its strengths and the areas of improvement through discussion with peers. Test product with intended user and evaluate the quality of both the design and the product considering functionality, quality and if it is fit for purpose.
	Year 6	Generate and develop ideas through research (surveys, questionnaires, interviews, web based resources) and discussion with peers to create a design specification for a variety of products created for different purposes. Develop a design specification to guide the development of a specific product designed for a specific reason, person or group.	Apply their understanding of computing to program, monitor and control their products. Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. Create a step by step plan considering how you are going to make a product listing the tools/materials you will need and the techniques	evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Continue to evaluate your design and work throughout the making process in order to edit and modify features to meet the needs of the initial design specifications. Compare the final product to the original design and design specification. Critically evaluate your wok to consider its strengths and the areas of improvement through discussion with peers.



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		Consider the factors of time and financial constraints when designing a realistic and achievable product fit for purpose. Conduct and participate in discussions with peers in which you are able to share, develop and clarify ideas. Design purposeful functional and appealing products and develop your ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.	you will use giving explanations for these choices. Confidently select appropriate tools in order to accurately measure, assemble and create your product using a variety of learnt skills and techniques. Consider your use of the construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.	Test product with appropriately designed tests to evaluate the quality of both the design and the product. Consider the functionality, quality and if the product is fit for both the intended user and purpose.

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			Exploring and using media and materials	Being imaginative	Technology
Understanding the World	EYFS	22 - 36 months	• Joins in singing favourite songs. • Creates sounds by banging, shaking, tapping or blowing. • Shows an interest in the way instruments are played. • Experiments with blocks, colours and marks.	• Beginning to use representations to communicate (e.g line drawing) • Beginning to make believe by pretending.	• Children seek to acquire basic skills in turning on and operating some computer equipment. • Children operate mechanical toys (e.g. turns the knob on a wind-up toy or pulls back on a friction car).
		30 - 50 months	• Understands that they can use lines to enclose a space, and then begin to use these shapes to represent objects. • Beginning to be interested in and describe the texture of things. • Uses various materials to construct. • Beginning to construct, stacking blacks vertically and horizontally, making enclosures and creating space. • Joins construction pieces together to build and balance. • Realises tools can be used for a purpose.	• Captures experience and responses with a range of media, such as music, dance, paint and other materials or words. • Uses available resources to create props to support role play. • Notices what adults do, imitating what is observed and then doing it spontaneously when the adult is not there.	• Children know how to operate simple equipment. • Children show interest in technological toys with knobs and pulleys. • Children show skills in making toys work by pressing parts or lifting flaps to achieve sound effects, movement or new images.
		40 – 60	• Experiments to create different textures. • Manipulates materials to achieve a planned effect. • Constructs with a purpose in mind, using a variety of resources. • Selects appropriate resources and adapts work where necessary. • Selects tools and techniques needed to shape, assemble and join materials.	• Chooses particular colours to use for a purpose. • Plays cooperatively as part of a group to develop and act out a narrative. • Creates simple representations of events, people and objects.	• *Children can complete simple program on the computer.* • *Children interact with age-appropriate computer software.*
		Early Learning	• Children sing songs, make music and dance and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	• Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. The represent their own ideas, thoughts and feelings through design technology, art, music, dance, role play and stories.	• Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.

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			Cooking and Nutrition
Cooking and Nutrition	KS1	Year 1	To understand where a variety of fruit and vegetables come from. (Farmed or grown at home) To understand the basic principles of having a healthy diet which includes a variety of different foods (The eat well plate.) To understand and use vocabulary relevant to the task at hand.
			Soft, juicy, sweet, sour, sharp, crisp, smooth, healthy, skin, pip, seeds, peel, crunchy, ingredients, choose, balanced.
		Year 2	To understand where a variety of fruit and vegetables come from. (Farmed or grown at home). To have an understanding of how food travels onto your plate. To understand the basic principles of having a healthy balanced diet which includes a variety of different foods (The eat well plate.) To understand why this is important. To understand and use vocabulary relevant to the task at hand.
			Hard, crunchy, soft, sweet, salty, sour, ingredients, healthy diet, cutting, slicing, squeezing, core, seeds, pip.
	KS2	Year 3	To understand how to use appropriate equipment and utensils to prepare a meal. To understand the journey of different ingredients. If they are grown or reared or caught. To learn about the journey food makes to your plate. To understand and use vocabulary relevant and appropriate to the task at hand.
			Equipment, utensils, ingredients, taste, preference, grown, caught, reared, fresh, processed, seasonal, frozen, healthy, fruit, vegetables, tinned.
		Year 4	To understand how to use appropriate equipment and utensils to prepare a meal. To know about a range of fresh and processed ingredients and understand the journey your food makes to your plate. To be able to fluently understand the different way we categorise food as part of a healthy diet.
			Edible, hygienic, caught, harvested, varied diet, spicy, hot, greasy, moist, preference, technique, ingredients, name of different products.
		Year 5	To understand how to use appropriate equipment and utensils to prepare a meal. To know about a range of fresh and processed ingredients and understand the journey your food makes to your plate. To understand the concept of seasonal food and the way this effects production and what is in the shops.
			Fat, sugar, carbohydrate, protein, vitamins, nutrients, gluten, dairy, seasonality, knead, beat, whisk, fold, roll, combine, source, flour, yeast, ingredients.
		Year 6	To understand how to use appropriate equipment and utensils to prepare a meal. To know about a range of fresh and processed ingredients and understand the journey your food makes to your plate. To understand how seasonality impacts the sourcing of different food products.
			Intolerance, bran, spices, herbs Fat, sugar, carbohydrate, protein, vitamins, nutrients, gluten, dairy, seasonality.

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Structures	KS1	Year 1	Structures
			To understand how to make a free standing structure. To understand how to improve a free standing structure (How to make it stronger and more stable.) To be able to use technical vocabulary to describe what you are doing and the project you are creating.
		Year 2	Cut, fold, join, fix, wall, tower, structure, framework, edge, side, stronger, higher, surface, thicker, thinner, corner, point, straight, wooden, curved, plastic, metal, square, circle, rectangle.
	KS2	Year 3	To develop your understanding of how to make strong shell structures (Den like). Consider how to improve a structure and its strength. To use knowledge of 3D shape to support in your creation of a stable structure. To be able to use technical vocabulary to describe what you are doing and the project you are creating.
		Year 4	Three dimensional, shape, net, cube, cuboid, prism, vertex, edge, face, width, breadth, capacity, marking out, scoring, shaping, adhesive, joininh, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, decision.
		Year 5	To understand how to strengthen and reinforce a 3-d framework. To use knowledge of 3D shape to support in your creation of a stable structure. To be able to use technical vocabulary to describe what you are doing and the project you are creating.
		Year 6	Stiffen, strengthen, reinforce, stability, shape, permanent, temporary, stability.

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Textiles	KS1	Year 1	Textiles
			To understand how simple textile products are made. To understand how to join fabrics using stitching, glue or other techniques. Explore different techniques. To understand and use appropriate technical language.
		Year 2	Joining, technique, tools, fabric, template, pattern, mark out, decorate, finish, stitch.
	KS2	Year 3	To understand how to strengthen and reinforce fabrics. To understand how to securely join two pieces of fabric together. To understand the importance of choosing appropriate fabrics for a specific purpose. To understand and use appropriate technical language.
		Year 4	Fabric, wool, cotton, leather, denim, waterproof, fastening, compartment, strength, weakness, seam, zip, buttoms, thread, template, seam.
		Year 5	Create a 3D textile product by selecting appropriate textiles. Understand how fabrics can be strengthened and reinforced where appropriate. To understand the importance of choosing appropriate fabrics for a specific purpose To understand and use appropriate technical language.
		Year 6	Seam, seam allowance, wadding, reinforce, hem, template, fastenings, pins, needles,.

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Mechanisms	KS1	Year 1	**Mechanisms** To use and explore mechanisms such as sliders and levers. To understand that different mechanisms create different types of movement. To understand and use appropriate technical language. Slider, lever, pivot, masking tape, quide, push, pull, down, up, forwards, backwards, straight.
		Year 2	To use and explore mechanisms such as wheels, levers, sliders and axes. To identify the differences between a fixed axle and a free moving one. To understand and use appropriate technical language. Vehicle, wheel, axle, body, assemble, join, cut, finish, moving, tools, materials.
	KS2	Year 3	To understand and be able to use lever and linkage mechanisms. To be able to distinguish between fixed and loose pivots. To understand and use appropriate technical language.
		Year 4	Mechanism, input, output, process, system, rotary, linear, oscillating, reciprocating.
		Year 5	To understand that mechanical and electrical systems have an input and output that create the process. To understand the use of gears and pulleys to create a variety of different types of movement. To understand and use appropriate technical language.
		Year 6	Pulley, gear, drive, rotation, circuit, circuit diagram, processs, electrical system, annotated.

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Electrical systems	KS1	Year 1	Electrical systems
		Year 2	
	KS2	Year 3	To understand and use electrical systems. (Link with science) To apply their computing understanding to control a product using a specific programme. To understand and use appropriate technical language.
		Year 4	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.
		Year 5	To understand and use electrical systems. (Link with science) Apply their understanding of computing to programme, monitor and control a product. To understand and use appropriate technical language.
		Year 6	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

Resources

https://www.foodafactoflife.org.uk

https://www.food4families.org.uk/userfiles/resources/soilassocnschoolpack.pdf

https://www.thegrid.org.uk/learning/dandt/ks1-2/resources/qca.shtml

https://www.ltl.org.uk/free-resources/

https://www.data.org.uk/for-education/curriculum/dt-national-curriculum-for-england-2014/

Resources also found in SharePoint file