Lomeshaye Junior School
Design and Technology Curriculum Progression

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Lomeshaye Junior School

Lomeshaye Junior School Curriculum Overview
Aspire – Believe – Achieve

Curriculum Vision

"A vibrant, inclusive learning community coupled with an ethos of high expectations and challenges are paramount to Lomeshaye's success. Aspirations are raised in a learning climate that is engaging and fun.

Our ambitious and aspirational curriculum provides individuals with a basis for learning a breadth of knowledge and development of skills across a broad range of contexts. We offer opportunities for learning about and through rights, sustainable development, creativity and cultural aspects. Our creative and extended curriculum which incorporates clubs, trips, partners working in school, sporting events and residential visits, will endeavour to develop our children and help to instil a sense of responsibility for the wider world whilst maximizing learning and enjoyment for all. An enriched curriculum provides a full entitlement for all learners including those with SEND and addresses social disadvantage. Our curriculum allows teachers to teach with freedom in innovative and creative ways. The quality of learning and teaching in every classroom - and the inspiration, challenge and enjoyment comes from our teacher's commitment and enthusiasm and is critical in achieving our goals as we Aspire – Believe – Achieve." – Vision developed by staff

Purpose

This document reflects the school values and philosophy in relation to the teaching and learning of National Curriculum Subjects and the locally agreed syllabus for Religious Education. It sets out a framework within which teaching and non-teaching staff can operate and gives guidance on planning, teaching and assessment. Our curriculum is shaped by all the planned activities that we organise in order to promote learning and personal growth and development. It includes not only the statutory requirements of the National Curriculum but the range of extra–curricular activities that enrich the children's life experiences. In addition, it includes the 'hidden curriculum' whereby the children learn from the way they are treated and expected to behave. We aim to teach our pupils to become positive, responsible and resilient, so that they can work and collaborate with others whilst developing knowledge, understanding and skills in order to reach their true potential.

The National Curriculum Aims

'The national curriculum provides pupils with an introduction to the essential knowledge that they need to be educated citizens. It introduces pupils to the best that has been thought and said; and helps engender an appreciation of human creativity and achievement.
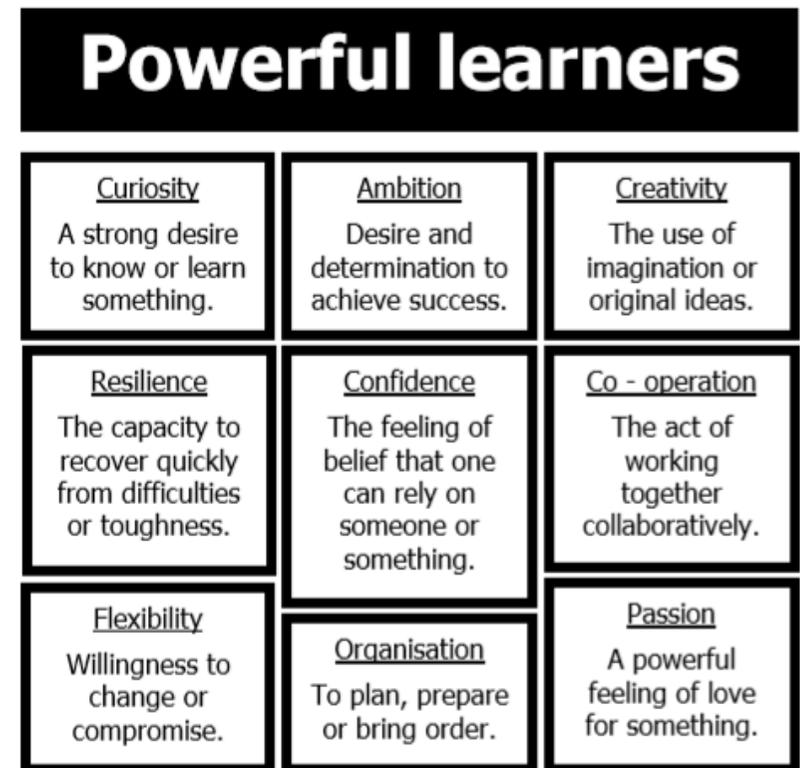
The national curriculum is just one element in the education of every child. There is time and space in the school day and in each week, term and year to range beyond the national curriculum specifications. The national curriculum provides an outline of core knowledge around which teachers can develop exciting and stimulating lessons to promote the development of pupils' knowledge, understanding and skills as part of the wider school curriculum.'

Aspire - Curriculum Intent:

At Lomeshaye Junior School our rationale is to deliver a challenging curriculum that builds on prior knowledge and develops cultural capital, is rich in written and spoken language, deepens understanding, and enables children to develop the powerful learner attributes which allow them to Aspire-Believe-Achieve.

We aim to be a school where:

- we provide a rich and varied curriculum which helps to develop a sense of self and a respect for the local area and wider world.
- staff and pupils have high expectations and strive for excellence in all subjects
- pupils acquire and develop a good level of skills in reading, writing and mathematics.
- children have opportunities to be curious, creative and have cultural experiences.
- we learn about and through rights and provide opportunities for children to be advocates for sustainable change
- children develop the knowledge, skills and powerful learner attributes needed to flourish in life, learning and work now and in the future.
- we support pupils to become responsible citizens with excellent behaviour and the ability to self-regulate.

Powerful learners

Curiosity A strong desire to know or learn something.	**Ambition** Desire and determination to achieve success.	**Creativity** The use of imagination or original ideas.
Resilience The capacity to recover quickly from difficulties or toughness.	**Confidence** The feeling of belief that one can rely on someone or something.	**Co - operation** The act of working together collaboratively.
Flexibility Willingness to change or compromise.	**Organisation** To plan, prepare or bring order.	**Passion** A powerful feeling of love for something.

At Lomeshaye Junior School, the curriculum is designed coherently in order that children in KS2 build knowledge, skills and understanding across all NC subjects taught through creative curriculum themes. Subjects are taught individually with relevant and meaningful connections made to other subjects under the same overarching theme so that the core skills and knowledge are not diluted through the thematic approach.Each foundation subject is taught through a progression model adapted from the NC and Lancashire KLIPS and End of Year Expectations which outlines the intended curriculum skills, knowledge and core vocabulary for each year group and the 4 writing purposes are linked to this, along with opportunities for Maths across the curriculum. Long term plans are formed with logical progression in mind, building on previous years' learning, and Medium Term planning includes the Lancs EOYE and KLIPS with opportunities for them to be revisited over the year. The language of rights is used to learn about and advocate for change and children are provided with opportunities to work with specialist teachers to develop their talents and receive an education which celebrates the whole child.

Believe - Curriculum Implementation:

Our pedagogies, created and agreed by Lomeshaye staff, outline how the curriculum is implemented. The long term and medium-term planning comes to life in the classroom when the pedagogies inform planning, teaching and learning. Kagan cooperative learning is used to promote collaboration and oracy is enhanced through use of talk roles. Learning revisits prior knowledge and is scaffolded appropriately to allow children to recall previous learning and make connections. Subject specific vocabulary, knowledge and skills, and links to powerful learner attributes, rights and SDG's are made explicit throughout so that pupils can integrate new knowledge and build on their prior understanding of concepts. Knowledge and learning organisers are in the early stage of implementation and are used for pre teaching, to support home learning and to form part of the reviewing of learning. These scaffold children with key facts and vocabulary and support the retention of knowledge into long term memory. Each leader sets out the specific intent for their subject and how its implementation will look in the planning and delivery of teaching and learning.

Achieve - Curriculum Impact:

We believe that our curriculum intentions have an impact when the children can remember their learning, recall knowledge and make connections. The learning environment, planning and pupil's work demonstrates how children are exposed to the curriculum, but the true impact is revealed when the children are able to articulate their knowledge and understanding through a range of written, creative and oral outcomes. To achieve our curriculum goals, subject leaders closely scrutinise all aspects of teaching and learning in their subjects to monitor that the curriculum is coherent and well-sequenced, and that children have opportunities to consolidate and embed knowledge. Impact is measured through summative assessments, focus week observations and scrutiny, curriculum evaluations and pupil voice. In addition, external recognition through achieved of awards such as RRS Gold and the SENDIA award show that the curriculum we provide is of a high standard.

Lomeshaye Pedagogies: Highly effective teaching and learning is dependent on…

Building on what pupils already know	High quality questions from pupils and adults	Regular and effective feedback
Planning engaging pre-learning tasks to assess current knowledge. Using talk partners to explore and share knowledge. Adapting lessons to reflect current attainment. Looking back to previous year group's coverage and KLIPS to ensure appropriate challenge. Pre and post home learning tasks - deepen and embed.	Use of questioning dice. Planned opportunities for pupils to ask questions (pupil choice). Starting lessons with a learning question. Planned use of HOT questions during lessons from teacher and TA. Regular audit of adult questions within the classroom. Pupil questioning tools - 'see, think, wonder' Questions on plans for TA's. Prompts in resilience boxes.	Individual and whole class feedback. Peer to peer feedback - collaborative learning pro forma. Self-evaluation and reflection tools. Planned time to respond to feedback. 1-1 time to give and discuss feedback. Children feeding back to adults their personal strengths and weaknesses. Fluid intervention trackers to support regular and effective feedback.
Higher order activities that challenge thinking	**Pupils being clear on the 'what' and 'why'**	**Explicit development of metacognition**
Record a thinking grid for the half term. Ensure all pupils have a balance of HOT (Higher Order Thinking) activities through careful planning. Include HOT in all curriculum lessons. Pupils highlight their learning of the day.	Presenting the big picture at the start of a term. Clear curriculum overviews for parents. Regular reminders during lessons. Use of working walls. Linking learning to real life when appropriate. Assertive discussions during mentoring.	Identify, display and teach the learning power of the month. Explicit planning for how the behaviour will be developed. Reflection tools within lessons which focus on 'how'. Learning behaviour working wall. Learning behaviours celebrated in assembly.
Variation of inputs during the process and different outputs for learning	**A pupil centred learning process**	**Worthwhile classroom dialogue**
2nd and 3rd input to be different to the first. Vary the emphasis on visual and auditory. Use pupils who have mastered to provide input to those who haven't. Effective use of resources including TAs, ICT and the outdoor environment.	Building elements of choice within all lessons (chilli challenge, science experiments etc.) Development of group roles. Pupil lesson evaluation forms. Planning for different types of learner. Involving pupils in curriculum evaluations. Pupil choice planned for all activities when appropriate. Home learning.	Identify, display and discuss dialogic behaviours. Development of structured sharing strategies (Kagan) Carefully planned opportunities for talk to enhance learning.

Lomeshaye Junior School Curriculum Statement
Aspire-Believe-Achieve

Design and Technology

"That's been one of my mantras — focus and simplicity. Simple can be harder than complex: You have to work hard to get your thinking clean to make it simple. But it's worth it in the end because once you get there, you can move mountains." Steve Jobs

Intent	Implementation	Impact
What will take place before teaching in the classroom?	**What will this look like in the classroom?**	**How will this be measured?**

The school's senior leadership team will:
 	
• Lead the school staff to develop a clear overarching curriculum intent which drives the ongoing development and improvement of all curriculum subjects.
• Ensure that the curriculum leaders have appropriate time to develop their specific curriculum intent through careful research and development.
• Provide sufficient funding to ensure that implementation is high quality.
	Our planned teaching sequence will show:
	
	• Lomeshaye agreed pedagogies used as basis for teaching and learning.
	• The Big Picture: Planning and implementation of the six principles for Design and Technology - User, Purpose, Functionality, Design decisions, Innovation, Authenticity are apparent.
	• Use of an 'Extraordinaire' or other character will inspire the design.
	• INVESTIGATE and RESEARCH a user (Extraordinaire)
	   ○ Prepare design challenge – the project (what is to be made). This card informs what the Extraordinaire wants. Use the doodles to inspire the shape and form of the design concept.
	   ○ Research - Use the 'Think' cards to initiate a deeper thinking and questioning.
	• DESIGN - Describe the concept visually. Sketch and annotate the design to communicate important features. Remember, good design is about great ideas – not being a great artist! (Further opportunities of development for concepts are available through the 'Design' questions on the 'Think' cards).
	• IMPROVE – When the design is complete, use the 'Improve' questions on the 'Think' cards to iterate and improve the design (repeat for the better).
	• NAME IT! – Pupils are to award their design a catchy name and add the trademark symbol - ™ in case someone tries to steal the design.
	• PRESENT – It is good practise for pupils to present their design concept to others. They should explain why the Extraordinaire needs the design; describe the research undertaken which informed their concept; high-light key features and improvements which made the design great.
	• Improve and build-upon basic skills in sewing, fixing, strengthening structures, cutting, measuring and creating electrical and mechanical systems, as per age related expectations.
	• Use technical vocabulary appropriate to the design.
	• Be aware of key individuals and events in design and technology that have shaped the world.
		Pupil voice will show:
		
		• A developing understanding of the designs, techniques and skills needed by designers and inventors to create, invent, build or make items that have shaped the world today, at an age appropriate level.
		• An understanding why clear progressive steps of design (research and design of product - purpose - person) – make (follow design plan) – evaluate (what went well, what could be improved) are essential for success.
		• A progression of independence in technical skills and understanding, with appropriate vocabulary which supports and extends knowledge acquisition.
		• Confidence and a genuine excitement of pride when presenting and discussing proto-types made, detailing skills and techniques learned and used.
		• A developing enablement into probing and questioning reasons behind the design.
		• SEND and AGT pupils to have differentiated goals (SEND: May need support in …; AGT: Should ensure attention to detail (length, measures, aesthetic) …

The Design & Technology leader will:	Our classrooms will:	Children's work in books and displays will show:
• Understand and articulate the characteristics of high-quality teaching in the subject and the main strengths for improving and sustaining high standards of teaching and learning for all pupils. • Ensure an appropriate progression of knowledge and skills is in place which supports pupils in knowing more and remembering more as Designers and/or Inventor. • Ensure an appropriate progression for vocabulary is in place for each area of learning, which builds on prior learning. • Know the relationship of their subject to the curriculum as a whole. • Keep up to date with current *Design & Technology* research and subject development through an appropriate subject body or professional group.	• Provide appropriate quality equipment for each area of the curriculum. • Have developed learning walls which include high quality WAGOLLs, including actual pieces of work and known Designers and/or Inventors, and carefully chosen vocabulary, which are regularly updated. • Be organised using Kagan cooperative learning so that pupils can work in small groups or whole class as appropriate to support pupils in their development of their skills. • Deploy appropriately challenging selections of texts, both non-fiction and fiction, accessible throughout learning to develop wider understanding and underpin reading skills.	• A varied and engaging curriculum which develops a range of design and technological skills and depth of knowledge. • Clear progression in line with expectations set out in the progression grids developed from Lancashire EOYE, KLIPS and National Curriculum. • Developed and final pieces of work or proto-types which showcase the knowledge and skills learned. • Sustained improvement in their subject knowledge, understanding and skills. • A strong understanding of the key ideas of the subject. • Deep thinking in relation to the subject matter. • That children are enthusiastic and highly motivated about Design & Technology.
The class teacher will, with support from year group colleagues and the Design & Technology leader: • Create a long-term plan which ensures appropriate coverage of knowledge, skills and vocabulary from the progression grid. • Personally, pursue support for any particular subject knowledge and skills gaps prior to teaching. • Ensure that resources are appropriate, of high enough quality and are plentiful so that all pupils have the correct tools and materials. • Work well together as a team. • Apply policy and plans consistently in the classroom. • Have high expectations of the pupils. • Reinforce the motivation of the pupils. • Facilitate deep learning within the subject. • Make good use of support, training and guidance.	**Our children will be:** • Engaged because they are challenged by the curriculum which they are provided with. • Resilient learners who overcome barriers and understand their own strengths and areas for development. • Able to critique their own work as a designer and/or inventor because they know how to be successful. • Safe and happy in D.T. lessons which give them opportunities to explore their own creative development. • Encouraged and nurtured to overcome any barriers to their learning or self-confidence because feedback is positive and focuses on D.T. skills and knowledge • Develop and build their own D.T. skills and knowledge, improving confidence over time because of careful planning, focused delivery and time to practice and hone skills.	**The Design & Technology leader will:** • Celebrate the successes of pupils through planned displays. • Collate appropriate evidence over time which evidences that pupils know more and remember more. • Monitor the standards in the subject to ensure the outcomes are at expected levels. • Provide ongoing CPD support based on the outcomes of subject monitoring to ensure that the impact of the curriculum is wide reaching and positive.

Lomeshaye Junior School Progression in Design and Technology
Aspire-Believe-Achieve

Design and Technology

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Year3	Year4	Year5	Year6
Design • Develop more than one design or adaptation of an initial design. • Plan a sequence of actions to make a product. • Think ahead about the order of their work and decide upon tools and materials. • Propose realistic suggestions as to how they can achieve their design ideas.	**Design** • Record the plan by drawing using annotated sketches. • Use proto-types to develop and share ideas. • Consider aesthetic qualities of materials chosen. • Use CAD where appropriate.	**Design** • Record ideas using annotated diagrams. • Use models, kits and drawings to help formulate design ideas. • Sketch and model alternative ideas. • Decide which design idea to develop.	**Design** • Plan the sequence of work. • Devise step by step plans which can be read / followed by someone else. • Use exploded diagrams and cross-sectional diagrams to communicate ideas.
Make • Select from a range of tools for cutting, shaping, joining and finishing. • Use tools with accuracy. • Select from materials according to their functional properties. • Use appropriate finishing techniques.	**Make** • Prepare pattern pieces as templates for their design. • Select from techniques for different parts of the process.	**Make** • Develop one idea in depth. Select from and use a wide range of tools. • Cut accurately and safely to a marked line. • Select from and use a wide range of materials	**Make** • Make proto-types. • Use researched information to inform decisions. • Produce detailed lists of ingredients / components /materials and tools. • Refine their product – review and rework / improve.
Evaluate • Investigate similar products to the one to be made to give starting points for a design. • Research needs of user. • Decide which design idea to develop. • Consider and explain how the finished product could be improved. • Discuss how well the finished product meets the user's design criteria. • Investigate key events and individuals in design and technology.	**Evaluate** • Draw / sketch existing products in order to analyse and understand how products are made. • Identify the strengths and weaknesses of their design ideas in relation to purpose / user. • Consider and explain how the finished product could be improved. • Investigate key events and individuals in design and technology.	**Evaluate** • Research and evaluate existing products. • Consider user and purpose. • Consider and explain how the finished product could be improved related to design criteria. • Investigate key events and individuals in design and technology.	**Evaluate** • Identify the strengths and weaknesses of their design ideas. • Report using correct technical vocabulary. • Discuss how well the finished product meets the design criteria having tested on/discussed outcomes with the user. • Understand how key people have influenced design in a variety of contexts. • Investigate key events and individuals in design and technology.

Technical Knowledge (Select as appropriate to the focus of the design and technology focuses in the year group)	Technical Knowledge (Select as appropriate to the focus of the design and technology focuses in the year group)	Technical Knowledge (Select as appropriate to the focus of the design and technology focuses in the year group)	Technical Knowledge (Select as appropriate to the focus of the design and technology focuses in the year group)
• Use an increasingly appropriate technical vocabulary for tools materials and their properties. • Understand seam allowance. • Proto-type a product. • Sew on buttons and make loops. • Strengthen frames with diagonal struts. • Measure and mark square section, strip and dowel accurately to 1cm. • Incorporate a circuit into a model. • Use electrical systems such as switches bulbs and buzzers. • Use ICT to control products. • Use linkages to make movement larger or more varied.	• Use an increasingly appropriate technical vocabulary for tools materials and their properties. • Understand seam allowance. • Proto-type a product. • Sew on buttons and make loops. • Strengthen frames with diagonal struts. • Measure and mark square section, strip and dowel accurately to 1cm. • Incorporate a circuit into a model. • Use electrical systems such as switches bulbs and buzzers. • Use ICT to control products. Use linkages to make movement larger or more varied.	• Use the correct vocabulary appropriate to the project. • Join materials using appropriate methods. • Create 3D textile products using pattern pieces. • Understand pattern layout with textiles. • Cut strip wood, dowel, square section wood accurately to 1mm. • Build frameworks to support mechanisms. • Stiffen and reinforce complex structures. • Use mechanical systems such as cams, pulleys and gears. • Use electrical systems such as motors and switches. • Program, monitor and control using ICT.	• Use the correct vocabulary appropriate to the project. • Join materials using appropriate methods. • Create 3D textile products using pattern pieces. • Understand pattern layout with textiles. • Cut strip wood, dowel, square section wood accurately to 1mm. • Build frameworks to support mechanisms. • Stiffen and reinforce complex structures. • Use mechanical systems such as cams, pulleys and gears. • Use electrical systems such as motors and switches. • Program, monitor and control using ICT.
Cooking and Nutrition • Follow instructions / recipes. Join and combine a range of ingredients. • Begin to understand the food groups on the *Eatwell Plate*.	**Cooking and Nutrition** • Make healthy eating choices - use the *Eatwell plate.* • Understand seasonality. • Know where and how ingredients are reared and caught. • Prepare and cook using different cooking techniques.	**Cooking and Nutrition** • Join and combine a widening range of ingredients. • Select and prepare foods for a particular purpose. • Know where and how ingredients are grown and processed.	**Cooking and Nutrition** • Understand and apply the principles of a healthy and varied diet. • Choose ingredients to support healthy eating choices when designing their food products. • Prepare and cook a variety of mostly savoury dishes using a range of cooking techniques.
Key Knowledge End Points	**Key Knowledge End Points**	**Key Knowledge End Points**	**Key Knowledge End Points**
Designing o prove that a design meets a set criteria. o design a product and make sure that it looks attractive o choose a material for both its suitability and its appearance	**Designing** o use ideas from other people when designing o produce a plan and explain it o persevere and adapt work when original ideas do not work o communicate ideas in a range of ways, including by sketches and drawings which are annotated	**Designing** o come up with a range of ideas after collecting information from different sources o produce a detailed, step-by-step plan o explain how a product will appeal to a specific audience o design a product that requires pulleys or gears	**Designing** o use market research to inform plans and ideas. o follow and refine original plans o justify planning in a convincing way o show that culture and society is considered in plans and designs

Making	Making	Making	Making
o follow a step-by-step plan, choosing the right equipment and materials o select the most appropriate tools and techniques for a given task o make a product which uses both electrical and mechanical components o work accurately to measure, make cuts and make holes	o know which tools to use for a particular task and show knowledge of handling the tool o know which material is likely to give the best outcome o measure accurately	o use a range of tools and equipment competently o make a proto-type before making a final version o make a product that relies on pulleys or gear	o know which tool to use for a specific practical task o know how to use any tool correctly and safely o know what each tool is used for o explain why a specific tool is best for a specific action
Evaluating o explain how to improve a finished model o know why a model has, or has not, been successful	**Evaluating** o evaluate and suggest improvements for design o evaluate products for both their purpose and appearance o explain how the original design has been improved o present a product in an interesting way	**Evaluating** o suggest alternative plans; outlining the positive features and draw backs o evaluate appearance and function against original criteria	**Evaluating** o know how to test and evaluate designed products o explain how products should be stored and give reasons o evaluate product against clear criteria
Technical Knowledge o know how to strengthen a product by stiffening a given part or reinforce a part of the structure o use a simple IT program within the design	**Technical Knowledge** o links scientific knowledge by using lights, switches or buzzers o use electrical systems to enhance the quality of the product o use IT, where appropriate, to add to the quality of the product	**Technical Knowledge** o links scientific knowledge to design by using pulleys or gears o uses more complex IT program to help enhance the quality of the product produced	**Technical Knowledge** o use electrical systems correctly and accurately to enhance a given product o know which IT product would further enhance a specific product o use knowledge to improve a made product by strengthening, stiffening or reinforcing
Food Technology o describe how food ingredients come together o weigh out ingredients and follow a given recipe to create a dish o talk about which food is healthy and which food is not o know when food is ready for harvesting	**Food Technology** o know how to be both hygienic and safe when using food o bring a creative element to the food product being designed	**Food Technology** o be both hygienic and safe in the kitchen o know how to prepare a meal by collecting the ingredients in the first place o know which season various foods are available for harvesting	**Food Technology** o explain how food ingredients should be stored and give reasons o work within a budget to create a meal o understand the difference between a savoury and sweet dish
Vocabulary	**Vocabulary**	**Vocabulary**	**Vocabulary**
o User o Purpose o Functionality o Design decisions o Innovation o Authenticity	o User o Purpose o Functionality o Design decisions o Innovation o Authenticity	o User o Purpose o Functionality o Design decisions o Innovation o Authenticity	o User o Purpose o Functionality o Design decisions o Innovation o Authenticity

Cooking & Nutrition *(Linked to the Eatwell Plate – Healthy Lunchbox)*	**Cooking & Nutrition** *(Linked to Teeth & Digestion)*	**Cooking & Nutrition** *(Linked to the Eatwell Plate – Healthy Meal)*	**Cooking & Nutrition** *(Linked to the Eatwell Plate - Protein)*
name of products, names of equipment, utensils, techniques and ingredients	name of products, names of equipment, utensils, techniques and ingredients	ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs	ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs
texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury	texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury	fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality	fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality
hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet	hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet	utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble	utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble
Mechanical systems - Levers and linkages mechanism, lever, linkage, pivot, slot, bridge, guide	**Electrical Systems - Control and Electrical Components** 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	design specification, innovative, research, evaluate, design brief	design specification, innovative, research, evaluate, design brief
system, input, process, output		**Mechanical Systems - Cams, Pulleys & Gears** pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor circuit, switch,	**Combination of skills bases – structures, mechanical systems, electrical systems, ICT, programming and control** *dependent on project*
linear, rotary, oscillating, reciprocating user, purpose, function	control, program, system, input device, output device	circuit diagram	**Structures** frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent
proto-type, design criteria, innovative, appealing, design brief	user, purpose, function, proto-type, design criteria, innovative, appealing, design brief	annotated drawings, exploded diagrams	design brief, design specification, proto-type, annotated sketch, purpose, user, innovation, research, functional
Structures frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent	**Textiles** fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance	mechanical system, electrical system, input, process, output	**Mechanical Systems** **(* as Year 5)**
design brief, design specification, proto-type, annotated sketch, purpose, user, innovation, research, functional	user, purpose, design, model, evaluate, proto-type, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces	design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief	**Electrical Systems** series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart
		3D Textiles seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces	function, innovative, design specification, design brief, user, purpose
		name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper	**ICT** computer aided design (CAD), computer aided manufacture (CAM)
		design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, proto-type	

			font, lettering, text, graphics, menu, scale, modify, repeat, copy, flip
			design brief, design criteria, design decisions, innovative, proto-type
			seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces
			names of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper
			annotate, functionality, innovation, authentic, user, purpose, evaluate, mock-up, proto-type
			Programming and Control 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
			function, innovative, design specification, design brief, user, purpose

Glossary

Authenticity - Pupils should design and make products that are believable, real and meaningful to themselves and others.

Design decisions - Pupils need opportunities to make their own design decisions. Making design decisions allows pupils to demonstrate their creative, technical and practical expertise, and draw on learning from other subjects. Through making design decisions pupils decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for.

Functionality - Pupils should design and make products that work/function effectively in order to fulfil users' needs, wants and purposes.

Innovation - When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging open-ended starting points for learning.

Purpose - Pupils should be able to clearly communicate the purpose of the products they are designing and making. Each product they create should be designed to perform one or more defined tasks. Pupils' products should be evaluated through use.

User - Pupils should have a clear idea of who they are designing and making products for, considering their needs, wants, values, interests and preferences. The intended users could be themselves or others, an imaginary or story-based character, a client, a consumer or specific target group.

National Curriculum Purpose of study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

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 proto-types 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

Subject content

Key stage 2

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:

Design
- 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, proto-types, pattern pieces and computer-aided design

Make
- 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

Evaluate
- 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

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