



Design Technology

at Liscard Primary School





Design and Technology

Intent

Design and Technology is an inspiring, rigorous and practical subject. Design and Technology encourages children to learn to think and intervene creatively to solve problems both as individuals and as members of a team. At Liscard, we encourage children to use their creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. We aim to, wherever possible, link work to other disciplines such as mathematics, science, engineering, computing and art. Pupils are encouraged to take risks, becoming resourceful, innovative enterprising and capable citizens. The children are also given opportunities to reflect upon and evaluate past and present design technology, its uses and its effectiveness and are encouraged to become innovators and risk-takers.

Implementation

Design and Technology at Liscard Primary School allows children to develop their capability by combining their design and making skills with knowledge and understanding to create quality products. The teaching of Design and Technology follows the National Curriculum and documents from The DT Association as well as teacher expertise to deliver high quality, comprehensive and progressive lessons.

The coverage across the school has been planned to ensure key strands are built upon throughout their education. As children progress through school, they are able to draw upon their previously learnt knowledge and skills to create increasingly more intricate and challenging products in the areas of; cooking and nutrition, structures, mechanisms, textiles and electrical systems.

Across units of work, pupils plan, design and make products within a variety of contexts. Children will first develop an understanding of the importance of researching pre-existing products to inform their own designs. Pupils will then be given the opportunity to plan and design a product with a clear purpose and audience in mind; during this part of the process, pupils will be encouraged to take into consideration the appropriate tools, materials, measurements and other key details that will help their product meet the design criteria. Teachers will provide pupils with opportunities to practise key skills involved in practical tasks before creating their final products. Throughout units of work, pupils will be encouraged to evaluate product effectiveness and potential areas for improvement. Pupils will also have the opportunity to work both independently and in collaboration with their peers.

Impact

We ensure the children:

- Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and 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 and critique, evaluate and test their ideas and products, as well as the work of others
- Understand and apply the principles of nutrition and learn how to cook
- Design and make a range of products
- A good quality finish will be expected in all products, with units of work appropriately planned and delivered for both age and ability of all pupils.

Subject Overview / Progression Mapping – Design and Technology

Design Technology - Long Term Curriculum Overview 2022 - 2023						
Subject area	Autumn Term A	Autumn Term B	Spring Term A	Spring Term B	Summer Term A	Summer Term B
F1	Explore a range of construction materials and resources in continuous provision. Build walls for Humpty Dumpty. Access tools and equipment. Explore materials and choose what to do with them.	Design and build broomsticks for the witch. Use scissors and glue to create stick puppets (Nativity/traditional tale characters) and make attachments.	Junk modelling – Chinese dragons for a dragon dance	Making gingerbread men. Exploring bridges, materials, and floating and sinking.	Explore how things work – robots and machines. Explore small world resources and construction materials – farms and maps.	Make imaginative and complex 'small worlds' (zoos). Explore different materials freely, in order to develop their ideas about how to use them and what to make.
F2	Construction Using various construction materials. Joining construction pieces together to build and balance.	Self Service snack- Cutting and preparing fruit Using simple tools and techniques completely and appropriately	Exploring different joins Selecting tools and using techniques needed to shape, assemble and join materials	Junk Modelling Experiment with colour, design, texture, form and function	Forest school- Den building Safely use and explore a variety of materials, tools and techniques.	Props making for F2 performance Make use of props and materials when role playing characters in narratives and stories.
Year 1	Structures: Playgrounds			Cooking and Nutrition: Fruit Smoothie		Mechanisms: Moving Pictures
Year 2		Mechanisms: Winding Mechanisms (Great fire of London)		Cooking and Nutrition: A Balanced Diet (Vegetable Wraps)		Structures: Beach Shelters
Year 3		Cooking and Nutrition: Mediterranean Pasta Sauce		Mechanical Systems: Pneumatics (Volcanoes)		Structures: (Greek Buildings)
Year 4		Textiles: Egyptian Slippers		Mechanical Systems: Pop up Books		Cooking and Nutrition: Bread
Year 5	Cooking and Nutrition: Soup and Savoury Scone			Mechanical Systems: Moving Toys		Structures: Bridge Building
Year 6		Cooking and Nutrition: Vegetable Cake			Textiles: Mobile Phone Holder	Mechanical and Electrical systems: Fairgrounds





Development Matters

Birth to Three	Three and Four-Year-Olds	Children in Reception
<p>Physical Development:</p> <ul style="list-style-type: none"> Build independently with a range of appropriate resources Develop manipulation and control. Explore different materials and tools <p>Mathematics:</p> <ul style="list-style-type: none"> Build with a range of resources. <p>Understanding the World:</p> <ul style="list-style-type: none"> Explore materials with different properties. <p>Expressive art and design:</p> <ul style="list-style-type: none"> Explore different materials, using all their senses to investigate them. Manipulate and play with different materials. Use their imagination as they consider what they can do with different materials. Make simple models which express their ideas. 	<p>Personal, Social and Emotional Development:</p> <ul style="list-style-type: none"> Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them. <p>Physical Development:</p> <ul style="list-style-type: none"> Use large-muscle movements to wave flags and streamers, paint and make marks. Choose the right resources to carry out their own plan. Use one-handed tools and equipment, for example, making snips in paper with scissors. <p>Understanding the World:</p> <ul style="list-style-type: none"> Explore how things work. <p>Expressive Art and Design:</p> <ul style="list-style-type: none"> Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. Explore different materials freely, in order to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Create closed shapes with continuous lines, and begin to use these shapes to represent objects. 	<p>Physical Development:</p> <ul style="list-style-type: none"> Progress towards a more fluent style of moving, with developing control and grace. Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor. <p>Expressive Art and Design:</p> <ul style="list-style-type: none"> Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills.

Early Learning Goals

Physical Development:

- Use a range of small tools, including scissors, paintbrushes and cutlery.

Expressive Art and Design:

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
- Share their creations, explaining the process they have used.



Designing

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> • Safely experiment with a variety of tools, materials and resources • Explore a variety of techniques, experimenting with colour, design, texture, form and function • Talk about what they want to make and what materials they will use • Talk about why certain materials have been chosen 	<ul style="list-style-type: none"> • Work within a range of contexts (e.g. local area) • Communicate their own ideas and opinions on existing products through discussion • Communicate what product they are making (including who the product is for and how it will work) • Use materials, kits and components to explore mock ups and templates • Design own product through drawings (with templates to support where necessary) • Annotate their designs with basic labels • Verbally explain the materials and tools they plan to use and why 	<ul style="list-style-type: none"> • Work within a range of contexts (e.g. historical) • Communicate their opinions about why they like existing products • State what products they are designing and making • Design and label own designs with diagrams and words (showing how the criteria has been met) • Develop ideas through drawing and talking • Explain how the product will function • Model ideas using basic prototypes • Use ICT where appropriate to develop and communicate ideas 	<ul style="list-style-type: none"> • Work confidently within a range of contexts • Communicate the strengths and weaknesses of existing products • Design a functional product that meets a range of requirements • Describe their design using an accurate sketch • Create functional models of their product, where applicable • Using research, develop realistic design criteria and use them to inform ideas • Use discussion to share and clarify ideas • With modelling, plan a step-by-step guide which details the order of steps 	<ul style="list-style-type: none"> • Communicate how research of existing products will inform their design • Design a functional product that meets a range of design requirements (ensuring it is realistic and appropriate) • Describe their design using an accurate sketch and explanation • Devise a template or prototype to decide the strength and/or reliability of a product • Take in to account what another user would want when choosing materials or tools • Plan a step-by-step instructional guide and explain it to others • Gather information about the needs and wants of individuals • Demonstrate creativity when designing products 	<ul style="list-style-type: none"> • Communicate the strength and weaknesses of different products in relation to the specification of the task and how this will inform their design • After conducting thorough research, create a range of designs through collaborative thinking • Describe and analyse a range of designs to create the most effective final design in relation to purpose • Create a detailed prototype explain how their plan meets the design criteria • Consider the user's opinion and functionality when selecting appropriate materials and tools, justifying their selection • Produce a detailed step-by-step plan, which explains why their finished product will be of good quality based on their plan • Use a complex IT program to enhance the quality of the product being designed 	<ul style="list-style-type: none"> • Conduct market research and other thorough research before planning designs – use this analysis in relation to the specification of the task and how this will inform their design • After conducting thorough research, create a range of designs through collaborative thinking exemplifying diversity in designs • Work collaboratively to discuss and compromise on ideas • Justify own opinions to others when creating a final design from different views and cross-sections • Use a prototype of template to check if their design will be successful and adapt it where necessary • Work within constraints (e.g. timing, budget) when selecting materials and tools, justifying their selection • Produce a detailed step-by-step plan, which explains why their finished product will be of good quality (with consideration to audience, purpose, culture and society)



Making

EYFS

- Use various construction materials
- Construct, stacking blocks vertically and horizontally, making enclosures and creating spaces
- Join construction pieces together to build and balance
- Select tools appropriately and know that certain tools can be used for a purpose
- Combine different media to create new effects
- Manipulate materials to achieve a planned effect
- Construct with a purpose in mind, using a variety of resources
- Use simple tools and techniques competently and appropriately
- Select appropriate resources and adapts work where necessary
- Select tools and techniques needed to shape, assemble, and join materials they are using
- Work with others to create collaboratively, sharing ideas, resources, and skills

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
General	<ul style="list-style-type: none"> • Select from a range of tools and equipment • Select from a range of components • With guidance, follow appropriate health and safety procedures 	<ul style="list-style-type: none"> • Plan by suggesting what to do next • Select from a range of tools and equipment • Select materials according to their characteristics • Follow appropriate health and safety procedures • Follow a design brief 	<ul style="list-style-type: none"> • Select tools and equipment suitable for the task (and explain why these choices have been made) • Use a wider range of materials and components than KS1 	<ul style="list-style-type: none"> • Explain choice of tools and equipment in relation to skills and techniques being used • Explain choice of materials and components according to functional properties and aesthetic qualities • Order the main stages of making 	<ul style="list-style-type: none"> • Produce appropriate lists of tools, equipment and materials that are needed • Formulate step-by-step plans as a guide to making • Accurately measure, mark, cut and shape materials and components • Accurately assemble, join and combine materials and components • Follow health and safety procedures 	<ul style="list-style-type: none"> • Produce appropriate lists of tools, equipment and materials that are needed • Formulate step-by-step plans as a guide to making • Accurately measure, mark, cut and shape materials and components • Accurately assemble, join and combine materials and components • Follow health and safety procedures
Structures	<ul style="list-style-type: none"> • Assemble, join and combine materials and components to create a stable structure 	<ul style="list-style-type: none"> • Make and assemble a model shelter • Measure materials to use in a model or structure • Join materials and components in different ways 	<ul style="list-style-type: none"> • Follow a design criteria • Construct 3D geometric shapes using nets • Create special features for individual designs • Measure, mark, cut out and shape components with some accuracy 		<ul style="list-style-type: none"> • Demonstrate resourcefulness when tackling practical problems • Independently measure and mark wood accurately to build a wooden bridge structure • Demonstrate correct techniques when use a saw • Identify where a structure needs reinforcement and use card corners for support • Understand basic wood function properties 	<ul style="list-style-type: none"> • Draw upon new and prior knowledge of structures • Accurately construct a 3D model • Draw upon new and prior knowledge to reinforce the final structure, justifying choices
Mechanisms	<ul style="list-style-type: none"> • Cut and shape card • Assemble, join and combine simple components • Create a simple moving model that uses a lever and slider • Use split pins for pivots • Use finishing techniques (including those from art and design) 	<ul style="list-style-type: none"> • Measure, mark and cut materials and components • Experiment with adjusting elements of design (e.g. length of string) • Use finishing techniques (including those from art and design) 	<ul style="list-style-type: none"> • Create a pneumatic system to create a desired motion • Build secure housing for a pneumatic system • Use syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic structure • Select materials due to their functional and aesthetic characteristics 	<ul style="list-style-type: none"> • Assemble, join and combine materials to create a moving storybook • Create a range of mechanical levers to create movement • Apply a range of finishing techniques (including those from art and design), with some accuracy 	<ul style="list-style-type: none"> • Follow a design brief with focus on accuracy • Accurately apply range of finishing techniques (including those from art and design) • Make a working product using gears and pulleys 	<ul style="list-style-type: none"> • Demonstrate resourcefulness when tackling practical problems • Create a moving product that use mechanical systems • Accurately apply a range of finishing techniques (including those from art and design)
Cooking and Nutrition	<ul style="list-style-type: none"> • Follow health and hygiene procedures • Chop fruit safely under adult supervision 	<ul style="list-style-type: none"> • Follow health and hygiene procedures • Use a range of healthy ingredients (vegetables) 	<ul style="list-style-type: none"> • Use a range of food ingredients • Explain their ingredient choices in relation to original design criteria 	<ul style="list-style-type: none"> • Follow a baking recipe using multiple steps • Measure ingredients with some accuracy 	<ul style="list-style-type: none"> • Prepare food safely • Use equipment safely, including knives, hot pans and hobs 	<ul style="list-style-type: none"> • Follow a recipe, including using the correct quantity of each ingredient

	<ul style="list-style-type: none"> Use a range of healthy ingredients (fruit) Combine ingredients for fruit smoothie 	<ul style="list-style-type: none"> Chop vegetables safely using the bridge or claw grip Combine ingredients and construct a healthy wrap that meets specific criteria 	<ul style="list-style-type: none"> Measure ingredients using recipe with some accuracy Follow the instructions of a recipe Demonstrate that they have taken care and given consideration to the appearance of their product. 	<ul style="list-style-type: none"> Cook safely, following basic hygiene rules Adapt a recipe 	<ul style="list-style-type: none"> Know how to avoid cross contamination Accurately measure out ingredients 	<ul style="list-style-type: none"> Adapt a recipe based on research Work to a given timescale Use all cooking equipment safely and with precision Work safely and hygienically with independence
Electrical Systems			<ul style="list-style-type: none"> Include a simple electrical circuit (as part of Mechanisms unit of work) 	<ul style="list-style-type: none"> Make a working electrical circuit and switch (as part of Mechanisms unit of work) 		<ul style="list-style-type: none"> Demonstrate resourcefulness when tackling practical problems Create a moving product that use complex electrical circuits Accurately apply a range of finishing techniques (including those from art and design)
Textiles		<ul style="list-style-type: none"> Cut and join fabric (as part of Shelters unit of work) 		<ul style="list-style-type: none"> Make and test a paper template with accuracy and in keeping with the design criteria Measure, mark and cut out fabric using a paper template Select a stitch to join fabric, working to sew neat stitches 		<ul style="list-style-type: none"> Accurately measure, mark, shape and cut fabric Accurately pin, sew and stitch materials together to make a product Accurately apply a range of finishing techniques (Textiles links also with RE & Worldviews unit of work)

Evaluating						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> Adapt their work and techniques where necessary Discuss what they have made and what worked well Talk about what they could do differently next time Share their creations and discuss the processes they have used Return to and build on their previous learning, refining ideas and developing their ability to represent them 	<ul style="list-style-type: none"> Talk about their design and what they are making Make some simple judgements about their product and ideas (what they like, how it could be made better) Explore existing products (talk about how they work and what they are used for) <p>Through shared reading opportunities, pupils explore key events and individuals who have developed products.</p>	<ul style="list-style-type: none"> Suggest strengths and weaknesses of different existing products Make simple judgements, in more detail than Y1, how their finished product relates to the original design criteria Suggest basic changes to improve their products during the process <p>Through shared reading opportunities, pupils explore key events and individuals who have developed products.</p>	<ul style="list-style-type: none"> Acknowledge where and when products were made Explore how well products have been made and why specific materials have been chosen Make decisions to change plan and/or design throughout the making process Explain what they have changed to make improvements to final product Investigate whether products can be recycled or reused <p>Key Individuals: Diane Kochilas (Chef) John Boyd Dunlop (Inventor) Olajumoke Adenowo (Architect)</p>	<ul style="list-style-type: none"> Identify the strengths and areas of development in their ideas and products Use the original design criteria to evaluate completed product Evaluate product thinking of both appearance and mechanisms during the process Investigate and analyse where and when products were designed and made (including by who) <p>Key Individuals: Paul Hollywood (Celebrity Chef) Vivienne Westwood (Fashion Designer) Lynn Conway (Electrical Engineer)</p>	<ul style="list-style-type: none"> Ensure that the evaluation of their product's effectiveness is ongoing throughout the designing and making process Consistently check whether anything can be improved before going ahead with it Seek advice to refine and improve the final product Evaluate the quality of design, manufacture and fitness for purpose of their products as they design and make Evaluate the function and appearance against the original criteria <p>Key Individuals: Ellen Swallow Richards (Founder of Home Economics) Isambard Kingdom Brunel (Engineer) Zaha Hadid (Architect)</p>	<ul style="list-style-type: none"> Generate discussions with peers and decide whether the product is fit for purpose (during each stage of the process) Evaluate their ideas and products against the original design specification Investigate and analyse how much products cost Discuss a range of elements that could improve their product (including alternative resources, budget and technology) Offer constructive evaluation to others to help improve their work <p>Key Individuals: Marguerite Patten (Home Economist) Dame Zandra Rhodes (Fashion Designer) Edith Clarke (Electrical Engineer)</p>

Technical Knowledge

EYFS

- Use equipment and resources safely
- Name and use simple tools, materials, and resources
- Name and use different ways of joining and attaching in their work (such as various types of glue, tape, string etc. – and select them appropriately)
- Use simple language to describe the properties of materials such as ‘hard’, ‘strong’, ‘bendy’, ‘stretchy’

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
General	<ul style="list-style-type: none"> • Talk about how models can be made stronger (including having experience of using materials to do so) • Use some correct vocabulary for the projects being undertaken 		<ul style="list-style-type: none"> •With increasing independence, use correct technical vocabulary for projects being undertaken •Know how to use learning from Science and Maths to help design and make products that work 		<ul style="list-style-type: none"> •Use correct technical vocabulary for projects being undertaken •Know how to use learning from Science and Maths to help design and make products that work 	
Structures	<ul style="list-style-type: none"> • Verbally explain the purpose of the structure • Develop awareness that different structures have different purposes • Learn that free standing structures can be made more stable 	<ul style="list-style-type: none"> • Explore the stability of different structures • Identify when a structure is more or less stable than another • Understand materials that materials impact product design • Recognise different tools have different purposes 	<ul style="list-style-type: none"> •Explore how to make a strong, still shell structure •Recognise what a 3D shape looks like as a net 		<ul style="list-style-type: none"> •Identify how to create a strong frame •Identify stronger and weaker structures •Understand there are different ways to reinforce structures 	<ul style="list-style-type: none"> •Demonstrate that structures can be strengthened by manipulating materials and shapes •Identify man-made and natural structures
Mechanisms	<ul style="list-style-type: none"> • Learn that levers and sliders are mechanisms and can make things move • Explore different mechanisms • Use appropriate vocabulary to describe movement (e.g. up, down, left, right) 	<ul style="list-style-type: none"> • Learn that mechanisms are a collection of moving parts that work together in a machine • Identify simple mechanisms in everyday objects • Explore winding mechanisms • Continue using appropriate vocabulary (Including horizontal and vertical) 	<ul style="list-style-type: none"> •Understand how a mechanical pneumatic system create movement •Learn that mechanisms a system of parts that work together to create movement •Learn that pneumatic systems force air over a distance to create movement 	<ul style="list-style-type: none"> •Understand and explain how different mechanical systems (levers and linkages) create movement 	<ul style="list-style-type: none"> • Know that mechanical systems (such as cams, pulleys or gears) create movement • Know how to reinforce and strengthen a 3D framework • Understand that mechanical systems have an input, process and output and that mechanisms create movement • Describe mechanisms in relation to their own and existing products 	<ul style="list-style-type: none"> •Demonstrate a clear understanding that materials have both functional and aesthetic qualities
Cooking and Nutrition	<ul style="list-style-type: none"> • Distinguish between fruit and vegetables • Use appropriate language to describe the taste and texture of fruit 	<ul style="list-style-type: none"> • Know that food ingredients should be combined according to their sensory characteristics • Use appropriate language discussing food products 	<ul style="list-style-type: none"> •Understand that different food ingredients have different nutritional benefits •Identify fresh food ingredients 	<ul style="list-style-type: none"> •Show awareness of appropriate measurements •Identify required ingredients 	<ul style="list-style-type: none"> •Understand that different food ingredients have different nutritional benefits •Identify fresh food ingredients •Record relevant ingredients and equipment needed to make product •Know that a recipe can be adapted by adding or substituting one or more ingredients 	<ul style="list-style-type: none"> •Show awareness of appropriate measurements •Identify required ingredients •Research recipes by specific ingredients •Explain how products should be stored and give reasons •Demonstrate that a recipe can be adapted by adding or substituting one or more ingredients
Electrical Systems				<ul style="list-style-type: none"> •Know that simple electrical components can be used to create functional products 		<ul style="list-style-type: none"> •Know that more complex electrical circuits and components can be used to create functional products •Explain and demonstrate how a series circuit will work •Draw circuit diagrams with accuracy
Textiles				<ul style="list-style-type: none"> •Understand that there are different types of stitching •Articulate the benefits and disadvantages of different stitch types •Know that a single fabric shape can be used to make a 3D textiles product 		<ul style="list-style-type: none"> •Know that a 3D textiles product can be made from a combination of fabric shapes

Cooking and Nutrition

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> • Begin to develop a food vocabulary • Begin to think about and explore different types of food • Introduction to healthy food and diet • Opportunities to prepare and choose healthy snacks 	<ul style="list-style-type: none"> • Know that everyone should eat at least five portions of fruit and vegetables a day • Use different techniques to prepare fruit ingredients • Prepare a simple fruit dish safely and hygienically • Prepare a simple fruit dish without using a heat source 	<ul style="list-style-type: none"> • Understand what makes a balanced diet • Explore 'hidden sugar' in food products and where to find nutritional information on packaging • Know the five food groups • Prepare a simple dish safely and hygienically without using a heat source • Use a range of techniques (such as cutting, peeling and grating) 	<ul style="list-style-type: none"> • Learn that climate affects food growth and that food is grown in the UK and Europe • Work with cooking equipment safely and hygienically • Learn that a healthy diet is made up of a balance of different food • Use a range of techniques to prep savoury ingredients 	<ul style="list-style-type: none"> • Name and identify the origin of different products • Classify different types of bread • Talk about the contribution bread can make to a healthy diet • Use a range of techniques to create predominantly savoury dishes (e.g. kneading, mixing and baking) 	<ul style="list-style-type: none"> • Demonstrate prior knowledge of working safely and hygienically • Recognise that different food and drink contain different substances, that are needed for health • Know that recipes can be adapted to change the appearance, taste, texture and aroma • Know that seasons may affect the food that is available 	<ul style="list-style-type: none"> • Learn how to adapt a recipe to fit specific design criteria • Understand the combinations of food that will complement one another • Demonstrate that recipes can be adapted to change the appearance, taste, texture and aroma • Use budgeting to cost ingredients needed to make final product • Consider the impact of culture and society on particular recipes

National Curriculum: Subject Content – Design and Technology

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].

When designing and making, pupils should be taught to:

Design

- Design purposeful, functional, appealing products for themselves and other users based on design criteria
- Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make

- Select from and use a range of tools and equipment to perform practical tasks [for example, 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

Evaluate

- Explore and evaluate a range of existing products
- Evaluate their ideas and products against design criteria

Technical knowledge

- Build structures, exploring how they can be made stronger, stiffer and more stable
- Explore and use mechanisms [for example, levers, sliders, wheels and axles, in their products.

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, prototypes, 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.

Cooking and Nutrition Key Stage 1 and 2

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.

Pupils should be taught to:

Key Stage 1

- Use the basic principles of a healthy and varied diet to prepare dishes
- Understand where food comes from.

Key Stage 2

- Understand and apply the principles of a healthy and varied diet
- Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Design and Technology: Leading Figures

	Autumn A	Autumn B	Spring A	Spring B	Summer A	Summer B
Year 1	Structures Playgrounds		Cooking and Nutrition Fruit Smoothie			Mechanisms Moving Pictures
Year 2	Mechanisms Winding Mechanisms			Cooking and Nutrition A Balanced Diet		Structures Beach Shelter
Year 3		Cooking and Nutrition Mediterranean Pasta Sauce		Mechanical Systems Pneumatics		Structures Greek Building
Leading Figure		Diane Kochilas (Chef)		John Boyd Dunlop (Inventor)		Olajumoke Adenowo (Architect)

	Autumn A	Autumn B	Spring A	Spring B	Summer A	Summer B
Year 4		Textiles Egyptian Slippers		Mechanical and Electrical Systems Moving Books		Cooking and Nutrition Bread
Leading Figure		Vivienne Westwood (Fashion Designer)		Lynn Conway (Electrical Engineer)		Paul Hollywood (Celebrity Chef)
Year 5		Cooking and Nutrition Soup & Savoury Scones		Mechanical Systems Moving Toys		Structures Bridges
Leading Figure	Ellen Swallow Richards (Founder of Home Economics)			Leonardo Da Vinci (Mechanical Engineering)		Isambard Kingdom Brunel (Engineer) Zaha Hadid (Architect)
Year 6		Cooking and Nutrition Vegetable Cake			Textiles	Mechanical and Electrical Systems Fairgrounds
Leading Figure		Marguerite Patten (Home Economist)			Dame Zandra Rhodes (Fashion Designer)	Edith Clarke (Electrical Engineer)