The Sequence of Learning:

Design and Technology

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 wellbeing of the nation.

Cooking and nutrition

As part of their work with food, pupils are 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.

AGE RELATED STATUTORY COVERAGE

Early Learning Goal	KEY STAGE ONE	KEY STAGE TWO
Expressive Arts and Design **Creating with materials** - 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; - Make use of props and materials when role playing characters in narratives and stories.	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	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

Personal, Social, Emotional Development **Managing Self** Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. **Physical Development** **Fine Motor Skills** – Use a range of small tools, including scissors, paint brushes and cutlery;	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 **Cooking and Nutrition** Pupils should be taught to: • use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from	• 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** • 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.

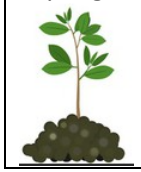
The Sequence of Learning:

	Designing	Making	Evaluating	Technical Knowledge	Cooking and Nutrition
Foundation for growth R 	• Talk about what they want to make • Planning and adapting initial ideas to make them better (e.g. change from using glue to masking tape when making a model) • Discuss and notice materials around them • Joining materials using Sellotape, glue and split pins with support.	• Make models randomly • Learn to construct with a purpose in mind • Observe closely and replicate a structure, e.g. of a church out of small wooden bricks after a visit there • Use the language of designing and making “join”, “build”,“shape”.	• Be excited about what they have made • Exploration – build and join for a purpose and testing their models (building a boat and testing it floats in the water tray) • Use of evaluative and comparative language, “longer”, “shorter”, “heavier”, “stronger” – Vocabulary links to Maths	• use a range of tools e.g. scissors glue, string, hole punch, rolling pin, cutter, grater	• Begin to understand some of the tools, techniques and processes involved in food preparation. E.g. taking turns stirring the mixture for a cake then watching it rise. • Stirring, mixing, pouring, blending in cookery activities • Discussion about hygiene and appropriate use of senses when tasting food • Discussing healthy foods and the importance of drinking water – links to PSED managing self

Seed 1 1 	• Generate ideas from their own experience • Talk about their ideas and say what will be done • Describe what they want to do using pictures and words • Make lists of materials they will need	• Know the features of some familiar products • Join two materials together, often with glue • Use scissors or a knife to cut, sometimes with help • Make simple models, not necessarily with a purpose • Use simple construction kits – e.g. Lego Task : Opportunities provided during continuous provision.	• Recognise the characteristics of familiar products Know how some moving objects work • Use simple terms to talk about their own and others' work • Identify materials and mechanisms in familiar products **Existing products** **Explore** • What products are • Who products are for • What products are for • How products work and can be used • What materials products are made from • What they like and dislike about products	• know about the simple working characteristics of materials and components • know about the movement of simple mechanisms such as levers, sliders, wheels and axles. Task: Make a moving toy as part of 'Toys' cross curricular unit using wheels • freestanding structures can be made stronger, stiffer and more stable • Know the correct technical vocabulary for the projects they are undertaking Tasks: making rain gauges linked to science. Make a boat to carry passengers safely – links to science sinking and floating)	**Where food comes from:** • Know that all food comes from plants or animals • That food has to be farmed, grown elsewhere or caught • Know the benefits of fruit and vegetables **Food preparation, cooking and nutrition** Know about basic hygiene and safety • how to name and sort foods into the five groups in The eatwell plate • That everyone should eat at least five portions of fruit and vegetables every day • How to prepare simple dishes safely and hygienically, without using a heat source • How to use techniques such as cutting, peeling and grating Tasks: Make a jam sandwich linked to computing and instructions

					Make a salad using home grown vegetables
Sprouting seed 2 	• Generate ideas, and plan what to do next, using their experience of materials and components • Use their knowledge of some working characteristics of materials when designing • Use wheels, slides and levers in plans • Use plans to show how to put their ideas into practice • Say how the product will be useful to the user • Draw pictures with labels, with some text •	• Begin to select tools for folding, joining, rolling • Measure out and cut fabric • Use a simple template for cutting out • Practise skills before using them • Use simple finishing techniques • Select tools and techniques appropriate to the job • Follow basic safety rules Task: make a habitat to keep the baby owls safe while mummy is out hunting	• Talk about how moving objects work • Describe how a commercial product works • Use like and dislike when evaluating or describing Explain why some products are useful • Use digital photography to present design or finished work • Recognise what they have done well and talk about what could be improved • Seek out the views and judgements of others • Predict how changes will improve the finished product **Existing products** **Explore** • What products are • Who products are for • What products are for • How products work and can be used	• know about the simple working characteristics of materials and components • know about the movement of simple mechanisms such as levers Task: create a story book for younger readers based on dragon unit • sliders, wheels and axles. Task: Make a cart which can take vegetables to market • How freestanding structures can be made stronger, stiffer and more stable Task: Make a tudor house strong enough to withstand the wind linked to great fire of London learning.	• Understand main rules of food hygiene • Understand and use the terms ingredient and component • Use simple scales or balances **Where food comes from:** • Know that all food comes from plants or animals • That food has to be farmed, grown elsewhere or caught • Know the benefits of fruit and vegetables **Food preparation, cooking and nutrition** • Know about basic hygiene and safety • How to name and sort foods into the five groups in The eatwell plate • That everyone should eat at least five portions of fruit and vegetables every day • How to prepare simple dishes safely and hygienically,

			• What materials products are made from • What they like and dislike about products	• Know the correct technical vocabulary for the projects they are undertaking	without using a heat source • How to use techniques such as cutting, peeling and grating Task: Make a sandwich for the queen of Peas to taste
Sprout 3 	• Use others to help generate their ideas • Use what they know about the properties of materials • Plan their work to include a range of joins • Ensure that plans are realistic and appropriate for the aim • Show the order of working in plans • Use models, pictures and words in designs • Make increasing use of ICT to plan ideas • Recognise that designs must meet a range of needs • Say why something will be useful	• Measure and cut out using centimetres and weigh in grams • Choose tools and equipment which are appropriate for the job • Prepare for work by assembling components together before joining • Use scoring and folding for precision • Make holes using a punch and drill • Work out how to make models stronger • Alter and adapt materials to make them stronger Combine a number of components together in different ways • Make the finished product neat and tidy Task: magnetic games linked to Science	• Be clear about their ideas when asked • Can alter and adapt original plans following discussion and evaluation • Recognise what has gone well, but suggest further improvements for the finished article • Suggest which elements they would do better in the future • Identify where evaluation has led to improvements **Existing products** **Explore** • How well products have been designed • How well products have been made • Why materials have been chosen • What methods of construction have been used	• Know how mechanical systems such as levers and linkages Task: Stone age diorama with moving parts • Know that a single fabric shape can be used to make a 3D textile product • Know that materials have both functional properties and aesthetic qualities • Know how to use learning from science to help design and make products work • Know how to use learning	• Understand safe food storage • Begin to select their own ingredients when cooking or baking • Make good presentation of food • Know that food ingredients can be fresh, pre-cooked and processed • **Where food comes from** • That food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world **Food preparation, Cooking and Nutrition** • how to prepare and cook a variety of predominantly

	• Apply what they know about mechanisms to create movement when planning and designing • Investigate a range of products to see how they work		• How well products work • How well products achieve their purposes • How well products meet user needs and wants • Who designed and made the products • Where the products were designed and made • When products were designed and made • Whether products can be recycled or reused **Key events and individuals** • Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products	from mathematics to help design and make products work. • Know that mechanical and electrical systems have an input, process and output • The correct technical vocabulary for the projects they are undertaking Task: Shaduf	savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking Task: Spanish Gazpacho Stone Age stewed fruit **In early KS2 pupils should also know:** • that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell plate • that to be active and healthy, food and drink are needed to provide energy for the body – link to Science – the human body
Sapling 4 	• Collect and use information to generate ideas • Consider the way the product will	• Increasingly model their ideas before making • Measure accurately to centimetres and grams • Combine materials for	• Talk about what they like and dislike, giving reasons • Develop their designs through	• Know how mechanical systems such as levers and linkages or	• Evaluate food by taste, texture, flavour etc. **Where food comes from**

	be used • Understand designs must meet a range of criteria and constraints • Take users' views into account • Understand how some properties can be used – e.g. waterproof • Think ahead about the order of their work • Add electricity to create motion or make light Produce step by step plans • Make ongoing sketches and annotations • Use their design criteria to evaluate their completed products	strength and to improve how the product looks • Use permanent and temporary fastenings to join • Join with a greater range of techniques – e.g. staples • Strengthen joins and corners in a variety of ways • Understand how wheels, axles, turning mechanisms, hinges and levers all work together Task: Picture frames to present favourite drawing from The Iron Man using fastenings/corners to join. Hold a year group exhibition.	their own reflection and the evaluation of others • Carry out tests before making improvements **Existing products** **Explore** • How well products have been designed • How well products have been made • Why materials have been chosen • What methods of construction have been used • How well products work • How well products achieve their purposes • How well products meet user needs and wants • Who designed and made the products • Where the products were designed and made • When products were designed and made Whether products can be recycled or reused Task: Design and make	pneumatic systems create movement Know that a single fabric shape can be used to make a 3D textile product • Know that materials have both functional properties and aesthetic qualities • Know how to use learning from science to help design and make products work • Know how to use learning from mathematics to help design and make products work. • Know that mechanical and electrical systems have an input, process and output • Know how simple electrical	• that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens • and cattle) and caught (such as fish) in the UK, Europe and the wider world **Food preparation, Cooking and Nutrition** • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking **In early KS2 pupils should also know:** • that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate • that to be active

			musical instrument to show understanding of how sound travels (Science link) **Key events and individuals** • Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products Giacometti – sculptures: Walter Tull sculptures.	circuits and components can be used to create functional products STEM - Torch project • Know how to program a computer to control their products Crumble kits – make lights move in sequence • The correct technical vocabulary for the projects they are undertaking	and healthy, food and drink are needed to provide energy for the body Task: Make a vegetable soup for hungry Anglo-Saxons using products grown at the time with an understanding of how food is grown and harvested.
Small tree 5 	• Make more complex designs to include belts and pulleys, and a combination of other mechanisms • Plan the order of work by thinking ahead • Use sketches to show other ways of doing things – and then make choices • Meet an	• Carry out tests to see if their design works • Make improvements from design suggestions Work in a safe and hygienic way • Measure and cut precisely to millimetres • Make stable and strong joins to stand the test of time Tasks: Money Boxes Egg protectors – linked to Space in Science	• Identify what is working well and what might be improved – and make choices from several alternatives • Refine the quality of the finished product, including making annotations on the design • Clarify ideas through drawing and modelling • Increasingly use testing to improve models and finished	• Know how to use learning from science to help design and make products work • How to use learning from mathematics and to help design and make products work • Know that materials have both functional properties and	• Use proportions when cooking, by doubling and halving recipes **Where food comes from** • That food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world • That seasons may affect the food

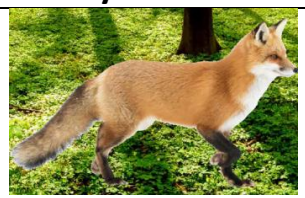
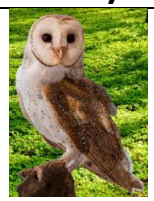
	identified need – e.g. a meal for an older person – by selecting ingredients or materials Using dehydrators to make astronaut food • Use various sources of information and draw on them in design		products **Existing products** **Explore** • How well products have been designed • How well products have been made • Why materials have been chosen • What methods of construction have been used • How well products work • How well products achieve their purposes • How well products meet user needs and wants • How much products cost to make • How innovative products are • How sustainable the materials in products are • What impact products have beyond their intended purposes **Key events and individuals** • Know about inventors, designers, engineers, chefs and manufacturers who	aesthetic qualities • Know that materials can be combined and mixed to create more useful characteristics • That mechanical and electrical systems have an input, process and output • Know the correct technical vocabulary for the projects they are undertaking • Know how mechanical systems such as cams or pulleys or gears create movement • Know how to program a computer to monitor changes in the environment and control their products	available • How food is processed into ingredients that can be eaten or used in cooking **Food preparation, cooking and nutrition** Across KS2 pupils should know: • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking **In late KS2 pupils should also know:** • that recipes can be adapted to change the appearance, taste, texture and aroma • that different food and drink contain different substances – nutrients, water

			have developed ground-breaking products	Task : Use crumble kits to make - • How to reinforce and strengthen a 3D framework Task – Land yacht • Know that a 3D textiles product can be made from a combination of fabric shapes	and fibre – that are needed for health
Mature tree with fruit 6 	• Keep cost constraints in mind when selecting materials in design • Use their knowledge of – e.g.- science and art when designing • Be aware of commercial aspects and incorporate these into their designs • Design including hydraulics and pneumatics when where appropriate • Draw scaled	• Measure and cut out in precise detail, and make sure that finished products are carefully finished • Make separate elements of a model before combining into the finished article • Understand how an article might be mass produced • Produce a simple instruction manual or handbook for their product	• Research products using the internet • Test and evaluate commercial products, understanding how this information supports their own designs • Evaluate a range of different sources of information such as advertising and handbooks **Existing products** **Explore** • How well products have been designed • How well products have been made • Why materials have been chosen	• Know how to use learning from science to help design and make products work Task: Kit Kat Protection Challenge – cross curricular science link • How to use learning from mathematics and to help design and make products work • Know that materials have both functional properties and	**Where food comes from** • That food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world • that seasons may affect the food available • how food is processed into ingredients that can be eaten or used in cooking • that seasons may affect the food available • how food is

	diagrams with increasing use of ratio • Calculate the amount of materials needed use this to estimate cost • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make Task: Anderson Shelters		• What methods of construction have been used • How well products work • How well products achieve their purposes • How well products meet user needs and wants • How much products cost to make • How innovative products are • How sustainable the materials in products are • What impact products have beyond their intended purposes **Key events and individuals** • Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products Task: Earthquake-proof buildings	aesthetic qualities • Know that materials can be combined and mixed to create more useful characteristics • That mechanical and electrical systems have an input, process and output • Know the correct technical vocabulary for the projects they are undertaking • Know how to program a computer to monitor changes in the environment and control their products • How to reinforce and strengthen a 3D framework • Know that a 3D textiles product can be made	processed into ingredients that can be eaten or used in cooking **Food preparation, cooking and nutrition** Across KS2 pupils should know: • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking Task : Guacamole and Salsa **In late KS2 pupils should also know:** • that recipes can be adapted to change the appearance, taste, texture and aroma • that different food and drink contain different substances – nutrients, water and fibre – that are

				from a combination of fabric shapes Task: Evacuation Teddies	needed for health Task : Ration biscuits

The Blean Values:

Curiosity	Resourcefulness	Responsibility	Resilience	Collaboration
				
Creating – using DT skills to experiment with new and varied ideas and range of media	**Inspiration**: looking to others to help us improve.	**Respect** – respecting and celebrating both our work and that of our peers.	**Persevering** – keep trying and practising to perfect skills in all areas of DT and food technology. No skill is achievable instantly.	**Team work** – working together to develop DT skills to create an interesting result
Expanding horizons – developing appreciation and understanding of other cultures, architects and designers	**Generalisation** - spotting patterns and adapting them to develop DT skills.	**Open mindedness** – being open to appreciating the work of others and the similarities and differences in techniques.	**Making mistakes** – enjoy things that go wrong and learn from them.	**Community links** – participate in local events to support and showcase DT projects.
Imagination – look at things in unusual ways.	**Cross curricular links** – using DT to support learning in other curriculum areas.	**Tolerance** – understanding and respect for others.	**Self -confidence** – mastering and celebrating a DT skill, showcasing work increases your self-belief and growth mind-set.	**Patterns** – spotting and using similarities
Patience – to practise and experiment with a variety of ideas to identify a solution	**Algorithms** – making ordered steps for completing a task	**Self motivation** – exploring different resources to take responsibility for our own learning and development.	**Challenge** – Design Technology challenges the brain to recognise, communicate and negotiate meaning through visual and concrete representations.	**Communication** – talk together to solve a problem
	Composing – the ability to choose from a variety of resources and select the most appropriate	**Evaluation** – making judgements	**Practice** – practising regularly is what helps you to grow and improve in DT and Food technology.	**Developing** – share ideas and use other people's ideas.

SMSC in DT

Spiritual	Social
Providing opportunities to wonder at human achievement reflecting on ingenious products and inventions, the diversity of materials and ways in which design technology can improve the quality of life. Develop determination to succeed eg finding solutions to problems and in doing so improve lives. Giving pupils the opportunity to explore and develop belief in themselves. Encouraging pupils to explore and develop what animates themselves or others. Developing a climate and ethos within which all pupils can grow and flourish, respect others and be respected. Enable pupils to make connections between aspects of their learning eg use of triangles to develop a strong structure due to mathematical knowledge Encourage pupils to relate their learning to a wider frame of reference – for example, asking why?, how? And where as well as what? In doing so, enhance their understanding of why technological advancements have occurred.	Encouraging pupils to work co-operatively, Providing opportunities for team building activities that develop the skill of collaborative working and reflect the principles of a democratic society. Helping pupils to develop personal qualities which are valued in civilised society, eg thoughtfulness, honesty, respect for difference, moral principles. Building independence and resilience through the development of design to solve a problem. Providing opportunities for pupils to exercise leadership and responsibility when working collaboratively and in doing so recognising others' strengths and sharing ideas and resources for greater overall development. Providing positive and effective links with the world of work and wider community.
Moral	**Cultural**
Encouraging pupils to take responsibility for their actions; for example in respect of property, care of the environment and developing codes of behaviour. Awareness of moral dilemmas created by technological advancements; the impact of 'winners and losers' ethos'	Recognising and nurturing particular gifts and talents. Reinforcing the school's cultural values through displays, posters and exhibitions etc. Understanding how different cultures have contributed to technology

British Values

British values in Design Technology

In Design Technology, children are given the opportunity to be creative and inventive through practical and investigative activities. At Blean Primary school, children take part Food Technology, learning about British food and food from other cultures, as well as sharing and respecting each other in a collaborative activity. Through both project work and cross curricular topics children are encouraged to investigate existing British products (such as the British postal stamp) or designs and learn or improve on new skills and techniques. Children study British designers such as Cath Kidston. Children then have the opportunity to use their acquired knowledge to design their own products and further develop their ideas through modification and evaluation.

Democracy is incorporated by for example by examining the influence of British designers (such as Cath Kidston, Yinka Shonibare)

Individual liberty - children are taught to express their opinions in terms of their designs.

Sustainability is emphasised by encouraging the use of recycled products, together with environmental issues – materials, manufacturing and sourcing

Mutual respect and tolerance of those with different faiths and beliefs is embedded in children's learning in Design Technology.

Design work is inclusive of other religions and does not offend in terms of colours, imagery and texts.

DT Key Vocabulary					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
mechanical electrical, materials, designer, product, construct, structure, moving parts, tools, outcome, equipment	stronger, stiffer, stable, diagram, components, joining, folding, rolling, binca fabric, template, assemble	axel, lever, criteria, stable, strong, durable, audience, packaging, sliders	mechanism function, purpose, finish, model, linkages, cams, pulleys, gears, functional products	components, inventors, innovate, complex, reinforce, strengthen, adapt, substitute, designers, input, output	hydraulics, pneumatics, precision, prototype, sequential diagram, specifications, abrasive, components, modify