Design and Technology Curriculum

“Be The Best We Can Be”

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.

National Curriculum 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 prototypes 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

How do we grow our Brookfield Design Technologists to be the best they can be?

What is our INTENT for our Brookfield Design Technologists?	How do we IMPLEMENT this for our Brookfield Design Technologists?	How do we measure success for our Brookfield Design Technologists?
Our curriculum goes beyond a plan of what will be taught and when it will be taught. It covers all the experiences a child receives under our guidance. As educationalists, we take our responsibility for the future of our young learners very seriously. Our curriculum will ensure that our children become confident, independent, resilient, curious learners with self -belief and our school ethos fully supports this. Our aim is for every child "To Be The Best They Can Be". At Brookfield Primary we aim to provide all children with a broad and balanced curriculum which prepares them for life beyond primary education. 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. Design and technology is an inspiring, rigorous and practical subject. It can be found in many of the objects children use each day and is a part of children's immediate experiences. 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 Brookfield the Design and Technology curriculum combines skills, knowledge, concepts and values to enable children to tackle real problems. It can improve analysis, problem solving, practical capability and evaluation skills. We aim to, wherever possible, link work to other disciplines such as mathematics, science, engineering, computing and art. The children are encouraged to become innovators and risk-takers. High-quality design and technology education makes an essential	At Brookfield we have a clear and comprehensive scheme of work in line with the National Curriculum. The Design and Technology National Curriculum and EYFS Framework is planned for and covered in full within the EYFS, KS1 and KS2 school curriculum. Whilst the EYFS Framework and National Curriculum forms the foundation of our curriculum, we make sure that children learn additional skills, knowledge and understanding and enhance our curriculum as and when necessary. **Language** - the promotion of a language rich Design and Technology curriculum is essential to the successful acquisition of knowledge and understanding in Design and Technology. The promotion and use of an accurate and rich vocabulary throughout school is planned in. Children have access to key knowledge, language and meanings to understand design and technology and to use these skills across the curriculum. Design and technology focused working walls throughout school focus on key aspects of design and technology and exemplify the terminology used throughout the teaching of design and technology. **Independent learning:** In design and technology children may well be asked to solve problems and develop their learning independently. This allows the children to have ownership over their curriculum and lead their own learning in design and technology. **Basic skills -**English, maths and ICT skills are taught during discrete lessons but are revisited in design and technology so children can apply and embed the skills they have learnt in a purposeful context. **Enhancement** - we plan termly visits, visitors and involvement in the community activity to provide first-	Our Design and Technology Curriculum is high quality, well thought out and is planned to demonstrate progression year on year, giving pupils the skills, knowledge and vocabulary that they need to move forward in their learning, alongside opportunities to apply their knowledge to different situations. If children are keeping up with the curriculum, they are deemed to be making good or better progress. In addition, we measure the impact of our curriculum through the following methods: ▪ Pupil discussions about their learning, which includes discussion of their thoughts, ideas, processing and evaluations of work. ▪ A reflection on standards achieved against the planned outcomes. ▪ Each year group will have the opportunity to share and discuss their new product with a different year group.

contribution to the creativity, culture, wealth and well-being of the nation.	hand experiences for the children to support and develop their learning. Word mats/ Knowledge Organisers are available for children to have out on desks to support their learning and recap previous learning.	

Key Stage content/ expectation	What will the progress of skills be in each year group? What will an Age-Related Expected Standard Brookfield look like?
Developing, planning and communicating ideas	**Year 1**
	• Begin to draw on their own experience to help generate ideas and research conducted on criteria. • Begin to understand the development of existing products: what they are for, how they work, materials used. Start to suggest ideas and explain what they are going to do. • Understand how to identify a target group for what they intend to design and make based on a design criteria. • Begin to develop their ideas through talk and drawings. Make templates and mock-ups of their ideas in card and paper or using ICT.
	Year 2
	• Start to generate ideas by drawing on their own and other people's experiences. • Begin to develop their design ideas through discussion, observation, drawing and modelling. • Identify a purpose for what they intend to design and make. • Understand how to identify a target group for what they intend to design and make based on a design criteria. • Develop their ideas through talk and drawings and label parts. Make templates and mock-ups of their ideas in card and paper or ICT.
	Year 3
	• With growing confidence, generate ideas for an item, considering its purpose and the user/s. • Start to order the main stages of making a product. • Identify a purpose and establish criteria for a successful product. • Understand how well products have been designed, made, what materials have been used and the construction technique. • Learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. • Start to understand whether products can be recycled or reused. • Know to make drawings with labels when designing. • When planning, explains their choice of materials and components including function and aesthetics.
	Year 4
	• Start to generate ideas, considering the purposes for which they are designing- link with mathematics and science. • Confidently make labelled drawings from different views, showing specific features. • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail. • Identify the strengths and areas for development in their ideas and products. • When planning, consider the views of others, including intended users, to improve their work. • Learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. • When planning, explain their choice of materials and components according to function and aesthetic.
	Year 5
	• Start to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes and pattern pieces. • Begin to use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose.

	• With growing confidence apply a range of finishing techniques, including those from art and design. • Draw up a specification for their design- link with mathematics and science. • Use results of investigations, information sources, including ICT when developing design ideas. • With growing confidence select appropriate materials, tools and techniques. • Start to understand how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose.
	Year 6
	• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes and pattern pieces. • Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. • Accurately apply a range of finishing techniques, including those from art and design. • Draw up a specification for their design- link with mathematics and science. • Plan the order of their work, choosing appropriate materials, tools and techniques. • Suggest alternative methods of making if the first attempts fail. • Identify the strengths and areas for development in their ideas and products. • Know how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose.

Key Stage content/ expectation	What will the progress of skills be in each year group? What will an Age-Related Expected Standard at Brookfield look like?
Working with tools, equipment, materials and components to make quality products	**Year 1**
	• Begin to make their design using appropriate techniques. • Begin to 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. • With help: measure, mark out, cut and shape a range of materials. • Explore using tools e.g. scissors and a hole punch safely. • Begin to assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape. • Begin to use simple finishing techniques to improve the appearance of their product.
	Year 2
	• Begin to select tools and materials; use correct vocabulary to name and describe them. • Build structures, exploring how they can be made stronger, stiffer and more stable. • With help measure, cut and score with some accuracy. Learn to use hand tools safely and appropriately. • Start to assemble, join and combine materials in order to make a product. • Demonstrate how to cut, shape and join fabric to make a simple product. Use basic sewing techniques. • Start to choose and use appropriate finishing techniques based on own ideas.
	Year 3
	• Select a wider range of tools and techniques for making their product i.e. construction materials and kits, textiles, food ingredients, mechanical components and electrical components. • Explain their choice of tools and equipment in relation to the skills and techniques they will be using. • Start to understand that mechanical and electrical systems have an input, process and output. • Start to understand that mechanical systems such as levers, linkages or pneumatic systems create movement. • Know how simple electrical circuits and components can be used to create functional products. • Measure, mark out, cut, score and assemble components with more accuracy. • Start to work safely and accurately with a range of simple tools. • Start to think about their ideas as they make progress and be willing to change things if this helps them to improve their work. • Start to measure, tape or pin, cut and join fabric with some accuracy.
	Year 4
	• Select a wider range of tools and techniques for making their product safely. • Know how to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. • Start to join and combine materials and components accurately in temporary and permanent ways. • Know how mechanical systems such as cams, pulleys or gears create movement. • Understand how more complex electrical circuits and components can be used to create functional products. • Continue to learn how to program a computer to monitor changes in the environment and control their products. • Understand how to reinforce and strengthen a 3D framework. • Sew using a range of different stitches, weave and knit.

	• Demonstrate how to measure, tape or pin, cut and join fabric with some accuracy. • Begin to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.
	Year 5
	• Select appropriate materials, tools and techniques e.g. 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. • Understand how mechanical systems such as cams, pulleys or gears create movement. • Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products. • Understand that mechanical and electrical systems have an input, process and output. • Begin to measure and mark out more accurately. • Demonstrate how to use skills in using different tools and equipment safely and accurately with growing confidence. • Cut and join with accuracy to ensure a good-quality finish to the product. • Weigh and measure accurately (time, dry ingredients, liquids). • Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.
	Year 6
	• Confidently select appropriate tools, materials, components and techniques and use them. • Use tools safely and accurately. • Assemble components to make working models. • Aim to make and to achieve a quality product. • With confidence: pin, sew and stitch materials together to create a product. • Demonstrate and make modifications as they go along. • Construct products using permanent joining techniques. • Understand how mechanical systems such as cams, pulleys or gears create movement. • Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products. • Know how to reinforce and strengthen a 3D framework. • Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.

Key Stage content/ expectation	What will the progress of skills be in each year group? What will an Age-Related Expected Standard at Brookfield look like?
Evaluating processes and products	**Year 1**
	• Start to evaluate their product by discussing how well it works in relation to the purpose (design criteria). • When looking at existing products, explain what they like and dislike about the products and why. • Begin to evaluate their products as they are developed, identifying strengths and possible changes they might make.
	Year 2
	• Evaluate their work against their design criteria. • Look at a range of existing products, explain what they like and dislike about products and why. • Start to evaluate their products as they are developed, identifying strengths and possible changes they might make. • With confidence, talk about their ideas, saying what they like and dislike about them.
	Year 3
	• Start to evaluate their product against original design criteria e.g. how well it meets its intended purpose. • Begin to disassemble and evaluate familiar products and consider the views of others to improve them. • Evaluate the key designs of individuals in design and technology and how this has helped shape the world.
	Year 4
	• Evaluate their products carrying out appropriate tests. • Start to evaluate their work both during and at the end of the assignment. • Be able to disassemble and evaluate familiar products and consider the views of others to improve them. • Evaluate the key designs of individuals in design and technology and how this has helped shape the world.
	Year 5
	• Start to evaluate a product against the original design specification and by carrying out tests. • Evaluate their work both during and at the end of the assignment. • Begin to evaluate it personally and seek evaluation from others. • Evaluate the key designs of individuals in design and technology and how this has helped shape the world.
	Year 6
	• Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests. • Evaluate their work both during and at the end of the assignment. • Record their evaluations using drawings with labels. • Evaluate against their original criteria and suggest ways that their product could be improved. • Evaluate the key designs of individuals in design and technology and how this has helped shape the world.

Key Stage content/ expectation	What will the progress of skills be in each year group? What will an Age-Related Expected Standard at Brookfield look like?
Food and nutrition	**Year 1**
	• Begin to understand that all food comes from plants or animals. • Explore the understanding that food has to be farmed, grown elsewhere (e.g. home) or caught. • Start to understand how to name and sort foods into the five groups in 'The Eat Well Plate'. • Begin to understand that everyone should eat at least five portions of fruit and vegetables every day. • Know how to prepare simple dishes safely and hygienically, without using a heat source. • Know how to use techniques such as cutting, peeling and grating.
	Year 2
	• Understand that all food comes from plants or animals. • Know that food has to be farmed, grown elsewhere (e.g. home) or caught. • Understand how to name and sort foods into the five groups in 'The Eat Well Plate'. • Know that everyone should eat at least five portions of fruit and vegetables every day. • Demonstrate how to prepare simple dishes safely and hygienically, without using a heat source. • Demonstrate how to use techniques such as cutting, peeling and grating.
	Year 3
	• Start to know 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. • Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. • Begin to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Start to understand that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat Well Plate'. • Begin to know that to be active and healthy, food and drink are needed to provide energy for the body.
	Year 4
	• Understand 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. • Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. • Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat Well Plate'. • Know that to be active and healthy, food and drink are needed to provide energy for the body.
	Year 5

	• Understand 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. • Begin to understand that seasons may affect the food available. • Understand how food is processed into ingredients that can be eaten or used in cooking. • Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. • Start to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Begin to understand that different food and drink contain different substances – nutrients, water and fibre that are needed for health.
	Year 6
	• Know 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. • Understand that seasons may affect the food available. • Understand how food is processed into ingredients that can be eaten or used in cooking. • Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. • Understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Know different food and drink contain different substances – nutrients, water and fibre that are needed for health.