

Breadsall CE Primary School Curriculum

Progression of knowledge and skills for:



DT

Intent

Design and Technology at Breadsall CE Primary aims to inspire children through a broad range of practical experiences to create innovative designs which solve real and relevant problems within a variety of different contexts. The iterative design process (the practice of building, refining, and improving a project, product, or initiative) is fundamental and runs throughout the different units. This iterative process encourages children to identify real and relevant problems, critically evaluate existing products and then take risks and innovate when designing and creating solutions to the problems. As part of the process, time is built in to reflect, evaluate and improve on prototypes using design criteria throughout to support this process. Opportunities are provided for children to evaluate key events and individuals who have helped shape the world, showing the real impact of design and technology on the wider environment and helping to inspire children to become the next generation of innovators.

Implementation

Design and Technology skills and understanding are built into lessons, following an iterative process. However, this is not to say that this structure should be followed rigidly: it allows for the revision of ideas to become part of good practice and ultimately helps to build a depth to children's understanding. Through revisiting and consolidating skills, our lesson plans and resources help children build on prior knowledge alongside introducing new skills, knowledge and challenge. We suggest a specific series of lessons for each key stage, which offer structure and narrative. The revision and introduction of key vocabulary is built into each lesson. This vocabulary is then included in display materials and additional resources to ensure that children are allowed opportunities to repeat and revise this knowledge. Adult guides and accurate design and technology subject knowledge are always provided within lessons to allow the teacher and adults working in those lessons to feel confident and supported with the skills and knowledge that they are teaching.

Through these lessons, we intend to inspire pupils and practitioners to develop a love of Design and Technology and see how it has helped shaped the ever-evolving technological world they live in.

Impact

The impact of using the full range of resources, including display materials, will be seen across the school with an increase in the profile of Design and Technology. The learning environment across the school will be more consistent with design and technology technical vocabulary displayed, spoken and used by all learners. Whole-school and parental engagement will be improved through the use of design and technology-specific home learning tasks and opportunities suggested in lessons and overviews for wider learning. We want to ensure that Design and Technology is loved by teachers and pupils across school, therefore encouraging them to want to continue building on this wealth of skills and understanding, now and in the future. Impact can also be measured through key questioning skills built into lessons, child-led assessment such as success criteria grids and KWL grids and summative assessments aimed at targeting next steps in learning.

DT – EYFS Expectations

Three and Four Year Olds	Personal, Social and Emotional Development		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.
	Physical Development		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.
	Understanding the World		Explore how things work.
	Expressive Arts and Design		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.
Reception	Physical Development		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.
	Expressive Arts and Design		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.
ELG	Physical Development	Fine Motor Skills	Use a range of small tools, including scissors, paintbrushes and cutlery.
	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.

Key Stage 1 National Curriculum Expectations

Design

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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

Pupils should be taught to:

- explore and evaluate a range of existing products;
- evaluate their ideas and products against design criteria.

Technical Knowledge

Pupils should be taught 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.

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.

Key Stage 2 National Curriculum Expectations

Design

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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 & Technology: Key Stage 1

	Designing	Making	Evaluating	Technical Knowledge	Food Technology
Coverage	<i>Design - purposeful, functional, appealing products for themselves and other users based on design criteria</i> <i>Design - generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</i>	<i>select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</i> <i>select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</i>	<i>explore and evaluate a range of existing products</i> <i>evaluate their ideas and products against design criteria</i>	<i>build structures, exploring how they can be made stronger, stiffer and more stable</i> <i>explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</i>	<i>use the basic principles of a healthy and varied diet to prepare dishes</i> <i>understand where food comes from</i>
Key Skills and Knowledge	use own ideas to design something describe how own idea works design a product which moves explain to someone else how they want to make their product make a simple plan before making think of an idea and plan what to do next explain why they have chosen specific textiles	use own ideas to make something make a product which moves choose appropriate resources and tools choose tools and materials and explain why they have chosen them join materials and components in different ways measure materials to use in a model or structure	describe how something works explain what works well and not so well in the model they have made explain what went well with their work	make their own model stronger make a model stronger and more stable use wheels and axles when appropriate to do so	cut food safely weigh ingredients to use in a recipe describe the ingredients used when making a dish or cake know what constitutes a healthy diet

Design & Technology: Lower Key Stage 2

Coverage	Designing	Making	Evaluating	Technical Knowledge	Food Technology
	<i>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</i>	<i>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 wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</i>	<i>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</i>	<i>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.</i>	<i>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</i>
Key Skills and Knowledge	prove that a design meets set criteria design a product and make sure that it looks attractive choose a material for both its suitability and its appearance use ideas from other people when designing produce a plan and explain it persevere and adapt work when original ideas do not work communicate ideas in a range of ways, including by sketches and drawings which are annotated	follow a step-by-step plan, choosing the right equipment and materials select the most appropriate tools and techniques for a given task make a product which uses both electrical and mechanical components work accurately to measure, make cuts and make holes know which tools to use for a particular task and show knowledge of handling the tool know which material is likely to give the best outcome measure accurately	explain how to improve a finished model know why a model has or has not been successful evaluate and suggest improvements for design evaluate products for both their purpose and appearance explain how the original design has been improved present a product in an interesting way	know how to strengthen a product by stiffening a given part or reinforce a part of the structure use a simple IT program within the design links scientific knowledge by using lights, switches or buzzers use electrical systems to enhance the quality of the product use IT where appropriate to add to the quality of the product	describe how food ingredients come together weigh out ingredients and follow a given recipe to create a dish can talk about which food is healthy and which food is not know when food is ready for harvesting know how to be both hygienic and safe when using food bring a creative element to the food product being designed understand what constitutes a healthy diet (including understanding calories and other nutritional content)

Design & Technology: Upper Key Stage 2

	Designing	Making	Evaluating	Technical Knowledge	Food Technology
Coverage	<i>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</i>	<i>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 wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</i>	<i>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</i>	<i>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.</i>	<i>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</i>
Key Skills and Knowledge	come up with a range of ideas after collecting information from different sources produce a detailed, step-by-step plan explain how a product will appeal to a specific audience design a product that requires pulleys or gears use market research to inform plans and ideas. follow and refine original plans justify planning in a convincing way show that culture and society is considered in plans and designs	use a range of tools and equipment competently make a prototype before making a final version make a product that relies on pulleys or gears know which tool to use for a specific practical task know how to use any tool correctly and safely know what each tool is used for explain why a specific tool is best for a specific action	suggest alternative plans; outlining the positive features and draw backs evaluate appearance and function against original criteria know how to test and evaluate designed products explain how products should be stored and give reasons evaluate product against clear criteria	links scientific knowledge to design by using pulleys or gears uses more complex IT program to help enhance the quality of the product produced use electrical systems correctly and accurately to enhance a given product know which IT product would further enhance a specific product use knowledge to improve a made product by strengthening, stiffening or reinforcing	be both hygienic and safe in the kitchen know how to prepare a meal by collecting the ingredients in the first place know which season various foods are available for harvesting explain how food ingredients should be stored and give reasons work within a budget to create a meal understand the difference between a savoury and sweet dish know the principles of planning and preparing a range of healthy meals know the characteristics of a poor diet and the risks associated with unhealthy eating (e.g. obesity / tooth decay)

DT Overview KS1	Autumn	Spring	Summer
Cycle A Started 2019/2020	Creating paper toys including ones that move	Design a boat	Design and make an animal mask
Cycle B Started 2020/2021	Make 3D models of houses (Tudor houses for Fire of London)	Food Technology: Fruit skewers / smoothies / Ice pops	Design a mini garden Healthy Eating (growing vegetables)

DT Overview LKS2	Autumn	Spring	Summer
Cycle A Started 2019/2020	Building Bridges	Light Up Signs	Seasonal Food (Derbyshire Dishes)
Cycle B Started 2020/2021	Moving Toys: Design a Roman chariot	Moving Rainforest Creatures	Breadmaking

DT Overview UKS2	Autumn	Spring	Summer
Cycle A Started 2019/2020	Moving Vehicles (linked to science topic on electricity & circuits)	Understand the principles of a healthy and varied diet / prepare and cook a variety of savoury dishes / understand seasonality	Design and make a pair of slippers / beach shoes
Cycle B Started 2020/2021	Design a game Build a Shaduf – levers and pulley mechanisms	?	Design a Bird House