

Shipbourne School Design and Technology Curriculum – using Cornerstones Curriculum Maestro

Purpose of Study

Design and Technology provides opportunities for pupils to develop their practical and logical capabilities, combining their designing and making skills with knowledge and understanding in order to create quality products. It develops pupils's skills and knowledge in design, structures, mechanisms, electrical control and a range of materials, including food. Design and Technology encourages children's creativity and encourages them to think about important issues.

Aims and Intent

Our Design and Technology Curriculum aims to ensure 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.

Our Design and Technology curriculum is designed to engage pupils in a broad range of knowledge, skills, and understanding, and prompts engagement in a wide variety of activities that are carefully linked to other curriculum areas. Pupils design and make products that solve real and relevant problems within a variety of contexts. Through evaluation of past and present Design and Technology, pupils progress through a range of learning opportunities, and develop a critical understanding of technology's impact on daily life and the wider world, thus leaving us prepared to shape their own future and make their own impact on the future that awaits them.

Programmes of Study and Implementation

All pupils access the Design and Technology curriculum at Shipbourne School. In the EYFS, as for Art and Design, children are encouraged to investigate different tools, materials and techniques, exploring how media can be combined to create different outcomes and develop a range of skills and techniques as they construct and share their creations, explaining the processes they have used. Children are given daily access to a range of creative opportunities and enjoy our carefully planned and well-resourced creative areas both indoors and out. Children are encouraged to create on both small and large scales and our outdoor environment supports this well.

Specific Design and Technology lessons occur either weekly or as Design Technology days, which give a longer period of time to work through a project without interruption. Curriculum Maestro knowledge rich companion projects are used to support planning, ensuring a spiral curriculum focused on the key elements of design, structures, mechanisms, electrical control and a range of materials, including food and associated healthy eating. All units start with exploration of existing designs before pupils move on to planning and innovating their own ideas ready to express them in a final piece at the end of the project. Pupils are supported to evaluate their work as they progress through the stages of the project, making adaptations and alterations as appropriate. Design and Technology is an excellent way to develop collaboration and often projects are completed as part of a partnership or with parental support during open classroom sessions.

Key Stage 1

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

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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

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

Enrichment, Visits and Visitors

Cross-curricular links are promoted to allow all children to deepen their understanding across the curriculum, including the use of design and technology and how it has impacted Britain and the wider world. Specific Design and Technology days and open classroom events are part of the school year and provide a chance for children to work in collaborative partnerships, groups and with parents to complete a project.

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2022 - 2023

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year R/1	Shade and Shelter This project teaches children about the purpose of shelters and their materials. They name and describe shelters and design and make shelter prototypes. Children then design and build a play den as a group and evaluate their completed product.		Taxi! This project teaches children about wheels, axles and chassis and how they work together to make a vehicle move.		Chop, Slice and Mash This project teaches children about sources of food and the preparatory skills of peeling, tearing, slicing, chopping, mashing and grating. They use this knowledge and techniques to design and make a supermarket sandwich according to specific design criteria.	
Year 2 / 3	Remarkable Recipes This project teaches children about sources of food and tools used for food preparation. They also discover why some foods are cooked and learn to read a simple recipe. The children choose and make a new school meal that fulfils specific design criteria.		Beach Hut This project teaches children about making and strengthening structures, including different ways of joining materials.		Cut, Stitch and Join This project teaches children about fabric home products and the significant British brand Cath Kidston. They learn about sewing patterns and using a running stitch and embellishments before making a sewn bag tag.	Push and Pull This project teaches children about three types of mechanism: sliders, levers and linkages. They make models of each mechanism before designing and making a greetings card with a moving part.
Year 4/5/6	Fresh Food, Good Food This project teaches children about food decay and preservation. They discover key inventions in food preservation and packaging, then make examples. The children prepare, package and evaluate a healthy snack.		Functional and Fancy Fabrics This project teaches children about home furnishings and the significant designer William Morris. They learn techniques for decorating fabric, including block printing, hemming and embroidery and use them to design and make a fabric sample.		Tomb Builders This project teaches children about simple machines, including wheels, axles, inclined planes, pulleys and levers, exploring how they helped ancient builders to lift and move heavy loads.	

2023 - 2024

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Year 2/3	Cook Well, Eat Well This project teaches children about food groups and the Eatwell guide. They learn about methods of cooking and explore these by cooking potatoes and ratatouille. The children choose and make a taco filling according to specific design criteria.		Making It Move This project teaches children about cam mechanisms. They experiment with different shaped cams before designing, making and evaluating a child's automaton toy.		Greenhouse This project teaches children about the purpose, structure and design features of greenhouses, and compares the work of two significant greenhouse designers. They learn techniques to strengthen structures and use tools safely. They use their learning to design and construct a mini greenhouse.	
Year 4 /5/6	Moving Mechanisms This project teaches children about pneumatic systems. They experiment with pneumatics before designing, making and evaluating a pneumatic machine that performs a useful function.		Eat the Seasons This project teaches children about the meaning and benefits of seasonal eating, including food preparation and cooking techniques.		Architecture This project teaches children about how architectural style and technology has developed over time and then use this knowledge to design a building with specific features.	

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2024-2025

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Year 2 / Year 3	Remarkable Recipes This project teaches children about sources of food and tools used for food preparation. They also discover why some foods are cooked and learn to read a simple recipe. The children choose and make a new school meal that fulfils specific design criteria.		Beach Hut This project teaches children about making and strengthening structures, including different ways of joining materials.		Cut, Stitch and Join This project teaches children about fabric home products and the significant British brand Cath Kidston. They learn about sewing patterns and using a running stitch and embellishments before making a sewn bag tag.	Push and Pull This project teaches children about three types of mechanism: sliders, levers and linkages. They make models of each mechanism before designing and making a greetings card with a moving part.
Year 4/5/6	Food for Life This project teaches children about processed food and healthy food choices. They make bread and pasta sauces and learn about the benefits of whole foods. They plan and make meals as part of a healthy daily menu, and evaluate their completed products.		Engineer This project teaches children about remarkable engineers and significant bridges, learning to identify features, such as beams, arches and trusses. They complete a bridge-building engineering challenge to create a bridge prototype.		Make Do and Mend This project teaches children a range of simple sewing stitches, including ways of recycling and repurposing old clothes and materials.	