

Design and Technology Curriculum Overview

The design and technology projects are well sequenced to provide a coherent subject scheme that develops children's designing, planning, making and evaluating skills.

Each project is based around a design and technology subject focus of structures, mechanisms, cooking and nutrition or textiles. The design and technology curriculum's electronic systems and IT monitoring and control elements are explicitly taught in our science projects to ensure the links between the subjects are highlighted.

Where possible, meaningful links to other areas of the curriculum have been made. For example, the cooking and nutrition project Eat the Seasons is taught alongside the geography project Sow, Grow and Farm. All the projects follow a structure where children are introduced to key concepts and build up knowledge and skills over time, using a more comprehensive range of equipment and building, cutting, joining, finishing and cooking techniques as they progress through school.

All projects contain focused, practical tasks in the Develop stage to help children gain the knowledge and skills needed to complete their Innovate tasks independently.

Throughout Key Stages 1 and 2, children build up their knowledge and understanding of the iterative design process. They design, make, test and evaluate their products to match specific design criteria and ensure they fit their purpose. Throughout the projects, children are taught to work hygienically and safely.

Key Stage 1

In the autumn term of Year 1, children begin to learn about structures in the project Shade and Shelter before designing and making a shelter. In the spring term project Taxi!, they learn the term 'mechanism' and assemble and test wheels and axles. In the summer term, children begin to learn about food sources in the project Chop, Slice and Mash and use simple preparation techniques to create a supermarket sandwich.

In the autumn term of Year 2, children learn more about food in the project Remarkable Recipes, where they find out about food sources, follow recipes and learn simple cooking techniques. In the spring term project Beach Hut, children develop their knowledge of structures further, learning to cut, join and strengthen wood for the first time. In the summer term, children begin to develop their understanding of textiles in Cut, Stitch and Join. They learn to sew a simple running stitch, use pattern pieces and add simple embellishments. They also continue to learn about mechanisms in the project Push and Pull by using sliders, levers and linkages in products.

Lower Key Stage 2

In the autumn term of Year 3, children continue to learn about food, understanding the concept of a balanced diet and making healthy meals in the project Cook Well, Eatwell. In the spring term project Making it Move, children extend their understanding of mechanisms by exploring cams and using joining and finishing techniques to make automaton toys. In the summer term project Greenhouse, they continue to develop their knowledge of structures, using triangles and braces for strength. They design and build a greenhouse, using their understanding of opacity and transparency and the needs of plants from science learning to inform their design.

In the autumn term of Year 4, children continue to develop their understanding of food in the project Fresh_Food, Good Food. They learn about food safety and preservation technologies before designing and making packaging for a healthy snack. During the spring term project Functional and Fancy Fabrics, children continue to explore textiles, learning about the work of William Morris before designing, embellishing and finishing a fabric sample. In the summer term project Tomb Builders, they build on their knowledge of mechanisms, learning about six simple machines and using their knowledge to create a lifting or moving device prototype. They also explore and use electrical systems and IT monitoring and control in the science project Electrical Circuits and Conductors for the first time.

Upper Key Stage 2

In the autumn term of Year 5, children deepen their understanding of mechanisms by studying pneumatic systems in the project Moving Mechanisms. They learn about the forces at play and create a prototype for a functional, pneumatic machine. In the spring term project Eat the Seasons, children continue to explore food and nutrition, learning about seasonal foods and the benefits of eating seasonally. In the summer term, they learn more about structures in the project Architecture, studying the history of architecture and developing new ways to create structural strength and stability. They use computer-aided design and consolidate their making skills to produce scale models. They also explore the electrical conductivity of materials before making products incorporating circuits in the science project Properties and Changes of Materials.

In the autumn term of Year 6, children learn about processed and whole foods in the project Food for Life, creating healthy menus from unprocessed foods. In the spring term project Engineer, children consolidate their knowledge of structures, joining and strengthening techniques and electrical systems by completing a bridge-building challenge. In the summer term project Make Do and Mend, they extend their knowledge of textiles by learning new stitches to join fabrics and using pattern pieces to create a range of products.

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	AUTUMN	SPRING	SUMMER
YEAR 1	<p>Shade and Shelter</p> <p>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.</p> <p>Significant knowledge: Designing and making shelters and dens</p>	<p>Taxi!</p> <p>This project teaches children about wheels, axles and chassis and how they work together to make a vehicle move.</p> <p>Significant knowledge: Mechanisms – wheels, axles and chassis</p>	<p>Chop, Slice and Mash</p> <p>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.</p> <p>Significant knowledge: Food preparation techniques; Hygiene rules; Designing and making salads and sandwiches</p>
YEAR 2	<p>Remarkable Recipes</p> <p>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.</p> <p>Significant knowledge: Sources of food; Kitchen tools; Reading recipes; Hygiene rules; Making a school meal</p>	<p>Beach Hut</p> <p>This project teaches children about making and strengthening structures, including different ways of joining materials.</p> <p>Significant knowledge: Structures – strengthening and joining</p>	<p>Cut, Stitch and Join</p> <p>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.</p> <p>Significant knowledge: Everyday fabric products. Sewing patterns; Running stitch; Adding embellishments; Designing and making.</p> <p>Significant designer: Cath Kidston</p> <p>Push and Pull</p> <p>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.</p> <p>Significant event: Mechanisms (Sliders, levers and linkages). Designing and making.</p>
YEAR 3	<p>Cook Well, Eatwell</p> <p>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.</p> <p>Significant knowledge: Food groups; Methods of cooking; Cooking appliances; Hygiene rules; Making taco fillings</p>	<p>Making it Move</p> <p>This project teaches children about cam mechanisms. They experiment with different shaped cams before designing, making and evaluating a child's automaton toy.</p> <p>Significant knowledge: Cam mechanisms; Designing and making; Cutting, joining, strengthening and finishing.</p>	<p>Greenhouse</p> <p>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.</p> <p>Significant knowledge: Features of greenhouses; Strengthening techniques; Using tools and safety rules; Properties of materials; Constructing strong frameworks.</p> <p>Significant designers: Sir Joseph Paxton and Sir Nicholas Grimshaw.</p>
YEAR 4	<p>Fresh Food, Good Food</p> <p>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.</p> <p>Significant knowledge: Food preservation techniques; Exploring food packaging; Prototypes; Designing, making and packaging.</p>	<p>Functional and Fancy Fabrics</p> <p>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.</p> <p>Significant knowledge: Fabrics; Design features; Stitching a hem; Embellishment; Designing and making patterned and embellished fabrics.</p> <p>Significant designer – William Morris.</p>	<p>Tomb Builders</p> <p>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.</p> <p>Significant knowledge: Simple and compound machines.</p>

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YEAR 5	<p>Moving Mechanisms</p> <p>This project teaches children about pneumatic systems. They experiment with pneumatics before designing, making and evaluating a pneumatic machine that performs a useful function.</p> <p>Significant knowledge: Pneumatic systems; Joining and finishing; Iterative design process; Building pneumatic machine prototypes.</p>	<p>Eat the Seasons</p> <p>This project teaches children about the meaning and benefits of seasonal eating, including food preparation and cooking techniques.</p> <p>Significant knowledge: Cooking; Nutrition</p>	<p>Architecture</p> <p>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.</p> <p>Significant knowledge: Architecture over time; Greek architecture; Structural support, stiffness and stability; Computer-aided design; Building design</p>
YEAR 6	<p>Food for Life</p> <p>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.</p> <p>Significant knowledge: Whole foods; Processed foods; Making healthy meals; Hygiene and safety.</p>	<p>Engineer</p> <p>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.</p> <p>Significant knowledge: Significant engineers and bridges; Features of bridges; Strengthening techniques; Iterative design; Building prototypes.</p>	<p>Make Do and Mend</p> <p>This project teaches children a range of simple sewing stitches, including ways of recycling and repurposing old clothes and materials.</p> <p>Significant knowledge: Sewing – running stitch, whip stitch and blanket stitch; Repairing clothes; Making products from recycled materials.</p>