



Whitby School

Design Technology

The moment an object is modified – whether it is cooked, cut, fixed, shaped or embellished – it becomes technology. Consequently, technology is where academic and creative aspects of education combine. To be successful designers, children need to review new, current, and future technologies and how they contribute to product and human development and so it develops from their learning in Science. They have to study history to see what has worked and failed before. They need to consider the artistic and aesthetic qualities of the products they design.

Technology is more than just making things. It is where the taught curriculum becomes three dimensional.

Design has particular relevance for Whitby. For skilled crafts and exports, Whitby has a proud tradition and a thriving present. Tourists come to Whitby from the ends of the earth to experience the history of its industry and to enjoy the food, products, and facilities it offers today.

At Whitby School, Design Technology is part of our Technical Discipline.

Our Intent

*"I will endeavour to be a person of great **character** who has the **courage** to realise my **ambitions**"*

<p>Courage Resilient</p>	<p>In design technology children will find things that they do not know how to do. Whether that is manipulating resistant materials or cooking a complex meal, we aim to create challenging products that will challenge young people to learn new skills. In doing so, they will build confidence.</p> <p>This is important to design technology because of the iterative nature of the topic. Great designs were created by learning from failures and by adapting, improving, and developing from the things that have not worked.</p> <p>As teachers, we take great pride in hearing a child who could not cook tell us that they are cooking dinner for their family and applying the skills they have learned – or hearing about something children have built using the techniques we have taught them, this is because the great designs of our time came from the confidence to try and be open to making mistakes and learning from them.</p>
<p>Character Practical</p>	<p>In design technology, the taught curriculum becomes three dimensional. Technology is a subject that rewards inter-disciplinary thinking and so we ensure that in this subject, children can apply learning in other subjects – in mathematics, science, art, for example - to the workshop setting. In doing so we aim to create versatile and practical thinkers.</p>
<p>Ambition Confident</p>	<p>We believe that a career in Science, Technology, Engineering and Mathematics based industries should be open to everyone. Consequently, we are passionate about ensuring participation and enjoyment for all in our curriculum design but also in the role models in design careers that we show the children of Whitby.</p>

Our Teaching

Pupils make progress in Design and Technology by using a combination of substantive and disciplinary knowledge which gives pupils the skill to construct practical outcomes or recipes.

Substantive knowledge in Design and Technology that pupils will learn includes, research and exploration into relevant information based on a user's needs. They will know how to use social, moral, and cultural information to understand a user more clearly. They can identify and solve their own design problems and understand how to develop problems given to them. They will develop specifications that allows them to be innovative, functional and create appealing products that

responds to a user's needs. They will use a variety of approaches for example, biomimicry and user centred design which generates creative ideas and avoids stereotypical responses to a brief.

Substantive knowledge in Food Preparation and Nutrition shows pupils will understand and apply the principles of nutrition and health, to cook a repertoire of savoury dishes to be able to feed themselves and others, a healthy and varied diet. They will be confident in a range of cooking techniques, for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture, and smell to decide how to season dishes and combine ingredients; adapting and using their own recipe. Pupils will understand the source, seasonality, and characteristics of a broad range of ingredients. Pupils understand the relationship between diet, nutrition, and health, including the physiological and psychological effects of poor diet and health. They understand the economic, environmental, ethical, and socio-cultural influences on food availability, production processes, and diet and health choices and demonstrate knowledge and understanding of functional and nutritional properties, sensory qualities and microbiological food safety considerations when preparing, processing, storing, cooking, and serving food. Pupils understand and explore a range of ingredients and processes from different culinary traditions (traditional British and international), to inspire new ideas or modify existing recipes.

Disciplinary knowledge in Design and Technology provides the practical evidence that our pupils can use the correct tools and equipment, (including CAM where appropriate) and consistently use or operate them safely, with an exceptionally high level of skill. Our pupils show a high level of quality control to ensure a prototype is accurate by consistently applying close tolerances. Prototypes show an exceptionally high level of making and finishing skills that are fully consistent and appropriate to the desired outcome. They will produce high-quality prototypes that have the potential to be commercially viable and meet the needs of the client/user.

Disciplinary knowledge in Food Preparation and Nutrition demonstrates effective and safe cooking skills by planning, preparing, and cooking using a variety of food commodities, cooking techniques and equipment. It develops knowledge and understanding of the functional properties and chemical processes as well as the nutritional content of food and drinks. Pupils will investigate the working characteristics and the functional and chemical properties of a particular ingredient through practical investigation. They will produce a report which will include research into 'how ingredients work and why'.

Our curriculum

Our curriculum follows a series of projects designed to give children a strong understanding and practical expertise in a range of techniques and materials.

Each project develops the following core skills:

Designing:

- use research and exploration, such as the study of different cultures, to identify and understand user needs
- identify and solve their own design problems and understand how to reformulate problems given to them
- develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations
- use a variety of approaches (for example, biomimicry and user-centred design) to generate creative ideas and avoid stereotypical responses
- develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations.

Making:

- select from and use specialist tools, techniques, processes, equipment, and machinery precisely, including computer-aided manufacture
- select from and use a wider, more complex range of materials, components, and ingredients, taking in to account their properties.

Evaluating:

- analyse the work of past and present professionals and others to develop and broaden their understanding
- investigate new and emerging technologies
- test, evaluate and refine their ideas and products against a specification, considering the views of intended users and other interested groups
- understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers, and technologists.

Technical Knowledge:

- understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
- understand how more advanced mechanical systems used in their products enable changes in movement and force

- understand how more advanced electrical and electronic systems can be powered and used in their products (for example, circuits with heat, light, sound and movement as inputs and outputs)
- apply computing and use electronics to embed intelligence in products that respond to inputs (for example, sensor) and control outputs (for example, actuators) using programmable components (for example, microcontrollers).

In addition, when preparing food, pupils are taught to:

- understand and apply the principles of nutrition and health
- cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet
- become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture, and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes]
- understand the source, seasonality, and characteristics of a broad range of ingredients.

Why do we sequence the curriculum in this way?

In Design and Technology, we aim to offer a unique learning experience, to stimulate curiosity about everyday products and develop skills and knowledge essential for an increasingly technologically advancing world. Pupils learn and apply a variety of practical skills over a wide range of design and make projects in food, plastics, wood, electronics, and fabrics. Pupils will cover projects in a range of material areas that will then be revisited at GCSE.

Our projects increase in complexity as pupils grow in skill, experience, and confidence. Many include the application of computer aided design and manufacture to ensure relevance to modern manufacturing systems. Alongside practical skills, pupils develop the ability to research, analyse, design, develop and evaluate products. They will be challenged to work collaboratively and to reflect critically on their own work as well as that of other designers. In Food projects, pupils will also learn and apply a wide range of practical skills which will allow them to be confident in the production of a variety of savoury and sweet products.

At the Prospect Hill site, Design and Technology pupils will acquire the knowledge, understanding and practical skills needed to be successful in the design processes of exploring, creating, and evaluating. Pupils will be equipped to make effective design choices through a breadth of core technical knowledge and understanding that consists of: new and emerging technologies, energy generation and storage, developments in new materials, systems approach to designing, mechanical devices, materials, and their working properties. In addition to the core technical principles, all pupils will develop an in-depth knowledge and understanding of a range of specialist technical principles to include selection of materials or components, forces and stresses, ecological and social footprint, sources and origins, selection of materials or components, using and working with materials, specialist techniques and processes. When studying Catering at the Prospect Hill site, pupils will focus on weekly practical cooking skills to ensure a thorough understanding of nutrition, food provenance and the working characteristics of food materials.