

# The Quality of Education: Technology - Purpose and Provision

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**St Christopher's:**  
A Church of England Academy

That person is like a tree planted by streams of water,  
which yields its fruit in season  
and whose leaf does not wither-  
whatever they do prospers.

Psalm 1:3

## The Purpose of Study

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The Technology department educates pupils and students to respond to ever changing real world problems with enthusiasm, creativity and innovation. We aim to build pupils' confidence and interest, so they are able to draw on a wide array of taught and researched knowledge and skills to iteratively design and produce relevant solutions to problems, in the form of new products and systems.

Pupils are encouraged to learn to explore and investigate problems, explore and generate possibilities, evaluate and manage risks, self-evaluate and develop a resilient, enterprising attitude across a wide range of diverse design contexts. Developing a critical understanding of how people shape technology and how technology shapes people's interactions with each other and the natural world is important.

Pupils learn about the sources, handling, processing, properties and functions of a wide variety of materials and are taught the hands on practical skills and knowledge of how products are designed and made. They are then challenged to utilise and consolidate these experiences with their own acquisition of conceptual skills and personal research, also applying their learning from across the wider school curriculum (particularly from science, mathematics and art) to find creative, innovative, workable solutions to problems. Pupils progress in their learning by taking on more challenging and complex problems, utilising a wider variety of materials and processes and by increasing both the depth and breadth of their understanding.

The subject also encourages pupils to learn to work both individually and co-operatively and to consider and serve a wide variety of different clients, with differing needs and values, both in our communities and across the wider world.

Through Technology, pupils enjoy learning the important transferable life skills and attitudes, highly valued by employers, of problem-solving, teamwork, decision making, communicating, resilience, analytical skills, applying both scientific principles and number, utilising ICT and modern technologies, as well as developing their ability to innovate, creatively think, understand health, safety and wellbeing issues such as the assessment of risk and the importance of good nutrition and develop hands on practical skills. Pupils also learn to balance functionality with social, moral, ethical, cultural, health and safety, economic, environmental and sustainability issues.

Through studying the curriculum subject of Technology we also endeavour to help pupils become global citizens and open up and raise awareness of, a very wide range of diverse possible career pathways and opportunities, throughout the design, manufacturing, engineering, retailing and creative industries.

# Complementing the School Purpose

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## Foundation Scripture

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Whether pupils only get to study Technology at KS3 or continue to GCSE or as students at A-level, the Technology curriculum, enables pupils and students not only to prosper academically and enrich their potential career opportunities but also to grow in self-confidence, interest and resilience preparing them to actively contribute to solving problems for the good of all in their own families and communities and our wider ever changing world. Their understanding of nutrition and the wider impact of Technological developments should enable them to make more informed decisions to support their own good health and that of the whole planet. 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 wellbeing of the nation.

## Key Themes

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The study of Technology develops in our pupils the creative, technical and practical expertise needed to perform everyday tasks confidently and to make personal decisions about how to participate fully and successfully in an increasingly technological world when they for example, begin to understand and apply the principles of nutrition and learn how to cook or make personal decisions about the recycling and use of materials in their own homes.

By building and applying a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wider range of users they also learn how they can positively influence the lives of others around them and reach out into the wider world, enabling us to better live well together.

Through Technology we also develop our pupils' ability to critique, evaluate and test their ideas and products and those of other people leading onto lifelong learning, continually increasing their wisdom and understanding and encouraging them to actively question the use of technological developments in the wider world. For many this leads onto fulfilling and rewarding jobs making valuable contributions as citizens but also challenging society when they see a need for change.

## Christian Virtues

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Through the study of Technology we offer many varied opportunities for our pupils and students to explore the school's Christian virtues. Some design challenges are too large to tackle alone and designs are often enriched by an element of collaboration or teamwork, such as the work done by Year 8 on the environmentally friendly pop up stall project, where pupils benefit from friendship and trust. Through the evaluation of past and present design and technology, they develop a critical understanding of its ability to impact on daily life and the wider world, giving hope that there are solutions to a wide variety of problems waiting to be developed and hope for the future of the planet. When pupils apply wisdom to improve the world and lives of others even in the smallest ways, they exhibit a deeper love of each other and the world. Many of our projects look into the deeper environmental aspects of design for example our Year 9 Trashion project using recycled materials.

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## Curriculum Aims

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In Technology all pupils work through a wide range of unique projects each year, carefully structured so each is focussing on different concepts, knowledge, understanding, materials and skills, providing the opportunities and support for all pupils to learn and achieve and making best use of our facilities and staff expertise. Pupils are, where possible, grouped to enable projects to be best tailored to their specific learning needs and initially pupils are exposed to a very broad range of materials, knowledge, skills and concepts, in more familiar contexts later being allowed to specialise more to encourage greater comprehension, complexity, unfamiliar contexts to be explored and a greater depth of understanding in the areas of study deemed of most value and interest to them.

Pupils and students are encouraged to understand developments in technology, its impact on individuals, society and the environment, and the moral responsibilities of designers, engineers and technologists. Pupils also study a range of cultures that are less familiar to them, for example in the Year 8 ready meal project, providing opportunities to research and understand a variety of values, needs and wants. Technology also promotes pupil mental wellbeing by teaching them to work through design problems in an iterative way where thought leads to action, resulting in further thought and action as pupils resolve design problems and address design opportunities. The subject also addresses pupils' and students' physical development through creative and practical activities where they are taught to select from and accurately use a wider range of tools, equipment, materials and components, according to their functional properties and aesthetic qualities, to perform practical tasks. For example, the Year 7 boat project covers the basics of cutting, shaping, joining and finishing of wood and plastic. There are also staged focused practical tasks throughout the food modules of work where pupils are taught specific technical knowledge, designing skills and making skills starting with salads for knife skills and progressing to items like filled pastry products. Physical development is also supported through the teaching of food nutrition and health which is built up, beginning with understanding the Eatwell Guide in Year 7.

Pupils and students are provided with opportunities and experiences to understanding the interests, needs, problems and preferences of a wide range of people as an essential part of designing for a client or user group. This may involve visiting locations and people outside school, such as the extracurricular Design Lab Nation project with Year 9, inviting experts into school and using media to enable pupils to explore less familiar surroundings.

Technology also aims to prepare pupils and students for the responsibilities of adult life through the teaching of food preparation and nutrition, a wide variety of other practical skills and teaching safe and hygienic practices helping them to develop the appropriate knowledge of the various hazards involved in the use of equipment, materials and their storage relevant to future lives. Pupils and students also understand how key events and individuals in design and technology have helped shape the world and how Technology will continue to do so.

# Complementing the School Provision

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## Teaching Approaches

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In Technology a wide variety of teaching approaches are used regularly which promote active learning, inspiring, exciting and motivating pupils to learn. It is very often the case that the very nature of designing and making products creates an automatic challenge, but the level of challenge in tasks is also deliberately manipulated for different groups and individual pupils to stretch even our most able Technologists. Questioning is often also used as a teaching strategy to support pupils and students to help them focus on the most important aspects or neglected aspects of their work and to get them to look or think more deeply. Pupils and students are also taught to question design contexts and what is presented to them through research, exploring existing products and ideas, conducting scientific investigations and reformulating problems. Demonstrations and modelling good practice, tailored to specific groups or individuals are also frequently used teaching approaches that pupils tell us they value. Planned practice of skills and techniques are used to build independence, quality and confidence, and pupils are encouraged to actively seek a range of feedback on their designs, from peers, clients or interested parties, as well as their teachers, to help them evaluate and develop their designs.

## Pupil and Student Attitudes

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Technology teaching here at St Christopher's wholeheartedly promotes pupil and student attitudes of being respectful, resilient, reflective and ready. Not only are we respectful to one another, learning to share design ideas and critical feedback in a positive, productive, enriching way, but we also teach respect for our environment by considering material sourcing, sustainability and renewal or recycling. Proper respect for equipment and resources is also cultured, particularly in terms of our health and safety routines. Resilience is also a quality taught by the department as seeing design problems through to successful engaging elegant solutions, that are innovative, fully functioning, original and aesthetically appealing for the intended user, involves much trial and error and disappointing setbacks which must be overcome. Pupils and students also need to be constantly reflective about their own work and that of other designers and to this end pupils are taught a range of testing and evaluative strategies and praised for innovative thinking rather than stereotypical responses to the challenges set. We also require pupils to attend lessons ready to learn but more than this we teach pupils to organise and plan their work to become more successful often working to time constraints by making time plans in food lessons, cutting lists and ingredients lists, production flowcharts and equipment lists.

## Going Beyond the Exam Specification

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Whilst we work closely to National Curriculum guidance and always have an eye to building the knowledge and skills demanded in the wide range of examination specifications we offer, Technology is an ever evolving subject with new materials, processes and technologies constantly being developed, transforming the designed and made world. It is therefore a real challenge for teachers to try to keep up to date with these new and emerging technologies to keep the teaching current and relevant. We have therefore developed and continually seek to adapt our own school Technology curriculum to specifically meet the needs of our pupils and students, influenced by our local environment and employment opportunities.

## Extra-curricular and Enrichment

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We routinely teach Technology in pre-planned blocks of time that usually are delivered in the form of a design task along with the associated skills, knowledge and learning needed to have success. These focus on a wide range of specialist materials, processes and design contexts to provide a wide yet balanced Technology education. Staff also routinely run lunchtime and afterschool sessions for pupils who are willing to put in extra time to enrich their projects or for those needing extra teacher attention or support. We aim to create a happy, hardworking, productive, environment where pupils feel supported and secure taking on real learning challenges. We also run successful clubs such as our "Airgineers" Drone Club at lunchtime and afterschool and frequently also plan and support other school events such as the Eco-Fayre, Help the Homeless sleep out and Soup Kitchen, and the Spirituality day, Sheikh Languor. Engaging in extra-curricular events we feel also greatly enriches pupil and student learning and their love of the subject. We have therefore taken part in the Design Lab Nation Project linking with local designers, the V & A museum, the London Art Gallery trip, the Institute of Manufacturing "Make It in Manufacturing" trip and an A level visit to Leyland trucks. We also give pupils opportunities to put their designing and making skills to the test and compete against pupils from other schools in various competitions. These have included the "Army STEM workshops" with Year 7, "Make it" with Year 9 at Burnley College, "Engineering Because" at Nelson and Colne College with Year 10, the Young Chef of the Year Competition and the ongoing highly successful "Roots and Shouts Awards" in London with Dr Jane Goodall to which we take our "Trashion Show".

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## Whole School / Cross-curricular Elements

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Technology is very much a subject where cross curricular knowledge and understanding is reinforced, connected and applied to real life contexts. The subject has been described as “the appliance of Science” and whilst it is true that there is a great deal of applied scientific understanding, such as the conditions for bacterial growth, the chemistry of cooking, biomimicry (the technique of investigating the materials, structures and systems in the natural world and using this inspiration to develop new ideas for the made world) and the applied forces used in mechanisms, it connects and reinforces so many more areas of learning. Reading skills are practiced when researching contexts, existing products and ideas, when following instructions or plans and when analysing client feedback which can also be in written form. Numeracy is used to weigh and measure materials, angles, and the flow of electricity, timings, speed and distances. Ratios are used in pastry recipes as well as gearing systems and scale drawings and models. Mathematical modelling is also taught as a way of modelling functional aspects of designs using numeracy, prior to making, such as nutritional analysis, and for the collection and analysis of test results in the form of graphs, charts, rating and ranking scales. Designing and communicating new product ideas and possible solutions to problems uses a set of skills which also draw on oracy, written communication, ICT and artistic skills and might take the form of, annotated sketches, detailed plans, 3-D modelling, oral and digital presentations.

Teamwork and leadership are valuable skills we also endeavour to foster, for example by the use of pupils as “Technology Technicians” to support other pupils in textiles or in our Year 8 STEM project where the challenge is such that it requires a strongly led team to work together to be able to complete in the time.

With such a diverse range of possible career pathways and opportunities, linked to Technology, at all levels, in the design, manufacturing, engineering, retailing and creative industries, we also see it as important to bring as many of these to the attention of our pupils as possible and show them that the skills they are learning with us are valued by employers and transferable to the workplace.

Finally Technology by its very nature deals with and develops a deeper understanding of many social, moral, cultural and spiritual issues as previously explained in the “Curriculum Aims” section, supporting this cross curricular aspect of learning. We also actively aim to promote British values, preparing pupils and students for life in modern Britain. For example pupils and students learn to apply British health and safety law to their designs and are taught health and nutrition advice specific to the British diet whilst we promote mutual respect and tolerance of those of different faiths and beliefs.

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## Meeting the Needs of All Pupils

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Both class lists on synergy and our Technology assessment system, help us to quickly identify all pupils end of year targets and any special learning needs (SEND or PP), although we are also fully aware, that in reality, there can be quite some deviation from targets, based on Maths, English and Science tests and progress in Technology. Sometimes even some of the most academically able struggle with Technological designing and making, whilst for some who find pure academic study hard they really enjoy and excel in the subject. We also make and pass on comments about the class and individual pupils to the next teacher to help them quickly get a feel for the group and get the most out of the pupils. Although in KS3, we teach repeated modules in each year group we are very mindful that the modules need adjusting for classes of differing ability and for individual pupils. To this end we always try to plan into our modules, enrichment opportunities, to stretch the most able but taking their work deeper, extension activities to challenge able pupils further and support resources and materials for those that struggle. An example of this is in the Year 8 Graphics based project, where some pupils are challenged to design their own net for complex shaped boxes whilst the majority create a straight forward net and the least able are given a ready-made net template to choose from. Similarly, in Food lessons, basic recipes are provided but more able pupils are taught to adapt and change them in light of the challenge set. Where pupils have an attached learning support assistant we are always grateful for these and liaise with them closely to ensure the pupil’s needs are best met. This personalised approach continues into KS4 and A level where pupils are guided into individual projects which will best allow them each to showcase their talents and for the teacher to provide individual support. Therefore differentiation is achieved by task, support and outcome.


We provide a nurturing environment, scaffold activities, use exemplar work and module responses, use practical activities and experimental learning and encourage the transfer of learning between contexts. All technology staff also offer extra-curricular one to one interventions and support. We also try to ensure the impact of homework on learning is consistently positive by focussing it on a specific part of a project or specific target connected with an element of learning so it is an integral part of learning, rather than an add-on. We also try to make the purpose of homework explicit to learners and ensuring that the focus is upon the quality of homework and not necessarily the quantity, as well as providing feedback on homework that is specific and timely.



Finally we endeavour to try to remove financial barriers to learning by bidding for PP funding to provide equipment and resources where necessary along with revision and homework materials. We have also tried to include PP pupils in extra-curricular activities such as the Design Lab Nation project.

# Ad Gloriam Dei

## To the Glory of God



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