

TDMS Design & Technology - Curriculum Overview

Key stage 2 (primary school) knowledge

- Understand how Design & Technology is used in many aspects of society
- Recognise the difference between a drawing and a design
- Demonstrate safe practices when using equipment.
- Demonstrate working in a safe manner
- Recognise what techniques will be appropriate in order to produce a product based on their designs.
- Demonstrate some practical outcomes

Key skills/content requirements at GCSE

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| <ul style="list-style-type: none">▪ The impact of new and emerging technologies▪ Generation of energy▪ Modern and smart materials▪ Functions of mechanical devices and forces▪ Electronic systems▪ Programmable components | <ul style="list-style-type: none">▪ Types of metals▪ Types of papers and boards▪ Types of plastics▪ Types of fabrics and fibres▪ Types of timbers and manufactured boards▪ Environmental issues▪ Past and present designers | <ul style="list-style-type: none">▪ Develop and communicate design ideas▪ Manufacturing in timbers▪ Specialist timbers/ manufactured boards equipment▪ Surface finishes |
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Year 7

- In Year 7, students are introduced to the foundations of Design Technology through the study of materials, design processes, and practical manufacturing skills. They learn about the origins, properties and uses of timbers, manufactured boards and polymers, developing an understanding of how materials are selected for different purposes.
- Students explore the design process by researching existing products and design movements, including Art Deco, and use this knowledge to generate and develop their own ideas. They learn to communicate their designs through sketches, annotations and modelling activities.
- Students will develop safe working practices and gain confidence in using a range of tools, equipment, and materials. They apply their knowledge and practical skills to design and manufacture a variety of products.

Year 8

- In Year 8, students build upon the knowledge, understanding and practical skills developed in Year 7, becoming more independent and confident designers and makers. They deepen their understanding of the design process by working to design briefs, producing specifications, and generating a range of creative design ideas.
- Students learn to refine and adapt their designs in response to feedback, testing and self-evaluation, developing their ability to make informed design decisions. Practical skills are extended through the safe and effective use of a wider range of tools and workshop equipment, including drilling machines and fret saws.
- A variety of projects provide opportunities to apply these skills and knowledge in different contexts and materials.

Practical skills ▪ Demonstrate how to select and use hand equipment ▪ Demonstrate basic cutting and joining techniques ▪ Demonstrate finishing techniques ▪ Develop design ideas ▪ Develop communication skills ▪ Produce and analysis prototypes			Practical skills ▪ Analysis existing products to inform designing ▪ Develop design ideas and self-assess outcomes against the brief and specification. ▪ Demonstrate how to select and use hand equipment ▪ Use machines such as a sanding machine, drilling machine and fret saw. ▪ Demonstrate basic cutting and joining techniques ▪ Demonstrate finishing techniques		
Core content	Portable knowledge	Key terms	Core content	Portable knowledge	Key terms
Health and safety Communication methods- free hand sketching. Analysing existing products Investigating and using the work of others to inform designing Developing design ideas Types and properties of timbers and manufactured boards-cutting, shaping, joining and finishing. Working with and joining in manufactured boards Systems- electronic circuits- inputs processes and outputs.	Health and safety in the workshop and when using tools and equipment. Types and properties of different materials- timbers, manufactured boards. Use of electronic components Communication techniques	Target market Specification Brief Product analysis Design development Measurements Accuracy Assembly Modelling Testing Evaluation Rendering Anchor Shadow Manufactured boards Timber Inputs Processes Outputs Circuits LEDS Resistor	Health and safety Designing and design development Types of movements Types of CAMS Manufactured with timbers and manufactured boards-cutting, joining, assembly and finishing. Communication techniques Understanding user needs Investigation strategies Evaluation and testing of outcomes. Knowledge of different types of plastic Working with polymers (vacuum forming and finishing) cutting, shaping, joining and finishing.	Health and safety in the workshop and when using tools and equipment Types and properties of different materials- timbers, manufactured boards, metals and alloys, Communication techniques Types of movements including CAMS/ followers	Aesthetics Sustainability Automata Cams Followers Oscillating Linear Reciprocal Rotary Joint Butt Joint Measurements Accuracy Fitting Assembly Modelling Testing Evaluation Sustainability 3 Dimensional (3d) Polymers Thermoplastics Thermosetting
Term 1				Portable knowledge	Key terms

Year 9	Year 9 Design Technology Autumn Term Students develop their understanding of modelling and prototyping as an essential part of the design process. They investigate a range of modelling techniques using card and paper, learning how designers use models to test, communicate and refine ideas before manufacture. Students explore the properties, characteristics, and environmental impact of different paper and card products and apply this knowledge when producing accurate and functional prototypes. Emphasis is placed on precision, problem-solving, and iterative design. Spring Term Students are introduced to Computer-Aided Design (CAD) through the use of 2D design software. They learn to create accurate digital drawings and develop an understanding of how CAD is used in modern product design and manufacture. Students also study the properties, uses and sustainability of a range of timbers, manufactured boards and polymers, considering how material selection influences product performance and manufacture. Alongside this, students develop their knowledge of electronic systems, exploring circuits, electronic components and their functions. They learn how to construct and test circuits safely and develop practical soldering skills to create reliable electronic connections. Summer Term Students apply their knowledge and skills through a design-and-make project. They investigate existing products and relevant design movements to inform their own design work, conducting research and analysis to identify user needs and design opportunities. The manufacturing stage focuses on prototyping, the accurate production of a product and the use of appropriate tools, equipment and processes to achieve a high-quality outcome. Students develop their understanding of quality control, accuracy and finishing techniques, applying treatments and finishes to improve both the function and appearance of their product. The project concludes with a detailed evaluation in which students assess their final outcome against a design specification, reflecting the effectiveness of their design decisions and identifying areas for future development. This project provides a strong foundation for further study at GCSE by developing independent design thinking, practical capability, and technical understanding.	Use of electronic components Types and properties of different materials- timbers, manufactured boards, metals/alloys, paper/ boards and polymers Communication and rendering techniques including use of CAD Development and use of brief and specifications Working towards a brief and specification taking into consideration needs of a specific client Safe and accurate use of a range of tools and equipment Evaluation and testing of outcomes against a brief and specification. Use of past and present designers for inspiration	Measurements Accuracy Fitting Assembly Modelling Prototypes Testing Evaluation Sustainability Inputs Processes Outputs Circuits LEDs Resistor Target market Specification on Brief Product analysis Design development ACCESSFM Aesthetics Manufactured boards Timber Polymers Alloys Ferrous Non ferrous
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SMSC in Design Technology and Product Design

The study of Design Technology and Product Design provides many opportunities to support students' spiritual, moral, social and cultural development. Through designing, making and evaluating products, students consider how design influences people's lives and how products can positively or negatively impact society and the environment. Students are encouraged to think critically about sustainability, ethical manufacturing, consumer needs and technological innovation while developing creativity, resilience and independence.

Spiritual Development

Students are encouraged to use their imagination, creativity and problem-solving skills to generate innovative design solutions. Through the design process, they reflect on their own ideas, values and aspirations while considering the needs and experiences of others. Product Design provides opportunities for students to experience a sense of achievement through creating functional and aesthetically pleasing products, developing confidence in their own abilities and appreciating the work of designers, engineers and manufacturers from a range of backgrounds.

Moral Development

Students explore moral and ethical issues linked to design and manufacturing, including sustainability, responsible sourcing of materials, environmental impact, planned obsolescence and fair trade. They are encouraged to consider the consequences of design decisions on individuals, communities and the wider world. Through evaluating products and manufacturing processes, students develop an understanding of responsible consumerism and the importance of making informed and ethical choices.

Social Development

Design Technology encourages collaboration, communication and teamwork through practical projects and design activities. Students work together to share ideas, solve problems and provide constructive feedback, developing respect for the views and contributions of others. They learn to manage projects, respond positively to challenges and reflect on their own progress through self and peer evaluation. These experiences help to develop confidence, resilience, leadership and interpersonal skills that are valuable beyond the classroom.

Cultural Development

Students explore how products, design movements and technological developments reflect the values, traditions and needs of different cultures and societies. They study the work of influential designers, engineers and manufacturers from a range of historical periods and cultural backgrounds. Through investigating global design influences and contemporary innovations, students develop an appreciation of diversity and gain an understanding of how culture shapes the products and technologies used in everyday life.

