



DESIGN TECHNOLOGY

SUBJECT NAME: KS3 Design & Technology

Why is the study of Design & Technology important?

Design and Technology is a practical and valuable subject. It enables students to actively contribute to the creativity, culture, wealth and well-being of themselves, their community and their nation. It teaches how to take risks and so become more resourceful, innovative, enterprising and capable. Students develop a critical understanding of the impact of design and technology on daily life and the wider world. Additionally, it provides excellent opportunities for students to develop and apply value judgements of an aesthetic, economic, moral, social, and technical nature both in their own designing and when evaluating the work of others.

What will learners know and understand from their study of Design & Technology?

Across the four-year curriculum the aims of our Design and Technology curriculum is to include the development of capability within the subject, along with broad general skills. Below details the skills and knowledge that will be gained across the five years and this list whilst not exhaustive also includes skills and knowledge gained in year 7 and 8.

What skills will the study of Design & Technology teach you?

Design and Technology uses knowledge, skills and understanding from within the subject itself and a wide range of other sources, especially but not exclusively science and mathematics. Design and Technology will teach you to:

- Develop resilience by not being afraid of challenges when solving problems, but to break them down and keep trying.
- Be creative in developing solutions to real world problems.
- Use modelling and annotated sketches to develop and communicate ideas.
- How to act responsibly within a practical environment thinking of the safety of yourself and others.
- Identify how to competently use a range of practical techniques across a range of disciplines.
- Apply and use CAD/CAM equipment to design and manufacture a range of products and components considering scale of production and precision.
- Work independently and part of a team to solve complex problems.
- Construct reasoned arguments to ethical, social and moral problems that have arisen due to technology and communicate these in an effective way.

- Identify links between different materials and contextual references.
- Test, evaluate and refine their ideas and products against a specification, considering the views of intended users and other interested groups.
- Understand and apply the principles of nutrition and health.
- Cook a repertoire of predominantly savoury dishes so that they can 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 recipes).
- Understand the source, seasonality and characteristics of a broad range of ingredients.

What will you know and understand from your study of Design & Technology?

- How to classify materials including smart materials and discuss their physical properties.
- How to use simple electronic circuits incorporating inputs and outputs.
- How to manufacture products with reference to their material's physical properties.
- Students will learn to use and adjust equipment and machinery depending on the task.
- Use learning from science and mathematics to help design and manufacture components and products.
- Students will learn to consider the influence of a range of lifestyle factors and consumer choices when designing and analysing products.
- Students will know and understand additional factors to consider such as ergonomics, anthropometrics or dietary needs.
- How to use a variety of approaches, for example biomimicry and user-centred design to generate creative ideas and avoid stereotypical responses.
- Students will be able to evaluate their work against an increasing range of designers, engineers, chefs, technologists and manufacturers and be able to relate their product to their own designing and making.
- Students will be able to evaluate products through disassembly to determine how they are constructed and function and consider the life cycle analysis.
- How to competently use a range of cooking techniques for example, selecting and preparing ingredients; using utensils and electrical equipment.
- Students will know the principles of nutrition and health including energy, nutrients, water, fibre, diet and health and nutritional needs throughout life and the risks of an unbalanced diet.

- Students will have a repertoire of predominantly savoury dishes in line with the principles of the Eatwell guide.
- Students should be able to feed themselves considering personal preference, socioeconomic aspects, nutritional and health needs.
- Students will understand the healthy and varied diets as depicted in the Eatwell plate and 8 tips for healthy eating.
- Students should explore the origin and product of food products and ingredients.
- Students should consider how seasons may affect the food available.
- Students should consider the function, nutrient profile and sensory attributes of ingredients.
- Students should study a range of food commodities e.g. cereals, fruits, vegetables, meat, fish, eggs, fats/oils, milk dairy food products.
- Students will develop a range of preparation, cooking and presentation skills.
- Students will learn to plan menus for a range of individual and nutritional needs.
- Students will learn how to prepare and cook safely to prevent food poisoning.
- Students will explore the effect of advertising, marketing and packaging on food choice.

How does your study of Design Technology support your study in other subjects?

As so many of the skills you will acquire in Design Technology are transferable. Your studies in Design Technology develops several skills that will support your study of other subjects. Helping to develop your focus, resilience, time management, problem solving and communication skills which are integral to all other subjects. For example, the ability to think creatively and problem solve are crucial in Engineering, Mathematics and Science. Design Technology gives you an opportunity for creative expression, which can lead to improved well-being, and support your study experience throughout school. Some students may take this even further and discover a subject that provides them with valuable life skills, or a career that enhances their life for years to come.

How can you deepen your understanding of Design & Technology?

- www.technologystudent.com
- www.bbc.co.uk/schools/bitesize
- www.engineering.com
- www.howstuffworks.com
- www.food.gov.uk
- www.foodafactoflife.org.uk

There are also opportunities for you to deepen your understanding of Design & Technology through extracurricular activities. Where you can continue to develop your creative ideas, or work on specific projects. During enrichment clubs, you will have the opportunity to meet Design Technology enthusiasts from other year groups, where you can share ideas, critique each other's work and continue to advance your skills.

How are you assessed in Design & Technology?

There are 6 assessment points each year that we term Praising Stars©. We assess how students at their current stage of study are on track to reach their end of stage targets which are formulated on aspirational expectation from their KS2 starting points. We make an informed prediction from our holistic assessments based on our subject mapping of expectation across the Design & Technology curriculum.

Key Assessment Objectives

At KS3 the key assessment areas of Design and Technology are broken down into the following.

Food & Nutrition

- AO1: Health and Safety
- AO2: Nutrition and Health
- AO3: Source, seasonality and characteristics of ingredients
- AO4: Food choice
- AO5: Cooking skills

Materials Technology

- AO1: Plan
- AO2: Make (Including Health and Safety)
- AO3: Evaluate
- AO4: Technical Knowledge

How can Design & Technology support your future?

Through the creative and practical elements of the subject, Design & Technology supports your future not just academically but through the development of key life skills that will support you into adulthood. You will have established the knowledge, skills and confidence to safely prepare and cook a delicious, nutritious meal and the ability to use basic tools for future DIY projects or repairs.

Design & Technology encourages you to think creatively and to consider the world around you and will help you to develop skills in observation, communication, time management, teamwork and problem-solving which will support you in any future career.

You may choose to extend your study of Design & Technology through our KS4 Vocational courses; Engineering or Hospitality & Catering. These primarily practical based curriculums are designed to support your learning through doing. These qualifications can open doors to

numerous Post 16 courses, apprenticeships and employment in the Design Technology, Engineering, Construction, Hospitality & Catering industries.

Study of Design & Technology can lead to a wide range of careers:

- 3D Designer
- Product Designer
- Fashion Designer
- Civil Engineer
- Electrical Engineer
- Mechanical Engineer
- Architect
- Bricklayer
- Plumber
- Plasterer
- Carpenter
- Hotel Manager
- Receptionist
- Housekeeper
- Restaurant Manager
- Chef
- Waiter
- Barista
- Bar Person
- Food Scientist
- Food Stylist
- Food Technologist
- Dietician
- Nutritionist
- Cruise ship Steward

SUBJECT OVERVIEW

KS3 Design & Technology			
Term	Year 7	Year 8	Year 9
Autumn Term	<p>Materials Technology: Mobile Phone Holder</p> <p>Workshop skills: <i>Marking Out</i> <i>Measuring</i> <i>Sawing</i> <i>Filing</i> <i>Shaping</i> <i>Working with machinery:</i> <i>Polishing</i> <i>Sanding</i> <i>Drilling</i> <i>CAD/CAM- 2d Design, Laser Cutter</i></p> <p>Theory: <i>Responding to a Design Brief</i> <i>Developing product Specifications</i> <i>Investigating Biomimicry</i> <i>Understanding the effects of design achievements.</i> <i>Respect and tolerance in design</i> <i>Creating design ideas</i> <i>Converting Isometric to Orthographic drawings</i> <i>Calculating waste</i></p>	<p>Materials Technology: Ball Bearing Maze Game Box</p> <p>Workshop skills: <i>Marking Out</i> <i>Measuring</i> <i>Sawing</i> <i>Filing</i> <i>Joining materials</i> <i>Finishing</i> <i>Working with machinery:</i> <i>Sanding</i> <i>Drilling</i> <i>CAD/CAM – Sketchup – Laser Cutter</i></p> <p>Theory: <i>Responding to a Design Brief</i> <i>Developing product Specifications</i> <i>Investigating De Stijl artworks</i> <i>Material areas</i> <i>Material Properties</i> <i>Sustainability</i> <i>Creating design ideas</i> <i>Converting Orthographic to Isometric drawings</i> <i>Calculating waste</i></p>	<p>Materials Technology: USB Night light</p> <p>Workshop skills: <i>Electrical systems</i> <i>Marking Out</i> <i>Measuring</i> <i>Working with machinery:</i> <i>Drilling</i> <i>Lathe work</i> <i>CAD/CAM- 2d Design, Sketchup, Laser Cutter</i></p> <p>Theory: <i>Material areas</i> <i>Material properties</i> <i>Working from Engineered drawings</i> <i>Understanding engineering processes</i> <i>Converting between Isometric & Orthographic drawings</i> <i>Calculating area/ volume</i></p>
Spring Term	<p>Food & Nutrition</p> <p>Theory: Food hygiene and food safety Equipment – large and small used in a kitchen</p>	<p>Food & Nutrition</p> <p>Theory: Food hygiene and food safety Macronutrients - Carbs, Fats & Proteins. Use by and best before dates Recipe Adaptation Staple Foods</p>	<p>Food & Nutrition</p> <p>Theory: HACCP Allergens Nutrition - Macro & Micronutrients Reared, Caught or Grown</p>

	<p>Eatwell guide and 8 healthy eating tips Functions of nutrients: vitamins and minerals Fibre Healthy Hydration Energy balance Environmental & Social factors affecting food choice</p> <p>Practical Skills: Hygiene and safety Knife skills – bridge and claw method Weighing and measuring Using the cooker – hob and grill Presentation skills</p>	<p>Safe storage, cooking and reheating of food Nutritional requirements of specific groups Factors affecting food choice Grown/Reared/Caught Food</p> <p>Practical skills: Hygiene and safety Weighing and measuring Knife skills – bridge and claw method Rubbing in method Safe use of the cooker – hob, oven Time planning/Dovetailing Making bread dough Rolling and shaping Cooking methods Temperature control Presentation skills</p>	<p>Time Planning/Dovetailing Presentation Techniques Recipe adaptations to suit customers' needs World Foods Food provenance Healthier cooking methods Function of ingredients Practical Skills: Hygiene & Safety Knife Skills - Bridge & Claw method. Refined skills, julienne. Accurate weighing & measuring. Rolling, shaping & Contingency plans Bain Marie v Microwave melting Safe use of cooker, hob, oven. Advanced - Presentation skills, garnishes, rule of 3, piping</p>
Summer Term	<p>Graphic/Textiles Design: Wellbeing, positive mindset Banner</p> <p>Practical Skills: <i>Layout & Composition</i> <i>Typography</i> <i>Colour</i> <i>Generating design ideas</i> <i>Surface Decoration</i> <i>Sewing Techniques</i> <i>Embellishment</i></p>	<p>Graphic Design: Wellbeing, get active interactive display</p> <p>Practical Skills: <i>Layout & Composition</i> <i>Typography</i> <i>Colour</i> <i>Rendering</i> <i>Testing</i> <i>Modelling</i></p> <p>Theory: <i>Responding to a Design Brief</i> <i>Investigating the work of Keith Haring</i></p>	<p>Graphic Design: Discrimination, Blackfest promotion.</p> <p>Practical Skills: <i>Layout & Composition</i> <i>Typography</i> <i>Colour</i> <i>Rendering</i> <i>Testing</i> <i>Modelling</i></p> <p>Theory: <i>Responding to a Design Brief</i></p>

	<p>Theory: <i>Responding to a Design Brief</i> <i>Investigating the work of Kate Moross</i> <i>Comparing the work of Kate Moross and Timothy Goodman.</i> <i>Semiotics & Semantics</i> <i>Layout & Composition</i> <i>Typography</i> <i>Fabrics & Fabric Construction</i> <i>Smart Materials</i> <i>Sustainability</i></p>	<p><i>Comparing the work of Keith Haring and Timothy Goodman.</i> <i>Semiotics & Semantics</i> <i>Levers and Linkages</i> <i>Mechanical systems</i></p>	<p><i>Investigating the work of Thomas Miller.</i> <i>Comparing the work of Thomas Miller and Aaron Douglas.</i> <i>Semiotics & Semantics.</i></p>
<p><i>Students will study rotations of materials technology, Food and graphic / Textiles design.</i> <i>Students will rotate subject areas throughout the year depending on groups.</i></p>			