Design & Technology Department

Why is this subject important?

In design & technology pupils combine practical and technological skills with creative thinking to design and make products and systems that meet human needs. They learn to use current technologies and consider the impact of future technological developments. They learn to think creatively and intervene to improve the quality of life, solving problems as individuals and members of a team. Through design and technology pupils develop confidence in using practical skills and become discriminating users of products. They apply their creative thinking and learn to innovate.

'Design and Technology is a practical and valuable subject. It enables children and young people 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.' 'data 2019'

What are the fundamental concepts of the subject?

Our work reflects the National Curriculum requirements for Design and Technology:

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks and innovative. Through the evaluation of past and present design and technology they develop a critical understanding of its impact on daily life in the wider world.

Aims and Objectives:

- To provide a range of structured and differentiated activities which develop breadth and progression.
- Where possible these will relate to the interest and everyday experiences of our children
- To develop knowledge and teach skills in order to design and make products successfully.
- To help children become aware of and investigate simple products by disassembly and evaluation.
- To show understanding and skills in order to design and make high quality prototypes and products for a wide range of users.
- To provide adequate time, access to information, skills and resources to make good quality products.
- To provide time to critique, evaluate and test their ideas and products and the work of others.
- To motivate pupils by providing interesting and stimulating experiences.
- To provide equal opportunities and develop the qualities of individual pupils.
- To enable children to use design and technology to solve a range of problems.
- To help children understand and apply the principles of nutrition and learn how to cook.

Pupils should have opportunities to:

- develop realistic outcomes to assignments.
- take increasing responsibility for their own work.
- critically evaluate their work and the work of others and suggest improvements.
- work individually and in teams, groups, partners or pairs.
- work with a range of materials and to use them appropriately.
- use a variety of tools safely and correctly.
- communicate ideas in a variety of ways.
- develop skills and apply knowledge and experience when working on an assignment.
- develop the ability to solve problems.
- research and record relevant information where appropriate.
- examine and evaluate

What topics will the pupils be studying in each year?

Topics studied in each year:

Topics	RM/PD	Graphics	Textiles	Catering
Year 7	Spinning Tops - Soft wood handle / CAD design laser cut spinning top	CAD/CAM Introduction Mechanical Toy - mechanisms, levers and linkages Sea breacher - model making using styrofoam	Merchandise Storage	Jam Tart Fruit Salad Fruit Crumble Pizza Swirls Scones Beef Curry Pasta Salad Chicken Nuggets
Year 8	Bird Box - Traditional skills. Decorated using laser cutter based on a chosen theme 2D design and Ethos CAD software	Slot together Toy – 2D Design Orthographic and 3D drawing techniques	Mini Monster	Savoury Rice Vegetable Soup Thai Green Curry Fruit Cobbler Sausage Rolls Bread-decorative Focaccia Lemon Fairy Cakes
Year 9	Desk Tidy based on a design movement - LED lighting circuit included	Solidworks CAD designs - introduction to industrial computer aided drawings.	Travel Bag based on a culture	Lasagne Cottage/Shepherd Pie Coconut Cakes Quiche Chicken Tagine Lemon Cheesecake Fish/Cheese Potato Cake Carrot and Orange Muffins

Year 10	Mini lighting Unit Project for Client Biomimicry Project Focused Practical Tasks Theory			Pastry types – shortcrust, choux, rough puff. Roux based sauces – béchamel & veloute. Eggs – gelatinisation quiche, meringues, pane. Complex meat & fish cookery. Decorated cakes – swiss roll, all in one method, creaming, genoise. Rich yeast dough & breads. Cheesecake, mousee using gelatine. Fresh pasta. Fresh custard.
Year 11	NEA Task – Exam Board Theory			Mock CA. Mock practical exam. Two course meal dishes – deboning chicken, portioning, accompaniments, garnish, portion control. Theory for Exam.
Year 12	Mini Projects – model making and Biomimicry, Maths in Product Design. Theory for exam			
Year 13	NEA Task Theory			

What key skills will the pupils develop over time?

Design skills and the ability to visualise new ideas can be useful in many job families such as marketing, sales and advertising, arts crafts and design, broadcast media and performing arts, journalism and publishing, construction, as well as engineering and manufacturing.

Skills and qualities - from studying design technology:

- **Technical ability**

  You may need particular technical skills and specialist knowledge of how things work or need to be designed and built.

- **Problem solving**

  Some jobs particularly require problem solving skills and creative thinking to recognise problems and their causes, to identify a range of possible solutions and then assess and decide the best way forward.

- **Organisation**

  You'll need to be able to plan and schedule work. This could include being able to prioritise what needs to be done and by when.

- **Communication**

  If your job requires verbal communication, you may need to write or give speeches and presentations. For jobs which require written communication skills, you will need to write clearly and convincingly – you could be producing or dealing with legal documents or writing articles for a newspaper. You may also require good listening skills, the ability to negotiate, or to be persuasive.

- **Creativity**

  You may need specific artistic or design skills for a job, or you may need to draw on a good imagination to come up with creative solutions to business challenges.

- **Business management**

  Some jobs require a good understanding of how businesses work and the management skills to help the business run smoothly and succeed.

- **Analytics**

  You'll be collecting and examining information in detail to arrive at a solution, to answer a key question or make an informed decision.

- **Customer service**

  Any job which involves contact with customers and the public requires good customer service skills. Whether it's on the phone or face-to-face it's important to be able to make customers feel welcome, to be polite and listen.

- **Discipline**

You need to know and do what is expected of you. This ranges from organising yourself, being on time, to being responsible. Some jobs need particular discipline skills such as being able to persevere with the task and plans until you accomplish them, or following strict procedures.

How are all pupils learning in this subject?

Key Stage 3

Pupils learn and undertake activities that contribute to the achievement of the curriculum aims for all young people: to become successful learners who enjoy learning, making progress and achieve; confident individuals who are able to live safe, healthy and fulfilling lives; responsible citizens who make a positive contribution to society.
In Years 7, 8 and 9 pupils experience all areas of the Design and Technology Department through a carousel system. Time is spent in each of the four areas: Food; Resistant Materials and Electronics; Graphics with CAD/CAM and Textiles.

Key Stage 4

We offer two GCSE courses in Design and Technology (AQA) and Hospitality & Catering (WJEC).

AQA GCSE Design and Technology 8552

GCSE Design and Technology will prepare students to participate confidently and successfully in an increasingly technological world. Students will gain awareness and learn from wider influences on Design and Technology including historical, social, cultural, environmental and economic factors. Students will get the opportunity to work creatively when designing and making and apply technical and practical expertise. The GCSE course allows students to study core technical and designing and making principles, including a broad range of design processes, materials techniques and equipment. They will also have the opportunity to study specialist technical principles in greater depth.

GCSE Level 1/2 Hospitality and Catering Specification

The WJEC Level 1/2 Award in Hospitality and Catering has been designed to support learners in schools and colleges who want to learn about this vocational sector and the potential it can offer them for their careers or further study. It is most suitable as a foundation for further study, providing learners with a core depth of

knowledge and a range of specialist and general skills that will support their progression to further learning and employment.

Key Stage 5

We offer A Level Design and Technology Product Design 7552 (AQA)

This creative and thought-provoking qualification gives students the practical skills, theoretical knowledge and confidence to succeed in a number of careers. Especially those in the creative industries. They will investigate historical, social, cultural, environmental and economic influences on design and technology, whilst enjoying opportunities to put their learning in to practice by producing prototypes of their choice. Students will gain a real understanding of what it means to be a designer, alongside the knowledge and skills sought by higher education and employers.

Pupil Support

Pupils are supported linked to the individual needs. A range of teaching strategies such as scaffolding, EEF drivers and adaptive are implemented. Staff make adjustments to instructions and teaching materials for children, based on how their needs present in the moment. One to one support and after school intervention sessions are offered to support students further.

How are pupils assessed in this subject?

Key Stage 3

Key Stage 3 pupils are assessed against seven key areas: Research, Specification, Ideas, Development, Practical, Evaluations and Theory aspects. Individual Progress Passports inform pupil progress, attainment and areas for improvement.

Key Stage 4

AQA GCSE Design and Technology 8552

Paper 1

What's assessed

- Core technical principles
- Specialist technical principles
- Designing and making principles

In addition:

- at least 15% of the exam will assess maths
- at least 10% of the exam will assess science.

How it's assessed

- Written exam: 2 hours
- 100 marks
- 50% of GCSE

Questions

Section A – Core technical principles (20 marks)

A mixture of multiple choice and short answer questions assessing a breadth of technical knowledge and understanding.

Section B – Specialist technical principles (30 marks)

Several short answer questions (2–5 marks) and one extended response to assess a more in depth knowledge of technical principles.

Section C – Designing and making principles (50 marks)

A mixture of short answer and extended response questions.

Non-exam assessment (NEA)

What's assessed

Practical application of:

- Core technical principles
- Specialist technical principles
- Designing and making principles

How it's assessed

- Non-exam assessment (NEA): 30–35 hours approx
- 100 marks
- 50% of GCSE

Task(s)

- Substantial design and make task
- Assessment criteria:
  - Identifying and investigating design possibilities
  - Producing a design brief and specification
  - Generating design ideas
  - Developing design ideas
  - Realising design ideas
  - Analysing & evaluating
- In the spirit of the iterative design process, the above should be awarded holistically where they take place and not in a linear manner
- Contextual challenges to be released annually by AQA on 1 June in the year prior to the submission of the NEA
- Students will produce a prototype and a portfolio of evidence
- Work will be marked by teachers and moderated by AQA

WJEC GCSE Level 1/2 Hospitality and Catering Specification

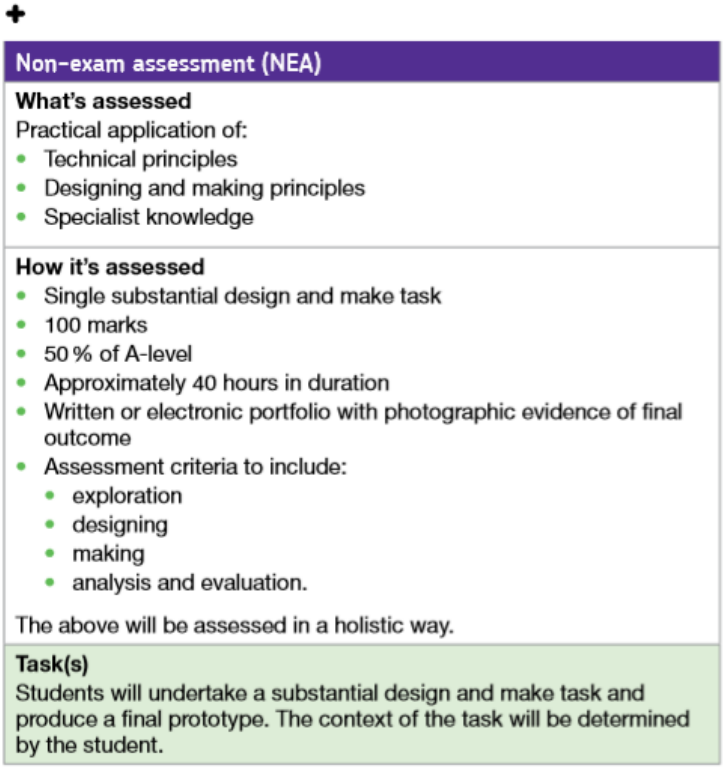
2.2 Assessment Overview

Summary of Assessment
Unit 1: The hospitality and catering industry Written examination: 1 hour 20 minutes 40% of qualification 80 marks
Questions requiring short and extended answers, based around applied situations. Learners will be required to use stimulus material to respond to questions.
Unit 2: Hospitality and catering in action Controlled assessment: approximately 12 hours 60% of qualification 120 marks
An assignment brief will be provided by WJEC which will include a scenario and several tasks available via the WJEC Secure Website.

Key Stage 5

AQA A Level Design and Technology Product Design 7552

Paper 1	+	Paper 2
What's assessed • Technical principles • Designing and making principles • Specialist knowledge		**What's assessed** • Technical principles • Designing and making principles • Specialist knowledge
How it's assessed • Written exam: 2 hours • 100 marks • 25 % of A-level		**How it's assessed** • Written exam: 2 hours • 100 marks • 25 % of A-level
Questions Mixture of short answer, multiple choice and extended response questions.		**Questions** **Section A: Product analysis** • 40 marks available. • Up to six short answer questions based on visual stimulus of product(s). **Section B: Commercial manufacture** • 60 marks. • Two extended response questions worth a total of 30 marks each.



Non-exam assessment (NEA)
What's assessed Practical application of: • Technical principles • Designing and making principles • Specialist knowledge

How it's assessed
• Single substantial design and make task
• 100 marks
• 50 % of A-level
• Approximately 40 hours in duration
• Written or electronic portfolio with photographic evidence of final outcome
• Assessment criteria to include:
  • exploration
  • designing
  • making
  • analysis and evaluation.
The above will be assessed in a holistic way.

Task(s) Students will undertake a substantial design and make task and produce a final prototype. The context of the task will be determined by the student.

How can pupils progress in this subject?

At KS4 pupils can opt for GCSE Design and Technology or Hospitality and Catering.

At KS5 pupils can opt for A Level Product Design.

Many of our students are successful at obtaining University placements and modern apprenticeship in various sectors and roles eg:

- BAE
- Sellafield
- Kimberley Clark
- Orsted
- Williams F1
- Tornado Wire
- Slacks
- GEN 2

Academic routes:

- UCLAN – Forensics and Criminology
- York University – Product Design

- Fashion Degree
- Mechanical and Civil Engineering
- Chemical Engineering
- Marine Engineering
- Food and Nutrition
- Event Management
- Education

Design Technology links to a wide and varied range of possible career routes within the following fields:

- Engineering (Civil, Marine, Aeronautical, Electrical, Mechanical, etc.)
- Architecture
- Police – Criminology
- Design CAD Engineer
- Fashion and Graphic Design
- Construction and Building
- Motor Vehicle – technology, manufacturing and repair
- Trade – Plumber, Electrician, Fitter
- Catering and Hospitality
- Event Management
- Photography and Media
- Textile Industry

How can pupils enrich their knowledge and understanding in this subject?

The curriculum is enriched with contact with employers, agencies, universities and individuals, who have a wealth of experience and expertise within their specialist area. This gives our students the opportunity to further develop their understanding of the subjects and topics that are studied in each Key Stage

Regular visitors and contributors to the Technology curriculum include:

- Rotary Club
- McClures
- BAE
- Orsted
- Crest Awards
- Sellafield
- GSK
- Lecks
- James Fisher
- 3DW
- Slacks
- Leeds University
- Cumbria STEM
- Lakeside Hotel

- Furness College
- LLWR