Design Technology – Subject Intent and overview

Subject Overview

The aim of our curriculum is to create:

- **A knowledge led curriculum which develops conceptual understanding and the development and application of skills.**

- **A curriculum which instils a love of learning across the subject area.**

- **A curriculum which is driven by up to date and relevant educational research.**

- **A curriculum which is underpinned by understanding the needs of our local demographic and building a curriculum which serves the young people in our locality.**

The Design and Technology curriculum is organised in such a way that it provides all pupils with the opportunity to develop themselves as successful learners who are well-prepared and excited about life after Ormskirk School.

Design and Technology will prepare pupils to participate confidently and successfully in an increasingly technological world. Pupils will gain awareness and learn from wider influences on Design and Technology including historical, social, cultural, environmental and economic factors. Pupils will have the opportunity to work creatively when designing and making and apply technical and practical expertise. We aim to nurture future designers by supporting our pupils to develop their skills using a range of activities through a variety of problem-solving tasks drawing upon disciplines such as mathematics, science, engineering, computing and art. They will learn how to take risks, becoming resourceful, innovative and enterprising. Through evaluation of past and present design and technology, pupils will develop a critical understanding of its impact on daily life and the wider world.

Pupils will engage in a variety of creative and practical activities gaining the knowledge, understanding and skills needed to engage in an iterative process of designing and making. The subject is delivered by dedicated staff with modern and up to date facilities.

Pupils who enjoy this subject:
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- Are resilient and like solving problems.
- enjoy technical drawing, both traditionally and computer aided.
- enjoy discussing social and moral factors regarding ethical design, manufacturing and processes.
- like researching the way products are made and why.
- enjoy prototyping and making 3-Dimensional outcomes based on innovative design ideas.

Strategic Intent for the Design Faculty

To develop a curriculum which:

- **Is thoughtfully sequenced, using research into how pupils learn, so they are inspired to learn new material in a meaningful manner and develop their understanding. This will be relevant to their age and stage of development.**

  Design concepts will be sequenced in such a way that they progressively build upon one another. This will begin with an understanding of the core principles in D&T e.g. 'What are manufacturing processes?' The SOL makes links to prior knowledge, whether it be from the previous lesson, everyday knowledge or a previous key stage. The schemes are built in a way that pupils can see the relevance in learning D&T and are fascinated by the world of design around them. Projects will have a fluidity that will be used to engage pupils in areas that interest them and that build on previous skills-based learning.

- **Links new subject knowledge to prior experiences so building cognitive pathways and associations.**

  The D&T department plan to further build in video and picture links and embed them into lesson objective slides referencing local industry/films/TV programmes as well as cross curricular links to aid understanding and cognitive pathways for pupils to build upon and relate to. Local and relevant artists and engineers to be used within learning to enable pupils to see local opportunities and successes and have the opportunity to question these people regarding starting their own journeys. Subject knowledge within projects will lead on from KS2 with all staff aware of what pupils should have/have experienced in primary school. Awareness of what has been covered at primary built by connections with feeder primary schools.

- **Is relevant to the young people in our locality.**

  We intend to build upon practical skills, knowledge of designers and trades, links with colleges and apprenticeships and identify these within schemes and lessons to help pupils see the opportunities around them.

- **Emphasises and reinforces the use of technical language and adventurous vocabulary.**

  Key words will be consistently identified within each lesson and referenced regularly in order to build understanding. There will be an expectation in all classes that terminology is modelled and broken down to reinforce technical principles. Contextual awareness will be developed with the use of specific terms to show differences between subject matter and pathways allowing pupils an insight into multiple design possibilities and stimulating their interest. There will be reading opportunities in each rotation on top of Ormskirk's whole school reading strategies. The use of current magazines, online articles discussing current affairs, text books or even just objectives read aloud by pupils will impact and build on reading skills, communication and understanding.

- **Builds in opportunities for fluency practise and repetition to improve retrieval and so deepen understanding, which is essential to strengthen learning.**

  The Design Technology department schemes and lessons will build on theory, constantly touching on past learning and helping with retrieval of information and mastery of key skills. Current research in teaching and learning including Rosenshine's 10 principles, cognitive load theory and growth mind-set will underpin daily practice to help pupil's gain the most from their experience. Targeted interrogation through questioning and verbal dialogue with pupils and also in theory questions in books will be consistently given by teaching staff and consolidated by practical work.

- **Has assessment for learning at its core, using a range of feedback strategies to develop pupils' metacognition and so move their learning forward.**

  Imagery is to be used heavily in lessons and lengthy descriptions of processes cut to a minimum to embed the fundamentals and not to overload pupils. Strategies such as our developed objective slides based on cognitive load theory will be used in all lessons to enhance pupil's awareness of learning. Metacognition will be interwoven throughout lessons and will inform pupils of their learning and increase awareness of recall and retrieval of information. Visual aids will be used to stimulate independent thinking and anchor key points and terminology. Live feedback will be consistently used in KS3&4 to enable rapid progress and strengthen skills as they occur. 'Tech ten' mid-unit assessment will be used to elicit what key learning pupils have gained and provide an opportunity for teaching staff to reteach or correct any misconceptions before a summative, end of unit assessment.

- **Gives our pupils the knowledge, skills and understanding to be healthy, safe and responsible young adults.**

  Projects aimed around cultural understanding and designing for a particular set of needs, skill-based learning in all subjects to enhance knowledge and understanding of key concepts and practical skills.

Curriculum Principles

- **We prioritise depth of knowledge and breadth of knowledge.**

  The department intends to prioritise mastery of skills and will focus on the skills with common tools, equipment and media. The design principles that underpin all of our teaching will be taught in depth so that pupils can interpret them in their own way fitting them to different contexts.

- **We give sufficient time to English and mathematics to ensure that pupils have the essential skills needed for life and so that they can demonstrate academic excellence across the full range of subjects.**

  Mathematical concepts will be taught throughout DT curriculum to support maths curriculum and prepare pupils for new DT GCSE course content. Literacy focus made explicit on PowerPoint slides to incorporate 'Frayer models' and 'Tiered terminology' and help to support analytical, evaluative and instructional writing alongside detailed annotation within DT lessons.

- **We build cultural capital in our pupils in order for them to develop a sense of identity and pride in their local community and excel in the wider world.**

  Studies into different contextual challenges across the department will impact on the pupil's knowledge of their community and awareness of individual needs. These starting points are fundamental to the subject we teach and form the projects that pupils undertake mimicking the design industry. There will be an increased focus on the local area with attention drawn to real issues/design work/opportunities.

- **We believe that creative subjects are crucial in forming well-rounded and confident young people.**

- **We make learning relevant.**

- **We plan to make learning relevant by embedding current Technological issues both within our locality and the wider world. Consistently referencing real world**

problems in the areas of design and manufacturing and making these explicit throughout lessons.

- **We thread careers information and PD (Personal Development) through all aspects of our curriculum ensuring that pupils have suitably high aspirations for themselves and their community.**

  We intend to build on links with Ormskirk 6th form college, other local colleges including apprenticeship opportunities and local work places to raise pupil aspirations and provide real links for our young people's futures. We intend to offer an A-Level route for pupils who wish to study Design Technology further at advanced level as a route into design related careers.

- **We have timely intervention for pupils who are below their chronological reading age, have weak writing skills and weak numeracy skills.**

  We intend to address key terminology and oracy through planned lesson objectives to support the increased rigour in exam questions and support pupil's literacy skills. Current articles and technological advances to form starter activities through the reading and discussion of current issues. E.g. magazine articles, online news websites. Reading will be in threaded through schemes so that pupil's gain confidence with literacy, communication and oracy.

- **We have high expectations of our pupils to develop articulate and confident young people, who can communicate effectively through the spoken and written word.**

  We intend to demand the highest level of work and verbal responses by pupils constantly making reference to standards and life after Ormskirk. These life skills will be promoted within lessons and enhance the learning of the pupils.

- **We use opportunities for cross-curricular work to develop transferable skills and to allow pupils to see the links across a range of areas.**

  We intend to cross reference all other subject areas within Ormskirk's curriculum and gear KS4 practical tasks around them.

Course Content

Key Stage 3 Pathways:

DT is taught for 1.5 hour each week in years 7, 8 and 9 (from 2024/25) and focuses on areas such as materials, structures, electronics, food, drawing, graphics, CAD/CAM, 3D design, core technical principles and the design process.

Key Stage 4 Pathways:

Examination Board: AQA	GCSE D&T: Design and Technology	
Assessment:	Unit 1 Written Paper	50% 2 hour written exam
	Design & Making Practice	50% controlled assessment
		(40% Practical, 60% Design Folder)

Design Technology is a popular GCSE option. Over the two-year course, pupils will learn a comprehensive set of practical skills to equip them to problem solve and confidently design and make products. They will then complete a design portfolio on an externally set brief where they follow the design process to produce a final practical product. The portfolio is

broken down into six sections: Investigating and researching design possibilities, Design brief and specification, Design ideas, Design Development, Realising design ideas & Analysing and Evaluation.

Examination Board: AQA	GCSE 3 Dimensional Design (From Sept 24)	
Assessment:	Unit 1: Portfolio of Work	60%
	Unit 2 Timed assessment	40%

3 Dimensional Design is popular GCSE option. The course spans over two years and enhances and refines the pupil's skillset and awareness of 3 Dimensional Art around them. The structure of the course is as follows:

Unit 1: Portfolio of Work

Pupils will complete 2 or 3 projects in Year 10 and 11. During each they will be expected to gather information (both visual and written) and generate ideas, explore and experiment using a variety of materials, techniques and processes, evaluate and refine their work, and design as well as produce a 3 Dimensional final piece (personal response). Year 11 will refine their coursework and prepare for the exam.

Unit 2: Timed Assessment

This follows a similar programme to pupil's coursework but on a shorter timescale. Pupils are given exam questions after Christmas; they have 10 weeks to create a body of work that fulfils the first three assessment objectives and a ten-hour exam in which to complete a personal 3-Dimensional response.

Enrichment

The Design Technology department offer a wide range of enrichment activities which aim to broaden our pupil's experiences of the wider world of Design and supports them in developing crucial life skills supporting their moral, emotional and social wellbeing. Our Design teachers are passionate about instilling a lifelong love of the Arts, Food and the Design and Manufacturing Industries. We recognise our pupils as individuals and, as such, understand that they each have their own interests and passions. To cater for these needs we offer extra-curricular programme including DT lunch club, STEM club, and GCSE workshop and catch up sessions amongst others. As part of our pupil's enrichment package, we also plan to offer a range of other activities which will be integrated within our curriculum such as work experience and other subject specific enrichment opportunities such as visits to further and higher education colleges, design museums, guest speakers (including CAD engineers) and local visits to broaden our pupils' individual experiences outside of the classroom. Ormskirk have links with Bae and take part in the annual 'Challenge' project in which teams of pupils use 3D printing technologies to develop solutions to a local environmental issue.

Personal Development, Behaviour and Welfare

Within the Department we recognise that for pupils to benefit from their time with us we must ensure that they have the best possible teaching and care and they must ensure that they try to meet the expectations placed on them in work, conduct and attitude. We believe that the department should actively promote all pupils' spiritual, moral, social and cultural development by providing positive experiences through planned and coherent opportunities in the curriculum and through interactions with teachers, other adults and the local community. The aim of our curriculum is to support Ormskirk School's PD curriculum and aims to ensure that the values inherent in our 'Proud to Belong' ethos becomes a reality for the pupils.

Within the Design Technology department, we strive to develop pupils who are:

- Confident young people who are able to live safe, healthy and fulfilling lives. All department staff believe that the creative Arts and subjects within D&T offer pupils a broad range of skills and experiences that are unique to our subject areas and help our young people become culturally enriched members of society.
- Aspiring young people who are equipped with the knowledge and skills needed to able to build their futures successfully.
- Safety aware young people who are able to manage risk and apply relevant precautions to keep themselves, and others, safe.

In order to achieve these aims and support PD, the Design department intends to:

- Develop awareness of careers and support Gatsby Benchmark 4.
- Develop a range of PD issues within our daily teaching practice including supporting British Values and Citizenship that is also taught through the school's PSHE program.
- Develop PD skills through our extra-curricular activities and events which link to aspects of PD.
- Develop cultural understanding and experiences through teaching and learning, project topics and opportunities outside of the classroom.
- Develop a safe working environment where all parties are able to risk assess the equipment and activities being undertaken.

Staff list

G Smith – Head of Department

J Speirs – Subject Teacher

A Williams – Department Technician

Key Stage 3 Summary

Years 7, 8 and 9

Key stage 3 is underpinned by a kinaesthetic approach to learning. The pupils will complete a wide range of activities using a variety of different materials including wood, metal, plastic and paper-based materials, building in difficulty as pupils progress through years. The tasks will be centred around a problem-solving activity with pupils creating design solutions to relevant scenarios. A strong emphasis is placed on the environmental impact of designing and manufacture of products, and all learning activities help pupils understand the need for a sustainable future.

Pupils will work in design & technology twice during each year whilst rotating around a carousel system. Each time they will receive a series of pre-planned lessons linked to the relevant programs of study with full national curriculum coverage. Each lesson will provide the pupils with a range of learning activities based in a subject appropriate room. Wherever possible pupils will have access to both CAD and CAM for a thorough learning experience, helping to prepare them for their GCSE options and the modern world of work.

Key stage 4 Summary

The course is split in to two main sections, each carrying a weight of 50% towards a final GCSE grade. The first component is an NEA (Non-examined Assessment) which consists of a design port-folio developed from an externally set task culminating in a practical final outcome. This is followed by a second component, a 2-hour written examination in which pupils are assessed on three areas, Specialist technical principles, core-technical principles and design and making principles.

Year 10

Year 10 largely focusses on the content for the written examination. Pupil's time will be split between theory lessons, CAD lessons and an ongoing design and make activity. The subject content is very broad, covering a variety of theoretical knowledge including, the environment, design evolution, materials, technical principles and processes to name a few. The content allows pupils to study a broad range of materials, including timber, metal, polymers, composites, technical textiles, smart materials, modern materials and papers and boards.

Core knowledge will underpin all learning and, wherever possible, will take place through practical activities to help pupils retain key concepts. Learning by doing and experiencing. A sustained project will be completed throughout year 10, developing both a skills base and a knowledge base. Pupils will begin their NEA from June in year 10 and will continue throughout year 11.

Year 11

Year 11 is predominately focussed on the NEA. This will require the pupils to complete a 20-page design folder and a 3-dimensional prototype solving a problem set by the exam board. The key development areas for this assessment will be:

- Identifying and investigating design possibilities.
- Producing a design brief and specification.
- Generating design ideas.
- Developing design ideas.
- Realising design ideas.
- Analysing & evaluating.

In addition to this, pupils will continue to develop their knowledge for their end of year assessment with regular retrieval activities and practice exam questions.

Quotation:

Learn by doing

LARCK