

Curriculum Implementation

Structure

In Design and Technology, the curriculum is planned and sequenced so that pupils cumulatively build skills and knowledge across all aspects of Design and Technology in Key Stage 3, building on prior learning from Key Stage 2, and specialising when necessary in Key Stage 4 in to a wide range of areas within the subject.

Within the subject in Key Stage 3, all pupils study:

- Food Preparation and Nutrition
- Graphic Design
- Resistant Materials
- Food Preparation and Nutrition
- Product Design
- Textiles Technology
- Electronics
- Engineering

Pupils study the subject in groups of mixed prior attainment, adhering to the Key Stage 3 national curriculum. At the end of Year 9, pupils are able to opt for the following Key Stage 4 subjects:

- GCSE AQA Food Preparation and Nutrition
- GCSE Design and Technology
- NCFE Level 1/2 Engineering
- NCFE Level 1/2 Graphic Design

These subjects are rigorous and provide a wide range of different paths for students to take, in particular these subjects are relevant to major employers in the area, with links to the Lancashire Advanced Manufacturing and Energy Cluster, which is part of the Northern Powerhouse scheme. These subjects link to many job sectors within the local area, such as; Advanced manufacturing, engineering, aviation, energy, and chemical and polymer engineering.

Subject Delivery

Design and Technology has long term plans for every area that is taught within the subject – mapping out delivery from Years 7 through to 11. The long-term plans are broken down into schemes of learning, each underpinned by ‘big questions’. These ‘big questions’ are set per topic in each year. We follow the school policy of ‘quality first teaching’, and all teachers within Design and Technology plan thoroughly, pitch challenge high and scaffold learning.

KS2 and Primary Transition

During Key Stage 2, students should have engaged in a variety of creative and practical activities which introduced them to the iterative design process of designing and making. They should have worked within a range of relevant contexts such as; the home, school, leisure, culture, enterprise, industry and the wider environment.

At Key Stage 2 students should be able to develop design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at particular individuals or groups. They should be able to generate, develop, model and communicate their ideas through discussion, annotated sketched, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.

Students should have prior knowledge of tools and equipment to perform practical tasks, such as cutting, shaping, joining and finishing, using materials and components such as construction materials, textiles and

ingredients taking into account their functional and aesthetic qualities. Students should have learnt how to investigate and analyse a range of existing products, and should be able to evaluate their ideas and products against their own design criteria, considering the views of others to improve their work. They should also be aware of key events and individuals in design and technology which have helped shape the world.

Prior understanding and skills should include how strengthen, stiffen and reinforce more complex structures, how to use mechanical systems in their products (such as gears, pulleys, cams, levers and linkages), how to use electrical systems in their products (such as series circuits, incorporating switches, bulbs, buzzers and motors) and apply their understanding of computing to program, monitor and control their products.

At Priory we actively engage in transition projects with feeder Primary Schools to allow Key Stage 2 pupils to experience the broadest range of skills before attending Secondary School. These transition projects include; Gifted and talented days, day visits to Priory for each feeder school, and engagement with Key Stage 2 teachers to reinforce their knowledge and delivery of the Design and Technology curriculum.

Key Stage 3 Delivery

Each year students will complete three units of work throughout the year, two in Design and Technology and one in Food Preparation and Nutrition. These units can be studied in any order, and are all designed to complement each other and build on previous skills learnt in the year. Every unit of work that students study is designed to complement and deliver the Key Stage 3 National Curriculum for Design and Technology.

In Key Stage 3, students study Design and Technology for one hour per week, with 12 hours in each subject area. Extra hours are dedicated to retrieval practice throughout the year, ensuring that students retain knowledge whilst moving through different projects and topics.

Year	Subject 1 – 12 hours	Subject 2 – 12 hours	Subject 3 – 12 hours
7	Graphic Design	Resistant Materials / Electronics	Food Preparation and Nutrition
8	Product Design	Textiles Technology	Food Preparation and Nutrition
9	Engineering	Graphic Design	Food Preparation and Nutrition

Key Stage 3 Long Term Plan

Key Stage 2	Key Stage 3 Long Term Plan		
	Year 7	Year 8	Year 9
	Graphic Design – Colour theory, pictorial drawing styles, idea generation. BIG question – What is creativity?	Product Design – Computer aided design and manufacture. Exploring different types of timbers. BIG question – How can machines shape the future?	Engineering – Exploring types of engineering and their impact on society. BIG question – What would happen to the world if there were no Engineers?
	Resistant Materials / Electronics – Manufacturing tools and materials. Using LEDs and batteries. BIG question – How are products created?	Textiles Technology – Sustainability, hand and machine sewing skills, types of fabric. BIG question – Is plastic one of the greatest inventions of all time?	Graphic Design – CAD / CAM using Serif and sublimation. BIG question – Does colour matter?

	<p>Food Preparation and Nutrition - Nutrition, choices and personalisation BIG question – What influences our food choices? (See Food Preparation and Nutrition Implementation Document)</p>	<p>Food Preparation and Nutrition - Dairy, proteins and carbohydrates BIG question - Why do we need dairy, protein and carbohydrates? (See Food Preparation and Nutrition Implementation Document)</p>	<p>Food Preparation and Nutrition - Fruits and Vegetables BIG question - Why 5 a Day? (See Food Preparation and Nutrition Implementation Document)</p>
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Key Stage 4 Delivery

In Key Stage 4 students are able to opt for several different courses within the subject. In Design and Technology, we offer three different GCSE and GCSE equivalent courses, which all build on knowledge gained at Key Stage 3. These courses are chosen to offer the broadest range of possibilities for each student's future careers.

- AQA Design and Technology GCSE
- NCFE Level 1/2 Engineering
- NCFE Level 1/2 Graphic Design

Lessons are a combination of theory-based and practical lessons.

Key Stage 4 Long Term Plan

Year 10	Year 11
Design and Technology	
<p>Term 1</p> <ul style="list-style-type: none"> • Introduction to the course, building on basic skills already acquired through Key Stage 3 <p>3.1 Core Technical Principles.</p> <ul style="list-style-type: none"> • New and Emerging Technologies • Energy generation and storage • Developments in New Materials • Systems Approach to Designing • Mechanical Devices • Materials and their Working Properties <p>Term 2</p> <p>3.2 Specialist Technical Principles – Timbers</p> <ul style="list-style-type: none"> • Selection of Materials or Components • Forces and Stresses • Ecological and Social Footprint • Sources and Origins • Using and Working with Materials • Stock Forms, Types and Sizes • Scales of Production • Specialist Techniques and Processes • Surface Treatments and Finishes <p>Term 3</p>	<p>Term 1</p> <p>NEA Task – Released in June, begins September of Year 11. (50% of final grade)</p> <ul style="list-style-type: none"> • Identifying and Investigating Design Possibilities • Producing a Design Brief and Specification • Generating Design Ideas • Developing Design Ideas <p>Revising of topics from Year 10 and exam practice. Application of Units 3.1, 3.2 and 3.3 in NEA</p> <p>Term 2</p> <p>Continuation of NEA Task</p> <ul style="list-style-type: none"> • Generating Design Ideas • Developing Design Ideas • Analysing and Evaluating <p>Revising of topics from Year 10 and exam practice. Application of Units 3.1, 3.2 and 3.3 in NEA</p> <p>Term 3</p> <p>Revising of topics from Year 10 before exam. (50% of final grade)</p> <ul style="list-style-type: none"> • 3.1 Core Technical Principles. • 3.2 Specialist Technical Principles – Timbers

<p>3.3 Designing and Making Principles</p> <ul style="list-style-type: none"> Investigation, Primary and Secondary Data Environmental, Social and Economic Challenge The Work of Others Design Strategies Communication of design ideas Prototype development Selection of Materials and Components Tolerances Material Management Specialist Tools and Equipment <p>Specialist Techniques and Processes</p>	<ul style="list-style-type: none"> 3.3 Designing and Making Principles
<p>Engineering</p>	
<p>Term 1</p> <ul style="list-style-type: none"> Introduction to the course, building on basic skills already acquired through Key Stage 3 <p>Understand Engineering Disciplines</p> <ul style="list-style-type: none"> How different Engineering disciplines are applied to projects and products. Know and understand health and safety legislation that influences Engineering. <p>Understand the properties and characteristics of engineering materials and why specific materials are selected for engineering applications</p> <ul style="list-style-type: none"> Know and understand the properties and characteristics of materials. To explain why materials are selected for Engineering products and projects. <p>Practical Project</p> <ul style="list-style-type: none"> Clock Design – Design and make a clock influenced by Engineering disciplines, applying knowledge of material properties and characteristics to select an appropriate material. <p>Term 2</p> <p>Understand engineering tools, equipment and machines</p> <ul style="list-style-type: none"> Know and understand how tools, equipment and machines are safely and correctly used in the engineering industry for manufacturing. <p>Understand how science and mathematics is applied in engineering</p> <p>Understand how to read engineering drawings</p> <ul style="list-style-type: none"> Read and interpret engineering drawings accurately. 	<p>Term 1</p> <p>Demonstrate production planning techniques</p> <ul style="list-style-type: none"> Plan the manufacturing process of an engineered product, for a manufacturing task. Plan the process, giving consideration to the individual stages of manufacture Include health and safety factors in manufacturing <p>Demonstrate processing skills and techniques applied to materials for a manufacturing task</p> <ul style="list-style-type: none"> demonstrate a variety of processing skills and manufacturing techniques: <ul style="list-style-type: none"> preparing modifying joining finishing techniques applied to materials for a manufacturing task Maintaining safe and correct use of tools, equipment and machines. <p>Term 2</p> <ul style="list-style-type: none"> Synoptic Project – Released in December of Year 11 (60% of final grade) First examination window – February Revising of topics from Year 10 before exam. (40% of final grade) <p>Term 3</p> <ul style="list-style-type: none"> Completion of Synoptic Project – Released in December of Year 11 (60% of final grade) Second examination window – June Revising of topics from Year 10 before exam. (40% of final grade)

<ul style="list-style-type: none"> Understand specific drawing conventions used throughout the engineering industry, and the purpose of using British Standards. <p>Produce hand drawn engineering drawings</p> <ul style="list-style-type: none"> Apply specific drawing conventions and use layouts recognised within the engineering industry following British Standard. <p>Produce Computer Aided Design (CAD) engineering drawings</p> <ul style="list-style-type: none"> Use CAD software to produce engineering drawings. To apply specific drawing conventions and use layouts recognised within the engineering industry following British Standard BS 8888. <p>Term 3 Mock synoptic project</p> <ul style="list-style-type: none"> Based on the previous year's synoptic project, or a sample provided by the exam board. 	
Graphic Design	
<p>Term 1</p> <ul style="list-style-type: none"> Introduction to the course, building on basic skills already acquired through Key Stage 3 <p>Students will:</p> <ul style="list-style-type: none"> Develop an understanding of the components of graphic design. Work with physical and/or digital materials and techniques Use personal experimental work to explore the components of Graphic Design. <p>Unit 1 – Introduction to Graphic Design</p> <p>Understanding the components of Graphic Design</p> <ul style="list-style-type: none"> Students will learn to describe the components of Graphic Design, and utilise them by annotating visual examples and experimenting and combining each of the components as they acquire knowledge. <ul style="list-style-type: none"> Colour Tone Line Composition Typography Imagery Link each of the components through design briefs and challenges, understanding how design decisions affect each other in a final piece through the 	<p>Year 10 Term 3 (continued) Produce their final graphic design idea</p> <p>The learner must demonstrate:</p> <ul style="list-style-type: none"> technical skills effective use of resources <p>The developed final idea will be accurate and relevant in meeting all the requirements of the brief. The learner will show the most effective selection and application of technical skills and effective use of resources in the execution of the final graphic design idea.</p> <p>These will be consistently applied throughout the production of the final design idea.</p> <p>Review how they met the brief</p> <p>The learner must evaluate:</p> <ul style="list-style-type: none"> the final outcome the purpose and impact of the graphic design effective use of resources what went well and not so well <p>Learners can describe the processes used to create their work, the purpose and impact and their effective use of resources.</p> <p>The learners describe how they approached and resolved the challenges presented by the brief. Learners can identify some of what went well/not so well in relation to the design brief, this will be sufficiently detailed.</p>

choice of typography, line, layout, colour etc.

Term 2

Unit 2 - Developing Graphic Design Practice

Students will:

- Explore design disciplines
- Examine the work of recognised designers
- Use their understanding of design components to identify successful design practice.
- Choose one discipline, select some work by a recognised designer in that discipline and create their own piece of graphic design, taking inspiration from their research and using components found in the work of their chosen designer.

Understand the work of recognised graphic designers

The learner must know about:

- examples of design practice in a chosen discipline
- recognised graphic designers in a chosen discipline
- the characteristics of design practice
- How to communicate the main characteristics of design work within their chosen discipline using a range of different sources from different formats to obtain information.
- How to state which sources have the most value and why.

Produce a graphic design inspired by the work of a chosen graphic designer

The learner must demonstrate use of:

- technical skills
- processes
- techniques
- equipment
- material
- composition

Learners will create a piece of graphic design, using all of the relevant graphic design components, in response to the chosen graphic designer's work, demonstrating effective, consistent application of technical skills.

Review their graphic design

The learner must evaluate:

- how their design reflects the work of the graphic designer
- their technical skills
- Their use of graphic design components
- ways of improving

The learner describes opportunities for development or improvement of their graphic design.

Year 11 Term 1

Unit 4 – Graphic Design Portfolio

Learners will explore working in the graphic design industry, by looking at different ways to present work to understand different types of portfolio. They will then design and create their own portfolio and review how the portfolio presents their skills as a graphic designer.

Understand working in the graphic design industry

The learner must know about:

- the range of employment opportunities in graphic design
- entry and progression routes
- ways to present and promote work
- the characteristics of digital and physical portfolios

Learners will describe a range (more than three) of examples of working in graphic industries, different types of presentation methods and promotional formats, and ways to present and promote their work.

There will be an explanation of how examples of working in the graphic design sector and presentation formats are linked.

Produce a graphic design portfolio

The learner must demonstrate:

- breadth of work
- editing and selection of work
- selection of format
- presentation skills
- reasons for choice

Learners will present their completed graphic design portfolio. The portfolio will accurately and consistently contain a breadth of the work which has been selected and edited to present the learner's skills as a graphic designer.

The learner will explain and justify their choices of format. The learner will demonstrate technical skills used to effectively and resourcefully overcome the challenges of editing, compiling AND presenting the work.

Review their skills as a graphic designer

Learners have identified a range of strengths and weaknesses, technical skills, creative responses and presentation skills within the graphic design work and will describe how these affected the design work.

<p>Learners will give detailed conclusions about their own work and they will have evidence of how it is made in response to the chosen graphic designer.</p> <p>Learners will cover the appropriate use of technical skills and appropriate graphic design components and provide justification for their selections which is clearly linked to the chosen graphic designer. Learners will suggest ideas for the effective improvement of future work/their own practice.</p> <p>Year 10 Term 3 Unit 3 - Understand the requirements of a graphic design brief</p> <p>Learners will analyse the requirement of a graphic design brief. They will understand the requirements and develop some possible ideas to meet the brief. The learner will further develop an idea and present their final graphic design.</p> <p>The learner must know how to:</p> <ul style="list-style-type: none"> • respond to a brief • develop ideas <p>Learners will analyse the brief and demonstrate that their understanding is based on an examination of all of its requirements. Their conclusions will be accurate and effectively balance all of the client's requirements. The ideas developed in response to the brief will successfully resolve all of the client's requirements. (see next column)</p>	<p>Learners will recognise the levels of importance when describing the impact of different factors upon their design work.</p> <p>Term 2</p> <ul style="list-style-type: none"> • First examination window – February • Revising of topics from Year 10 before exam. (50% of final grade) • Refining any coursework in light of moderator feedback. <p>Term 3</p> <ul style="list-style-type: none"> • Second examination window – June • Revising of topics from Year 10 before exam. (50% of final grade) • Refining any coursework in light of moderator feedback.
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Teaching Pedagogy

To ensure knowledge is memorised and available for retrieval and application, strategies such as these are used in lessons:

- Low stakes testing of prior learning on entry to the classroom using quick fire questions / answers on whiteboards
- Spelling and definition tests
- Interleaving – revisiting prior knowledge in a timely fashion
- Method of loci
- Repetition of activity
- Creating knowledge organisers

Teachers demonstrate techniques and introduce new materials in small steps whilst questioning pupils to enhance engagement and ensure pupils can demonstrate their understanding. The use of the visualiser to provide models and guide students practice is commonplace.

Learning is scaffolded through activities such as:

- Activating prior knowledge. This strategy reminds of what they have already learned, often through brief reviews. This helps reduce students' anxiety as they move on to new subjects.
- Offering a motivational context to pique student interest or curiosity in the subject at hand
- Breaking a complex task into easier, more "doable" steps to facilitate student achievement

- Showing students an example of the desired outcome before they complete the task
- Modelling the thought process for students through "think aloud" talk
- Offering hints or partial solutions to problems
- Using verbal cues to prompt student answers
- Teaching students chants or mnemonic devices to ease memorisation of key facts or procedures
- Facilitating student engagement and participation
- Using graphic organisers (visual aids) to offer a visual framework for assimilating new information
- Teaching key vocabulary terms before reading
- Guiding the students in making predictions for what they expect will occur in a story, experiment, or other course of action
- Asking questions while reading to encourage deeper investigation of concepts
- Suggesting possible strategies for the students to use during independent practice
- Modelling an activity for the students before they are asked to complete the same or similar activity
- Asking students to contribute their own experiences that relate to the subject at hand

Independence is encouraged and confidence is built in both theory and practical work by

- Having some autonomy over how to demonstrate understanding when working in books e.g. translating a written passage into a diagram
- Using a wider variety of materials, techniques and processes.
- Providing wider reading and promoting wider research around a topic

Work in books must be to 'Priory Standard' to ensure pupils present work legibly so that they can use it to revise. High standards of presentation are also to be encouraged so that pupils demonstrate that which will be asked of them in a future working environment.

Reading is built into lessons, homework and wider reading / research.

Assessment (formative and summative)

Formative - Homework supports and extends that which is taught in class to consolidate and test learning, help pupils retrieve knowledge and practice. Homework can include but is not limited to; completing written tasks in relation to questions posed, watching videos of how products are made or techniques accomplished, taking online quizzes, learning spellings and definitions, designing products, undertaking research, reading around a topic, building schemata.

Low stakes tests, as defined in 'Teaching pedagogy' above, assess the extent to which pupils have embedded understanding and memorised content.

Pupils are provided with a personal learning checklist (PLC) at the beginning of each scheme of learning. It details the knowledge and skills that pupils are expected to assimilate in a unit of work. Formative assessments such as homework pieces, outcomes of practical lessons and ability to answer questions, inform the degree to which the assessment has been met.

Summative - summative assessment at KS3 takes the form of a written, question-based test completed in silence in week 11 of the carousel. In week twelve they revisit their answers and fill in any gaps in their knowledge.

All pupils sit a summative end of year exam in years 7,8 and 9 to assess the degree to which the taught learning has 'stuck'.

At Key stage 4, pupils are tested termly with an end of term test. They sit pre public exams (mocks) in November and March of Yr 11 and then final exams in the summer of year 11.