



love the journey

Curriculum Implementation 2023-24

Secondary

LCA Strand	Technology, Enterprise & Sport
Subject	DT
Key Stage	Key Stage 3 (Chapter 7-9)

<p>What are the key concepts taught?</p>	<p>Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of domestic and local contexts [for example, the home, health, leisure and culture], and industrial contexts [for example, engineering, manufacturing, construction, energy, agriculture When designing and making, pupils should be taught to:</p> <p>Design</p> <ul style="list-style-type: none"> • use research and exploration, such as the study of different cultures, to identify and understand user needs (Bauhaus year nine scheme). • identify and solve their own design problems and understand how to reformulate problems given to them (students identify specific clients in chapter 7 projects and research the wider context in year 8 mechanism project) • develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations (all design projects in each keystone) • use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses (chapter 8 pavillion, architecture project) • develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools. (Use of CAD, 2D design and 3D CAD modelling in product holder, pavillion and phone holder projects) <p>Make</p> <ul style="list-style-type: none"> • select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer
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	<p>aided manufacture (All keystone 3 schemes build on prior knowledge and complexity).</p> <ul style="list-style-type: none"> • select from and use a wider, more complex range of materials and components taking into account their properties. (Year 8 dependent on the size of the cohort across all projects. Level of challenge increased for more able students) <p>Evaluate</p> <ul style="list-style-type: none"> • analyse the work of past and present professionals and others to develop and broaden their understanding (research Zaha Hadid pavilion chapter 8, the Bauhaus chapter 9) • investigate new and emerging technologies (new and emerging technologies in chapter nine) • test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups (Dendrite race for the line project in chapter 7) <p>Technical knowledge</p> <ul style="list-style-type: none"> • and use the properties of materials and the performance of structural elements to achieve functioning solutions (Range of projects across the keystages covering the materials outlined in the DFE Design and technology GCSE subject content document) • understand how more advanced mechanical systems used in their products enable changes in movement and force • understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]. (Mechanisms project and robotics scheme in chapter 8)
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<p>What is the sequencing of units?</p>	<p>Chapter 7</p> <p>Product holder - Pupils will develop skills using a range of different resistant materials. They will develop their practical ability using a range of manufacturing methods including hand tools, power tools and workshop machinery.</p> <p>Dendrite race for the line - Designing, sketching, modelling and evaluation. Additional links to Maths and Science through STEM skills. Modelling using basic modelling materials, CAD/CAM and styrofoam using hand tools. Team work.</p> <p>Sculpture Stand - Pupils will reinforce the practical skills they have developed by modifying a range of different resistant materials. They will develop their practical ability using a range of manufacturing methods including hand tools, power tools and workshop machinery. Focussed practical tasks to develop products with a high-quality finish.</p>
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Chapter 8

Architecture, design a pavilion - Designing, sketching, modelling and evaluation. Additional links to Maths and Science through use of nets when modelling. Pupils will develop their knowledge and understanding of Architecture with a focus on a range of modelling materials and techniques.

Passive amplifier - Students will design and manufacture a passive speaker . The design of the passive speaker should reflect a design era or movement. The product is designed to meet the requirements of a target market is teenagers aged 13-16 years old, who enjoy listening to music. The passive speaker should be suitable for use both at home and while on the move.

Pupils will manufacture the docking station using hand tools and CAD/CAM equipment and a range of new hand-tools, machines and processes. There will be no use of CAD/CAM during manufacture, however students may design and print templates using ICT tools if necessary, whilst developing general workshop skill and awareness.

Robotics and Design theory - introduction to materials and processes. A series of theory lessons to develop pupils knowledge and understanding of DT theory.

Chapter 9

Phone holder - Pupils will develop skills working with CAD/CAM equipment, hand tools, power tools and workshop machinery. Pupils will complete focussed practical tasks to develop a high quality practical outcome.

Bauhaus project - Pupils will develop their modelling ability through sketch modelling using a range of modelling materials. Pupils will develop their communication and presentation skills in a Dragons den style pitch at the end of the project.

GCSE preparation and Design theory - introduction to materials and processes. A series of theory lessons to develop pupils knowledge and understanding of DT theory.

How do we encourage pupils to see the links between different units and concepts?

The links through the different schemes continue to build on:

- developing the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world.
- building and applying a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users.

A focus on careers in design across the Key stages allows pupils to make the links to studies at degree level and beyond.

<p>What are the planned opportunities for adaptive teaching, including for SEND, the more and able and disadvantaged pupils?</p>	<p>Differentiation – Developed through collaborative planning to develop personalised learning for students with SEN in their understanding of subject specific terminology. Issues with mobility and engagement in practical activities are skilfully dealt with through detailed planning by experienced faculty staff. Scaffolded work books that support learners with a range of needs.</p> <p>Support materials are developed to support students across the key stages with their knowledge and understanding of numeracy and literacy in Design and Technology lessons. Adaptive methods of teaching and learning employed during all schemes at KS3 with the use of subject specific support sheets such as ACCESSFM to support learners.</p> <p>Pupil voice used to measure student engagement and attitude to the schemes and lessons. Faculty staff monitor behaviour and attitudes to learning. Dept reports used to monitor behaviour when appropriate. Extra curricular clubs and competitions (success in Unilever competition). Students awarded certificates and trophies in recognition of their achievements.</p> <p>DSEF used annually to analyse the curriculum and the impact on attainment in the dept. National data and school data used to identify and implement areas for improvement and establish changes required to improve teaching and learning.</p> <p>Schemes are renewed annually to assess the impact on pupil progress. Regular consultation with the department to establish the most appropriate ways to improve the quality of schemes and most appropriate way to deliver lessons that stretch and challenge the more able. As a result of work scrutiny, more challenging activities and differentiated work in Design and Technology lessons to challenge higher ability students, with a focus on Maths and Science content in design lessons. Challenging the curriculum intent, to ensure all areas are offering an engaging curriculum.</p>
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<p>What are the planned opportunities for retrieval and reflection by pupils?</p>	<p>Activities at the start of each lesson provide opportunity for pupils to retrieve knowledge previously taught. Keywords - Subject/unit specific terminology is listed in the work books for each unit and are re-visited as pupils progress through each unit.</p> <p>Refinement and reflection throughout various assessment strategies across the units.</p>
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<p>What are the opportunities for feed forward by the teacher post assessment outcomes?</p>	<p>Over the course of a term the following sections of the Design Process will be considered substantial assessment pieces: Specification, Design ideas –this is an iterative process that will be revisited by the teachers and students during the term. Practical assessments can vary depending on the specialist area being studied. Specialist areas of Design Technology will assess focussed</p>
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	<p>practical tasks, or specific skills leading to a product manufactured over the course of a term. All specialist areas will assess practical work on a weekly basis to inform planning with some individual assessment and feedback provided for individuals in the cohort in the teaching group. Book scrutiny of KS3 work to assess the level of challenge in the schemes of work.</p>
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<p>What are the planned opportunities for developing Reading?</p>	<p>Keywords, definitions and new subject specific terms are introduced throughout each unit.</p> <p>Analysis and evaluation of designers' work is evident across the key stages with additional resources provided to read concise passages related to designers and the properties of materials when preparing pupils for progress point assessments each term.</p>
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<p>What are the planned opportunities for developing literacy, numeracy, oracy and SMSC?</p>	<p>The identification of the gaps in the students STEM knowledge was the most important factor in recognising ways to develop the school curriculum. Through managing the implementation of STEM resources and teaching across the curriculum this will promote change. Planning of physical resources and material preparation for the practical elements of Design. Preparation of resources for the Race for the Line competition for the entire year seven cohort including sourcing suitable materials to allow the project to take place Liaising with other curriculum areas is cross curricular projects to help develop literacy and oracy.</p> <p>Arithmetic and numerical computation - Recognise and use expressions in decimal and standard form Calculation of quantities of materials, costs and sizes. Use ratios, fractions and percentages scaling drawings, analysing responses to user questionnaires. Calculate surface area and volume determining quantities of materials. Students will use scale, measurement as part of the unit. Links to geometry through CAD/CAM. Literacy and numeracy mats used across the keystages to support learners.</p> <p>Science: Students will investigate Environmental issues relating to the manufacture of their product. Properties of materials</p> <p>SMSC - Resources provided to discuss social, moral and ethical issues in design and technology. Carbon emissions and 6r's delivered to year nine to develop an awareness of the impact of sustainable design decisions.</p>
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