



## **Design Technology (DT) INTENT:**

### **Equipping young people for a technological world**

The DT curriculum provides a rich, challenging, enjoyable and enhancing programme of learning. It is a contemporary and varied curriculum which enables students to be successful by giving opportunities for all students to achieve outstanding progress.

Through this curriculum, students will be inspired by engineers, designers and architects to enable them to create a range of structures, mechanisms, electrical systems and products with a real life purpose. We will prepare students to take part in the development of tomorrow's rapidly changing world through the embedded main concepts of Design, Make and Evaluation, which simulates the industry standard of the product life cycle. Creative thinking encourages students to make positive changes to their quality of life and the life of others. The subject will stimulate them to become an autonomous and creative problem-solver, both as an individual and as part of a team. It enables students to identify needs and opportunities and to respond by developing ideas and making products through a variety of techniques, materials and processes. Through this varied and inclusive curriculum, students will gain the knowledge and understanding that they require in preparation for life as citizens of the 21<sup>st</sup> century.

In year 7 students will be introduced to the iterative design process and will work through the process using the three key concepts of Design, Make and Evaluate with the necessary knowledge interleaved in each concept. The first element of their DT journey will involve an introduction to Health and Safety (links to the Law and Mutual Respect of Fundamental British Values) to ensure a safe and independent experience in the different workshop areas. During the year, they will learn to understand the properties and origins of different materials such as timbers and polymers where they will learn to classify them and explain where they come from and when they are best utilised. They will be introduced to a variety of drawing methods and techniques including Computer Aided Design software. These new design ideas will then be manufactured using newly developed machine and hand tool skills and knowledge. The frame project in year 7 allows students to demonstrate their understanding of different types of wood joints available and where each type of joint is most suitable. They will then evaluate their work by looking at ways they could improve their skills and how machinery and or CAD/CAM helped them.

The journey continues in year 8 where students' knowledge and understanding of the key concepts with be deepened and strengthened will work in more depth on projects, honing their practical skills, improving their resilience and problem solving whilst developing more independence in the workshop. During this year students will learn about more materials and further develop the three concepts, for example students will learn about orthographic projection as part of 'Design', they will know basic electronic circuits and components and learn how to solder as part of 'Make'. They will 'Evaluate' their work and reflect on how to fix problems. They will build upon Year 7's knowledge and understanding about timber and incorporate a mechanism such as a cam using appropriate materials and joining methods.

*Opening minds, opening doors.*

**Honesty • Excellence • Aspiration**



Students will complete their key stage three DT curriculum journey in Year 9 continuing to follow the iterative design through the three concepts. At this stage, students will be encouraged to work more independently to problem solve and design solutions. Within 'Design' they will develop an idea to become more sustainable, specify what quality control checks need to be carried out and when to ensure a successful outcome and develop technical drawing from which an outcome can be produced by others. Within 'Make' they will enhance and adapt materials to solve construction issues, use quality control checks to ensure a successful outcome and adapt manufacturing techniques to overcome problems and create high quality and marketable outcomes that fulfil the needs of the user. Finally within 'Evaluate' they will state how research has helped with designing, planning and making, use user feedback to develop and improve the product, develop several tests to check the performance of the product and also use evaluation to make improvements to the product as it is manufactured.

The subject includes the practical application of mathematical and scientific concepts combined with practical skills, and an understanding of aesthetic, social and environmental issues, linked together with industrial practices. These issues are debated throughout the curriculum to support Fundamental British Values within our subject. Students will reflect on and evaluate present and past design and technology, its uses and its impacts. Design Technology at Royton and Crompton will enable all students to become a discriminating and informed consumer and potential innovator.

Students then have the option to continue their Design and Technology studies, at key stage four and specialise in Engineering. Our current course is the BTEC Tech Award in Engineering, which comprises of three components: two that are internally assessed and one that is externally assessed.

Within Component 1 aim for students will get to know industry sectors and how they work together to solve real-life problems. They will do this by exploring the different engineering sectors, products and interconnections within the industry, investigating what various engineering organisations and functions do, in addition to potential career paths that are available in the future. They will also discover the engineering design and manufacture processes that builds upon the iterative design process covered through all years of key stage three.

As part of Component 2 students will then investigate an engineering product with the aim to explore the types of materials, components and processes used to make products, then reproduce and test that product. They will do this by learning why engineers choose certain materials and components to make products, investigating how products are made, identifying best practice when it comes to safety and risk management, further developing research, observation, recording, interpretation and measuring skills and then put what they've learned into practice by safely planning, reproducing and testing an engineered product. This again builds on knowledge and understanding of materials and processes in particular different classifications of metals that students master in year 9.

Finally, Component 3 aims for students to provide solutions to real-life problems by creating their own. To do this students must build on what they've learned in Components 1 and 2, identify the problem given to them, develop a hypothesis and investigate possible solutions, create a prototype that meets the brief and then record, analyse and evaluate data and outcomes, and reflect on how the product meets the brief. This particular component has strong links with the Science curriculum taught at key stage 4.

The course was selected as it gives students the opportunity to apply academic knowledge to everyday and work contexts, it gives them a great starting point for academic or vocational study post-16, as well as preparing them for future employment within one of the many different engineering sectors.

*Opening minds, opening doors.*

Honesty • Excellence • Aspiration