



SHIRLEY HIGH SCHOOL PERFORMING ARTS COLLEGE

Our Vision:

To develop aspirational learners who strive for excellence academically, creatively and culturally, benefitting from a wide range of opportunities led by inspirational educators.

DESIGN AND TECHNOLOGY

Intent:

The curriculum in Design and Technology at Shirley High School should enable students to build the skills and knowledge to become confident and creative to design and to be safe and independent in the application of tools equipment to realise and make their designs.

This curriculum should inspire and challenge students to pursue their interests and to always aspire to greater challenges in design in technology. Like the Japanese 'Kiazen' approach to technology they should see positive 'continuous improvement' in their understanding and in their ability as they progress through the Design & Technology curriculum, underpinned by the Shirley High School Learning Journey and the Shirley High School Learner.

This curriculum should allow students to see the wider context of Design and Technology outside school and to open doors to potential career paths and to continue learning in further or higher education.

The design and technology curriculum should be fun, enjoyable and demanding but achievable for all students at all levels.

Implementation:

From the moment they enter Design and Technology in Year 7 students should learn the rules and procedures in Design and Technology to ensure the health and safety for themselves and others. This knowledge and approach must underpin every action they take in the design and technology environment and it must be refreshed and renewed in every term of every year and whenever materials, processes, tools or equipment are introduced.

In the pewter badge project Year 7 students will be introduced to the design process, metals, metal processes, wood, plastic and the basic hand tools to cut, form and finish metal wood and plastic.

They will move on to the door entry system project where they will learn of basic systems with inputs, outputs and processes. They will learn how to construct and test basic electronic circuits and they will learn more about plastics and plastic processes.

In Year 8 students will look deeper into the design and make process. They will learn design communication skills sketching, technical drawing techniques and in the use of 2D CAD systems. They will learn about forces and structures then apply this in a group work project to design, make and test bridge structures. In the final Year 8 project students will research into wood types and their applications. They will then apply some of this knowledge to the design and construction of a picture frame project.

In Year 9 students will develop their design and groupwork skills in a balloon project, where they will learn to draw accurately to scale using drawing instruments and learn to apply the scale to make a full size balloon. This project involves cross curricular activities in maths and science (geometry calculations, heat, gas and pressure.)

In the final KS3 project of Year 9 students will be introduced to the design process, including the design brief, the design specification, analysis of research and research into plastics and sustainability. They will develop



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their knowledge of systems, integrated circuits and PCB manufacture. They will apply this knowledge to the design and make of an electronic system and case.

At each stage of each project in KS3 students will be assessed on their understanding and skill. In both formative and summative assessments feedback will be detailed positive, encouraging and clearly show ways to improve. These assessments will also be used to develop and dynamically develop the programme to improve understanding, differentiation and student enjoyment.

In Year 10 students will be introduced to the GCSE content and structure. They will work through the stages of a mini GCSE project, based on a previous NEA 'context'. This project will be more focussed and condensed than the full GCSE project. Students will look at project options meeting the context and they will undertake guided relevant research. This will allow them to write a Design Brief and Specification. They will be encouraged to show creativity in design ideas and they will learn modelling skills in card and CAD to develop their final designs. They will learn to evaluate designs, plan for manufacture and apply workshop skills to complete its manufacture. This mini project will be assessed following the exam board criteria but feedback will clearly show how students could improve their work to achieve higher grades.

Alongside this project, students will learn and be assessed in relevant knowledge topics. For example materials and working properties, CAD modelling, scale and tolerances will be taught during the design stage; Planning, scales of production and production systems at the planning stage; Processes, surface treatment, CAM and QC will be taught during the manufacture stage.

Following this mini GCSE project, at the start of the summer term, Year 10 students will look at small more advanced topics such as programmable microcontrollers, mechanisms and energy. These topics will be supported with small systems approach to design.

Later in summer term of Year 10 the GCSE NEA will be released. Students will then choose their GCSE project context and start to research into project design possibilities, write their design brief and specification and start to create design ideas. This will be supported in lessons looking at design techniques and research learning of designers, ergonomics, aesthetics, biomimicry etc.

Feedback to design folder work will be to GCSE criteria but students will have the opportunity to improve and resubmit. An understanding of knowledge will be assessed formatively in class exercises and summatively in exam practice questions.

In Year 11, students will continue to work on their NEA project : Developing their designs by modelling and CAD; then they will moving on to Planning, Manufacture, Assembly & Finishing. Evaluation against the design specification will take place at the design stage and at the end of manufacture. GCSE feedback will be given for each criteria and students will have the opportunity and guidance to make improvements. This NEA project will be completed and formally assessed before Easter.

Subject knowledge will be assessed in formative class exercises supporting the project and in summative PPE exams. Like Year 10 this content will follow the NEA project timetable but subjects will be assessed to a greater depth and some new topics will be introduced. Following the submission of the NEA Year 11 students will prepare for exams and practice exam questions and exam techniques.

Impact:

The impact of this programme is to give KS3 students a broad range of design and make skills that they can apply safely and confidently at school or at home. They will have and encountered aspects of applied physics, applied maths applied materials science and graphical communication. Feedback from assessments



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will give students awareness, confidence and clearly show them ways to improve They will be encouraged to be creative and to aspire to progress further particularly in the fields of Design and Technology.

In KS4 students will become more confident more skilled and more knowledgeable in the application of Design and Technology. They will be fully aware of the GCSE format and assessment and they will know how far they have progressed and how they can improve. This will be known through formative and summative assessment of understanding and through detailed feedback at each stage of the NEA project.

They will have skills, knowledge and confidence to function safely and effectively in a design and technology environment. They will be fully aware of opportunities to apply these skills and knowledge outside school and progress from Design and Technology into careers and into further or higher education.

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We want all at SHS to believe in and maintain the values of our school:

