

DESIGN & TECHNOLOGY

Curriculum intent and rationale

Design and technology involves developing a knowledge of the design and make process, enabling the students to gain an understanding of natural and manufactured timbers; plastics, metals, papers and boards, textiles, hospitality and catering, and electronics - through a range of planned projects. Students are able to transfer knowledge into a wide range of skills when designing and making products.

Design and technology as a subject has evolved throughout the years; it now involves students using knowledge of all areas of design and technology to develop solutions to real problems, including the social, moral and environmental aspects of design. The activities undertaken at Heartlands Academy enable students to consider the needs of individuals and society within the community. Students embark on real world issues and use knowledge they gain in all material areas to develop a solution.

In Year 7, students are asked to evaluate the use of the academy's canteen; they identify an issue of their choice, and through rotations they develop a range of solutions, from redesigning the menus, to developing new lighting or table design. Thus, giving them knowledge of the design process. This includes a substantive knowledge of a design brief, specification, initial design ideas, final design, and a

working prototype. They gain disciplinary knowledge, through developing a critical evaluation.

In each rotation, students use their acquired knowledge and understanding to develop a personal design brief, a design specification, design ideas, and manufacturing. They then evaluate their work and reflect upon their progress, to see if they have solved their initial design problem.

The academy's canteen is used in Year 7, as it's an area used everyday by the students. It allows the students to work on an area they have first-hand knowledge of how it's used, and are able to make suggestions of how it could be improved. It also allows us, as teachers, to use visual teaching, as regular visits can be made and staff can be interviewed. Students are able to evaluate and analyse their work by testing it in the academy canteen and receive meaningful feedback from those who use it.

Throughout Year 8, students focus on how design and technology can impact the environment. As designers, they have a responsibility to develop new ways to enrich the society that they live in, whilst also taking into consideration how they can reduce our impact on the environment. This could be from reducing the amount of food waste, to reducing the amount of material used to create a new product.

In Year 9, students complete their Key Stage 3 curriculum journey, using existing knowledge (gained in Years 7 and 8), to solve a problem based on an external company. An external company is used in Year 9 to give students a wider knowledge of how design works outside of the academy. This gives students the opportunities to work with professionals and gain an understanding of how businesses operate. By liaising with external businesses, students gain confidence in communication skills, which helps to support the students across all subject areas, when arranging work experience, as well as when applying for further education.

Students make links to all areas of design and technology to solve a given problem, in all of the rotations. They gain knowledge of how to interact with others in a professional manner. They build such knowledge by working with a client and working within the client's time frames and commitments. This in turn, enhances their social skills through interaction to ensure a mutually successful outcome.

Throughout Years 10 and 11, students are set an external design problem. The exam board allows students to select one of three problems. Using the knowledge of design and technology gained in the previous three years and the world we live in to create a solution. The process takes the form of analysing, describing, and evaluating. Students use their knowledge to collate data, which supports them in solving the selected problem.

Students have the advantage of being able to specialise in one material area. This allows them the opportunity to gain an in-depth and more informed knowledge and understanding of their

chosen material area. The choice of material areas gives students the freedom to become specialist creative designers. This could include designing and making a garment from recycled material to constructing a space saving item of furniture. Students work independently to complete their controlled assessment, which incorporates the whole design process taught in Key Stage 3.

Throughout all areas of design and technology, students develop knowledge of practical processes, they are then given the time to develop their knowledge into practical skills, allowing them to become resilient and independent learners. These skills are recalled upon throughout all rotations of design and technology, building on complexity throughout the academic years.

The curriculum at Heartlands Academy is designed to build in complexity throughout the years, to allow all learners access the curriculum and to challenge them in every year. Beginning in Year 7, students are given an understanding of the design process. This is developed upon in Year 8, by restricting to recycled or reused materials. This ensures students are gaining a greater knowledge of materials and deeper thinking about the impact their chosen materials have on the environment. Their knowledge of the design process and materials is developed again in Year 9, when students contact and work alongside companies, giving them real world experience of design and technology.

Our curriculum ensures that students who choose to study design and technology in Key Stage 4, start with a depth of substantive and disciplinary knowledge about design and technology. They have the base knowledge to be able

to think creatively, to solve the problems set by the exam board when partaking in the Design and Technology GCSE course.

For students who decide not to continue with design and technology in Key Stage 4, this curriculum gives them the knowledge and a way of thinking to realise that problems can be creatively solved. The decisions we make can and do have an impact on the world. Students understand that everything has been through a design process and a great deal of thought has gone into the design, teaching them to respect what is around us. It also gives them a range of practical knowledge, which can be used throughout other subjects and their wider futures.

The activities undertaken at Heartlands Academy have been designed to reflect upon the student's local environment and support them in the wider world. Teaching not only knowledge of how materials are used, but also their wider impact on the environment. We encourage students to reference the six R's (reduce, recycle, refuse, rethink, repair, and reuse) of sustainability throughout their projects. Students are given knowledge from all academic years, which they are able to recall upon to develop their skills in the design and making process.

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, students design and make products which solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw upon disciplines such as mathematics, science, engineering, computing and art.

Students learn how to take risks and to be innovative in using their acquired skills and knowledge. Through the evaluation of past and present design, students develop a critical understanding of how designs can have an impact on daily life and the wider world.

As part of the process, time is built in to reflect, evaluate, and to improve on prototypes, using design criteria to support this process. Opportunities are provided for children to evaluate key events and individuals who have helped shape the world, showing the real impact of design and technology on the wider environment and helping to inspire them to become the next generation of innovators.

At Heartlands Academy, we seek to ensure that design and technology is loved by teachers and students across the academy, therefore encouraging them to continue building on this wealth of skills and understanding, now and in the future.