Design Technology KS4 –Statement of Intent

"Design is not just what it looks like and feels like. Design is how it works." - Jonathan Ive

At All Saints Academy the Design and Technology curriculum is designed alongside the Academy vision of *'Living well together with dignity, faith and hope*.' We want our learners to explore the disciplines of design and technology through bespoke and individualised curriculums tailored for each students interests and career aspirations. The focus on sustainable design and environmentalism helps students to explore ways to improve their world and help us all live well together.

We use the AQA GCSE Design and Technology course as it enables learners to use creativity and imagination to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. The course covers a range of materials, processes, and techniques, such as papers and boards, timber, metals, polymers, textiles, electronic and mechanical systems, and new and emerging technologies. This allows us to adapt to students interests and needs by selecting material groups and processes which support and foster students understanding alongside their career aspirations.

The course also develops learners' knowledge, understanding, and skills of design principles and practices, such as design thinking, iterative design, user-centred design, and sustainability. The course prepares learners for further study and careers in the creative, engineering, and manufacturing industries, as well as enhancing their cultural and aesthetic awareness. We use support materials including writing frames, materials analysis, and peer support activities to ensure students develop the knowledge and tactile skills they need.

We will ensure all our learners have access to the materials required for production, and our pupil premium grant will be used to provide these students with access to a range of materials and resources.

SEND students have further differentiation of tasks, resources, and outcomes according to their individual needs and abilities, and offering alternative or modified materials and methods if needed. Themed workbooks and support materials are provided through targeted assessments which identify areas of strength and weakness which students are supported to develop.

Students are motivated to enjoy and value design and technology, and to recognise their achievements and progress. We encourage peer collaboration and sharing of ideas and feedback and creating an inclusive and supportive learning environment all students, including send students, have access to multi-sensory approaches, including ICT, to enhance their learning experience and engagement.

All staff communicate clearly and effectively with the students, using key words, visual aids, and simple instructions. Providing feedback and assessment for learning and helping all students to set and achieve their learning goals.

Substantive Knowledge

In Year 10 and 11, we build the substantive knowledge of our students through encouraging them to become enquiring, confident, and enthusiastic learners. Through a range of mini projects students develop their iterative design skills and work to practice the skills needed to develop their NEA submission through two supported projects based on previous NEA themes.

Knowledge developed at keystage 3 is crucial to the work completed in year 10. Students use their knowledge of design principles, graphics and making processes to respond to the AQA design and technology requirements. During terms 1 of year 10 students learn about the properties, sources, origins, forms, and applications of different materials, such as papers and boards, timber, metals, polymers, textiles, electronic and mechanical systems, and new and emerging technologies.

During term 2 students learn about the design process and the methods and techniques of designing and making products, such as design thinking, iterative design, user-centred design, sustainability, prototyping, testing, and evaluation.

Throughout year 10 students work across all projects to learn about the context and purpose of design and the factors that influence design decisions and outcomes, such as stakeholder requirements, usability, inclusivity, ergonomics, aesthetics, branding, and fashion.

In year 11 students are focused on the NEA task for terms 1 and 2 where all the knowledge gained is used to work on independent solutions to AQA set problems.

Looking at existing products and practice and exploring and critiquing the work and influence of designers students learn to apply mathematical and scientific knowledge and skills to solve design problems and to enhance the functionality and performance of products which currently exist or are proposed.

Key to ensuring the quality of outcomes students learn how to use digital design tools and ICT to support and enhance the design and making process. At All Saints Academy students are able to access CAD using fusion 360 and tinkercad, CNC through the use of laser cutting, and 3D printing.

Disciplinary Knowledge

By the end of the course, students are expected to have developed a broad and coherent disciplinary knowledge in design and technology, and to be able to apply it to a variety of contexts and challenges.

Throughout year 10 understanding of the principles, concepts, and methods that underpin the creation and evaluation of products is developed on from keystage 3. Students learn how to use the elements of design, such as function, aesthetics, ergonomics, and sustainability, to communicate ideas and solve problems effectively through guided challenges and their NEA in June of year 10 through to May in year 11.

Throughout the course the focus is on supporting students to analyse and critique products, using appropriate terminology and criteria, and how to appreciate the historical, cultural, and social contexts of design and technology.

In year 11 the GCSE AQA design technology course, disciplinary knowledge development is focused on completing a non-exam assessment (NEA) project, which accounts for 50% of the final grade. The NEA project requires students to identify and investigate a design problem, generate, and develop a range of possible solutions, prototype and test their chosen solution, and evaluate their design process and outcome. The NEA project allows students to demonstrate their creativity, innovation, and technical skills, as well as their knowledge and understanding of design principles and practices.

From May when the NEA is submitted students are supported in preparing for a written exam, which accounts for the other 50% of the final grade. The written exam consists of three sections: core technical principles, specialist technical principles, and designing and making principles. The core technical principles cover the general knowledge and understanding of design and technology, such as new and emerging technologies, energy generation and storage, developments in new materials, systems approach to designing, mechanical devices, materials and their working properties, and informing design decisions. The specialist technical principles cover the specific knowledge and understanding of one material category, such as papers and boards, timber, metals, polymers, textiles, electronic and mechanical systems, or new and emerging technologies. The designing and making principles cover the application of knowledge and understanding to the design and making process, such as design thinking, iterative design, user-centred design, sustainability, prototyping, testing, and evaluation. The written exam allows students to demonstrate their theoretical and practical knowledge and understanding of design and technology, as well as their mathematical and scientific skills.

By the end of the course, students are supported in developing a broad and coherent knowledge in design and technology, and to be able to apply it to a variety of contexts and challenges, staff support all learners to engage with these skills in a range of guided and independent activities.