Design and Technology Phase One Curriculum 2023-24

Curriculum Intent

At TASE, our Key Stage 3 Design and Technology curriculum is designed with the intent of nurturing creative problem solvers, innovators, and critical thinkers. Our curriculum aims to provide students with a solid foundation in design principles, technical skills, and an understanding of the impact of technology on society. We strive to develop students' abilities to design and make products that are functional, aesthetically pleasing, and sustainable.

Our intent is to inspire a love for design and technology by engaging students in meaningful and practical projects that connect with their interests and the world around them. Through hands-on experiences, we aim to foster a deep understanding of the design process, from initial concept development to the production of high-quality outcomes. We encourage students to think critically, evaluate their work, and seek innovative solutions to real-world problems.

The "Golden Threads" in Key Stage 3 (KS3) Design and Technology (D&T) refer to the essential themes and principles that run throughout the curriculum. They provide a consistent framework for teaching and learning in this subject:

- **Design Thinking:** this thread emphasises the design process. It encourages students to identify and understand problems, generate creative ideas, develop plans, make prototypes, and then evaluate and improve their designs. It teaches them how to think critically and creatively.
- **Practical Skills:** developing practical skills is fundamental in D&T. This includes learning how to use tools, materials, and machines safely and effectively. Students learn skills such as woodworking, sewing, using CAD (Computer-Aided Design) software, and more, depending on the specific focus of the course.
- **Creativity and Innovation:** encouraging creativity is a key thread in D&T. Students are encouraged to come up with original and innovative ideas for their projects. They learn to think "outside the box" and find unique solutions to design challenges.
- **Understanding Materials:** students learn about different materials and their properties. They understand how to select the right materials for a given project based on factors like strength, durability, cost, and environmental impact.
- **Environmental Sustainability:** an important aspect of modern D&T is considering the environmental impact of products and designs. Students learn about sustainability, recycling, and how to make choices that reduce harm to the environment.
- **Problem Solving:** D&T teaches problem-solving skills. Students encounter real-world problems and learn how to analyse them, break them down into manageable parts, and find practical solutions. This is a valuable skill for life.
- **Communication:** effective communication is vital in D&T. Students learn to present their ideas clearly through sketches, technical drawings, written reports, and presentations. They also develop teamwork skills, as many projects involve collaboration.
- **Iterative Design:** this thread emphasises that design is an iterative process. Students learn that it is okay to make mistakes and that these can lead to better solutions. They continually refine and improve their designs based on testing and feedback.
- **Health and Safety:** safety is a top priority in D&T. Students learn to work safely with tools and equipment and understand the importance of following safety procedures.
- **SMSC Considerations:** Some D&T projects touch on the cultural and social aspects of design. This can involve learning about the impact of technology on society, considering the needs of diverse users, and understanding the cultural context of design choices.

These "Golden Threads" are interwoven throughout the KS3 D&T curriculum to ensure that students not only gain practical skills but also develop critical thinking, creativity, and problem-solving abilities that can be applied to a wide range of challenges in their academic and future professional lives.

Overview

Year 7

Project 1	Project 2	Project 3
This project introduces students to the D&T makerspace environment. They are introduced to hazard awareness and hazard prevention to ensure that they can work safely and confidently within the makerspace. The students are then introduced to a range of hand tools and machinery (band facer and pillar drill) to provide them with the basic skills needed to measure and mark out materials (timbers) and cut and shape materials (timbers). Part of this process involves students demonstrating competency in use of the equipment before they work more independently on the manufacture of a mobile phone stand. Students are also introduced to the timbers material group; looking at sourcing, processing, common types, advantages and disadvantages. This is to enable them to make informed decisions about materials choices in their projects.	This project introduces students to Design Briefs and a Design Specifications, design sketching techniques and oblique 3D drawing, industrial manufacturing methods (casting), CAD and CAM, metal working hand tools. Following on from project 1, students are now able to work safely in a Makerspace environment – they can identify hazards and how to prevent them. They also now understand some key prototype manufacturing processes and tools, along with how to measure and mark out materials with precision and accuracy. Now that students are able to operate safely within the makerspace and have an understanding of some of the common tools, they are able to progress to looking at the design process and start to develop their own ideas in response to given design briefs, they should also progress to establishing design specification criteria for their prototypes (this comes within the bag tag element of project 2). This project will also broaden their understanding of materials (metals) building upon the knowledge required for them to eventually select the most appropriate materials for the products that they design and make.	This project introduces students to modelling techniques in card and the iterative development process of designing, modelling, evaluating, and refining their ideas. This project allows the students to take their knowledge and understanding of the iterative design process and apply this in the development of a prototype that solves a problem that they have identified. They will utilise a user-centred approach to design, model, evaluate and refine their ideas, with a view to producing a unique prototype solution.

Year 8

Unit 1	Unit 2	Unit 3
This project introduces students to the D&T makerspace environment. They are introduced to hazard awareness and hazard prevention to ensure that they can work safely and confidently within the makerspace. The students are then introduced to a range of hand tools and machinery (band facer and pillar drill) to provide them with the basic skills needed to measure and mark out materials (timbers) and cut and shape materials (timbers). Part of this process involves students demonstrating competency in use of the equipment before they work more independently on the manufacture of	This project introduces students to Design Briefs and a Design Specifications, design sketching techniques and oblique 3D drawing, industrial manufacturing methods (casting), CAD and CAM, metal working hand tools. Following on from project 1, students are now able to work safely in a Makerspace environment – they can identify hazards and how to prevent them. They also now understand some key prototype manufacturing processes and tools, along with how to measure and mark out materials with precision and accuracy.	This project introduces students to modelling techniques in card and the iterative development process of designing, modelling, evaluating, and refining their ideas. This project allows the students to take their knowledge and understanding of the iterative design process and apply this in the development of a prototype that solves a problem that they have identified. They will utilise a user-centred approach to design, model, evaluate and refine their ideas, with a view to producing a unique prototype solution.

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Year 9

Unit 1	Unit 2	Unit 3
This project introduces students to the D&T makerspace environment. They are introduced to hazard awareness and hazard prevention to ensure that they can work safely and confidently within the makerspace. The students are then introduced to a range of hand tools and machinery (band facer and pillar drill) to provide them with the basic skills needed to measure and mark out materials (timbers) and cut and shape materials (timbers). Part of this process involves students demonstrating competency in use of the equipment before they work more independently on the manufacture of a mobile phone stand. Students are also introduced to the timbers material group; looking at sourcing, processing, common types, advantages and disadvantages. This is to enable them to make informed decisions about materials choices in their projects.	This project introduces students to Design Briefs and a Design Specifications, design sketching techniques and oblique 3D drawing, industrial manufacturing methods (casting), CAD and CAM, metal working hand tools. Following on from project 1, students are now able to work safely in a Makerspace environment – they can identify hazards and how to prevent them. They also now understand some key prototype manufacturing processes and tools, along with how to measure and mark out materials with precision and accuracy. Now that students are able to operate safely within the makerspace and have an understanding of some of the common tools, they are able to progress to looking at the design process and start to develop their own ideas in response to given design briefs, they should also progress to establishing design specification criteria for their prototypes (this comes within the bag tag element of project 2). This project will also broaden their understanding of materials (metals) building upon the knowledge required for them to eventually select the most appropriate materials for the products that they design and make.	This project introduces students to modelling techniques in card and the iterative development process of designing, modelling, evaluating, and refining their ideas. This project allows the students to take their knowledge and understanding of the iterative design process and apply this in the development of a prototype that solves a problem that they have identified. They will utilise a user-centred approach to design, model, evaluate and refine their ideas, with a view to producing a unique prototype solution.

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