

# Design and Technology Phase One Curriculum



## 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

| Mobile Phone Stand                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Pewter Keyring                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Pencil Case                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Cooking and Nutrition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <p>This project introduces students to the D&amp;T: 3D Design workshop, focusing on hazard awareness and hazard prevention to ensure they can work safely and confidently in the environment. Students learn to identify risks and implement safety measures, building a foundation of responsible workshop practice. They are then introduced to a range of hand tools and machinery, including the band facer and pillar drill, equipping them with essential skills for measuring, marking out, and cutting and shaping timbers. As part of this process, students must demonstrate competency in using the equipment before progressing to work more independently on the manufacture of a mobile phone stand. In addition, students are introduced to the timbers material group, exploring topics such as sourcing, processing, and the advantages and disadvantages of different types of timber. This knowledge will help them make informed material choices in future projects, building a strong foundation in material selection and practical manufacturing.</p> | <p>This project introduces students to key concepts such as design briefs, design specifications, and sketching techniques, including oblique 3D drawing. They will also learn about industrial manufacturing methods like casting, as well as CAD (Computer-Aided Design) and CAM (Computer-Aided Manufacturing), alongside the use of metalworking hand tools. Building on their previous experience with the mobile phone stand project, students are now equipped to work safely within a Makerspace environment, confidently identifying potential hazards and knowing how to prevent accidents. With a foundation in basic prototype manufacturing processes, including precision measurement and material marking, students are ready to delve deeper into the design process, generating ideas in response to design briefs. This project also expands their understanding of materials, specifically metals, helping them develop the knowledge required to eventually select the most appropriate materials for their own product designs. As a result, students will enhance both their practical skills and conceptual understanding of designing and making in a real-world context.</p> | <p>This project introduces students to the D&amp;T Textiles workshop. In this project students will design and create a pencil case inspired by a famous design movement, gaining a deep understanding of both creative and practical textile skills. They will learn how to safely navigate the textiles workshop, including key health and safety protocols, such as safe handling of needles, hot wax for batik, and using a sewing machine. Students will develop proficiency in hand embroidery techniques and machine stitching to construct their pencil cases. In addition, they will explore a variety of decorative techniques such as transfer printing, batik, tie-dye, and stamping, which will allow them to personalise their projects and enhance their understanding of design principles. Through this project, students will gain valuable knowledge of design movements, practical textile techniques, and how to safely and creatively express their ideas in fabric form.</p> | <p>This project introduces students to the Food Technology environment. In this project students will develop essential culinary knowledge and skills through the creation of a variety of dishes. They will learn the fundamentals of kitchen hygiene, including food safety, personal hygiene, and correct food storage practices. Students will acquire basic food preparation skills, such as safe and effective chopping techniques, knife handling, and the use of key kitchen tools. They will also gain confidence in operating an oven and other kitchen appliances, learning how to cook food safely and accurately. Throughout the project, students will explore key concepts such as nutrition, balanced meals, and food presentation, while developing their ability to plan, prepare, and evaluate a range of healthy and appealing dishes. This scheme aims to build both practical cooking competence and a solid understanding of safe food preparation, encouraging students to make informed and healthy choices in their cooking.</p> |

## Year 8

| Desk Organiser                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| <p>In this project students will design and manufacture a plywood desk organiser, focusing on developing a range of technical and creative skills. They will explore user-centred design, learning to tailor their designs to meet specific needs, and communicate their ideas effectively through isometric sketching techniques. Students will continue to develop their knowledge and understanding of health and safety in the workshop, particularly in the safe use of scroll saws and other tools. They will learn how to create precise, repeatable components using manufacturing jigs and develop skills in the accurate construction of timber joints, including dowel and halving joints. Additionally, students will be introduced to timber finishing techniques, allowing them to add a professional touch to their final product. Through this project, students will gain a well-rounded understanding of more advanced design processes, technical manufacturing skills, and workshop safety, resulting in a functional, high-quality desk organiser.</p> | <p>In this project students will explore the principles of mechanisms and motion by designing and producing a functional mechanical toy. They will gain a comprehensive understanding of different types of motion—linear, rotary, oscillating, and reciprocating—and how these are applied through mechanisms such as cams and followers, levers, linkages, pulley systems, and gear systems. Throughout the project, students will develop skills in designing for movement, using mechanical components to create motion within their toys. They will also learn practical skills in cutting, assembling, and joining materials, while applying technical knowledge to ensure the accurate and efficient operation of their toy. By the end of the project, students will have developed a working toy that demonstrates their understanding of mechanical principles, enhanced their problem-solving abilities, and gained insight into the real-world applications of mechanisms in products and machines.</p> | <p>This project introduces students to the D&amp;T Textiles workshop through the imaginative and sustainable creation of a monster toy. Inspired by the quirky charm of Ugly Dolls, students will design and construct their own unique soft toy using recycled and repurposed textiles. This hands-on project encourages creativity while promoting environmental awareness, as students explore the impact of fast fashion and the importance of reducing textile waste. Throughout the project, students will learn how to safely and confidently navigate the textiles workshop, including essential health and safety practices such as safe handling of needles, using sewing machines, and working with a variety of fabrics. They will develop key practical skills including hand stitching, appliqué, embroidery, and button sewing, as well as machine sewing techniques to bring their monster designs to life. Students will also engage in iterative design processes—sketching, prototyping, and refining their ideas based on feedback—while considering the context of their creations: who will use them, how they'll be used, and the environments they'll inhabit. This contextual approach helps students make thoughtful design decisions that are both functional and meaningful.</p> <p>By the end of the project, students will have gained a strong foundation in sustainable textile practices, creative design thinking, and practical making skills. Their final monster toys will be a reflection of their personal style, environmental values, and growing confidence as young designers.</p> | <p>This project builds on students' foundational knowledge of Food Technology, guiding them into a deeper exploration of culinary skills, food science, and kitchen safety. In this second year of cooking, students will refine their practical abilities while expanding their understanding of the principles that underpin safe and effective food preparation.</p> <p>Students will revisit key hygiene practices with a more advanced focus on the '4 Cs' of food safety—Cleaning, Cooking, Chilling, and Cross-contamination—developing a thorough understanding of how these principles protect against foodborne illness. They will also enhance their confidence in using kitchen equipment, including ovens, hobs, and small appliances, with greater precision and independence.</p> <p>Practical skills will be further developed through the preparation of more complex dishes, with an emphasis on accurate knife techniques, efficient workflow, and thoughtful presentation. A highlight of the project will be an investigation into the science of bread-making, where students will explore the role of ingredients such as yeast, gluten, and salt, and how chemical and biological processes affect texture, flavour, and rise.</p> <p>Alongside cooking, students will deepen their knowledge of nutrition and balanced meals, learning how to adapt recipes to meet different dietary needs and preferences. They will also be encouraged to evaluate their work critically, considering taste, appearance, nutritional value, and sustainability.</p> <p>This scheme aims to foster independence, curiosity, and confidence in the kitchen, equipping students with the skills and knowledge to make informed, safe, and healthy food choices both in school and beyond.</p> |

## Year 9

| USB Lamp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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| <p>In this project, students will design and manufacture a USB-powered lamp, combining creative design with technical precision. The lamp will feature a timber base formed using lamination and bending techniques, alongside an acrylic light diffuser engraved with custom graphics inspired by popular culture. Students will develop new practical skills in timber forming, learning how to manipulate wood through lamination and controlled bending to create elegant, functional shapes. They will also be introduced to basic electronic circuits and soldering, assembling a USB-powered LED system to illuminate their designs.</p> <p>Design work will focus on graphic development for laser engraving, encouraging students to explore visual storytelling through stylised imagery drawn from films, games, and other cultural references. They will learn to communicate their ideas through annotated sketches and CAD software, refining their designs for both aesthetic appeal and manufacturability. Throughout the project, students will continue to build their understanding of workshop health and safety, particularly in the use of soldering equipment, laser cutters, and timber forming tools. The final outcome will be a unique, functional USB lamp that showcases students' ability to integrate design thinking, technical making, and cultural inspiration.</p> | <p>In this project, students will design a desk lamp for a specific user or environment, developing their ideas through advanced 2-point perspective sketching to improve visual communication. They will explore how programmable boards (Micro:bit) can be used to control output components such as LEDs, enhancing the lamp's functionality. Programming will be done using laptops and the Microsoft MakeCode online app, building on skills developed in Year 8 Computing. Students will take their designs to the cardboard prototyping stage, learning how to use craft knives and cutting mats safely and effectively. They will apply techniques for clean construction, structural integrity, and presentation to produce well-finished models. The project encourages creativity, technical skill, and an understanding of how electronics can be integrated into product design.</p> | <p>This project introduces students to the D&amp;T Textiles workshop through the imaginative and sustainable creation of a monster toy. Inspired by the quirky charm of Ugly Dolls, students will design and construct their own unique soft toy using recycled and repurposed textiles. This hands-on project encourages creativity while promoting environmental awareness, as students explore the impact of fast fashion and the importance of reducing textile waste. Throughout the project, students will learn how to safely and confidently navigate the textiles workshop, including essential health and safety practices such as safe handling of needles, using sewing machines, and working with a variety of fabrics. 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