

## **The Curriculum Intent for Design and Technology at Dorothy Stringer School.**

### **Overall aims:**

At Dorothy Stringer, the Design and Technology department provides opportunities for students to develop their analytical, designing and making skills to create a variety of new products spanning product design, textiles, and catering.

We aim for Design and Technology to be an inspiring, rigorous subject that combines theoretical and practical studies. Using creativity and imagination, students design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values.

Our schemes of work enable students acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing, and art.

Whilst pursuing the coursework tasks we encourage our students to learn how to take risks, become resourceful, innovative, enterprising, and capable citizens.

Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world.

A key emphasis for staff in our department is to show our students the vocational possibilities that Design and Technology have to offer.

We particularly encourage our students to believe in the entrepreneurial possibilities that exist through design and technology; through the use of technological advances such as CAD/CAM (see information on our Young Entrepreneurs club below) we show our students the business opportunities that exist to manufacture and market small batches of simple products.

Sustainability is also a key focus for the department. In every project we teach the environmental impact of design and production; through both teaching the theory of sustainability and using sustainably sourced materials for their projects. Our mission is to incorporate re-used or recycled materials into all student projects. Examples of how we currently do this include:

1. the use of FSC accredited suppliers, or locally sourced ingredients
2. the re-use of materials from stage sets built for the Drama dept.
3. the break down and re-use of softwood from locally sourced pallets
4. the sourcing and use of re-cycled sheet plastics made from recycled plastic packaging

### **Implementation of the National Curriculum**

We teach Design and Technology to all Yr7, Yr8 students and to Yr9, Yr10 and Yr11 students as an option.

It is a compulsory subject in Yr7 and Yr8, when the students rotate twice a year, working on four different projects during their lessons, combining three hours of class study every two weeks.

When the students come up from Yr6, they have had a varied prior experience of Design and Technology gained from their primary school. We therefore provide a framework that gives student the opportunity to access the learning through theory lessons, designing, making and evaluation tasks. Regardless of their prior experience and successes in D&T, students access the learning through a mixed variety of tasks on offer.

In year 9, students can choose to focus on either Resistant Materials or Food and Nutrition. They work on a variety of projects and have the benefit of four hours of study time in school every two weeks.

In year 9, students are given more autonomy over their projects, which helps to prepare them for KS4, should they choose D&T or Food and Nutrition for one of their GCSE option subjects.

In year 10 and 11, students can choose either GCSE Design and Technology or GCSE Food and Nutrition.

We follow the AQA exam board syllabus. During years 7, 8 &9, we filter down the KS4 curriculum to prepare our students for the theory requirements of the GCSE syllabus. As our students progress through the year groups, the projects that they follow become more detailed and rigorous. The knowledge and skills that our students learn progress incrementally. We achieve this in a variety of ways, for example:

1. CAD/CAM (Computer Aided Design, Computer Aided Manufacture) projects become more complicated each year; developing students to use more complicated tools in the CAD software and utilising more advanced CAM equipment as they progress through the school.
2. The products that students create become more complicated, starting with the Pencil Holder in year 7, moving to the Casting project in year 8 and onto the Gumball Dispenser in Year 9.
3. Autonomy is encouraged as students become more senior; for instance in Food and Nutrition in Yr7 the focus is on students learning how to make core recipes that are provided to them, designed to build and strengthen their skills and safety in the kitchen environment. Moving through lower school, they build upon this foundation, learning to choose, research and prepare their own dishes in year8 and year9. In KS4 the focus is upon developing the pupil's technical skills and encouraging them to design and create their own meals.

For further information on how we deliver our schemes of work, you can click on the following links:

### **Design and technology at KS3**

**Year 7 is an introduction to the different disciplines within D&T, pupils will cover the following areas:-**

Food- pupils will gain an understanding of healthy eating and of the importance of seasonal fruit and vegetables. They will learn how to safely and hygienically plan and make a range of both savoury and sweet products. They will be guided to work independently and gain their confidence preparing their own dishes, whilst understanding the importance of being a team worker to maintain safety and hygiene within the kitchen environment.

- During the food rotation students will make a range of sweet and savoury dishes and snacks which aim to teach them the fundamental skills needed when preparing and cooking food. We work on knife skills, oven safety, being able to accurately weigh and measure, healthy eating and how to develop design ideas into products.
- Resistant Materials – Pupils will have an introduction to the workshop, working with a variety of hand and machine tools.
- CAD/CAM - Pupils will learn how to use the 2 D Design and produce their design using the vinyl plotter.
- E Textiles - An introduction to basic electronic circuits and simple sewing techniques

**Year 8 is a year in which students build on prior knowledge and skills:**

Food – Building on the knowledge gained in year 7, pupils will continue to develop their knowledge and use of kitchen equipment. Students will learn about the term ‘staple food’ and will learn how to use a variety of different ingredients from around the world. They will learn how to be more independent in the kitchen and further their understanding of the environmental impact of food around the world.

- Resistant Materials - The students will be looking at the casting process and producing pewter cast necklace.
- CAD/CAM - using 2Ddesign the students will design an interlocking acrylic phone stand using a wider variety of drawing tools and cutting their design out on the laser cutter.
- Textiles - Designing and making a small piece of luggage, including an introduction to using the sewing machine.

**Year 9:**

**Students who have opted for these practical options in year 9 have 5 lessons a fortnight. They will undertake 3 extended projects throughout the year**

### **Product design:**

Students will learn a variety of theory that links to the GCSE subject content including design history, materials, construction techniques, presentation techniques, production methods and CAD/CAM.

- 1. Looking at past design styles and famous designers for inspiration, the students will produce a CAD/CAM clock that will be manufactured on the laser cutter.
- 2. Using a range of hand and machine tools students will be learning about a range of practical techniques, mechanisms and construction methods to manufacture a wooden gumball machine.
- 3. An Environmental design competition, students will be working on a city wide school competition to redesign part of Madeira drive.

### **Food:**

- Getting professional: students will work through a range of theory and practical activities to help increase their confidence and skills in the kitchen. This will include health and safety, nutrition and highly skilled practical.
- Street food: students will research, design and make a street food of their own for a country of their choice. They will make a range of street foods that already exist to help develop their understanding of the project.
- Commodities: Students will start to prepare for GCSE through learning about the basic commodities we use e.g. dairy and meat. They will learn about the science behind them and how to use them in a range of dishes.

### **Assessment**

During KS3, students' progress is monitored during and at the end of each project. Their learning is assessed in terms of their core subject knowledge and in their skills for designing, making and evaluation. We give our students feedback on what went particularly well during their projects and how we would like them to improve for the next project. Our subjects work on a carousel. All feedback is recorded in their folders, so that other D&T teachers may see a pupil's target for improvement and support them to achieve it.

### **AQA Design and Technology at KS4**

GCSE Design and Technology will prepare students to participate confidently and successfully in an increasingly technological world. Students can learn about contemporary technologies, materials and processes, as well as established practices.

This course places emphasis on understanding and applying iterative design processes. Students will use their creativity and imagination to design and make prototypes that solve real and relevant problems, considering their own and others' needs, wants and values.

Students will gain awareness and learn from wider influences on Design and Technology including historical, social, cultural, environmental and economic factors. Students will have the opportunity to work creatively when designing and making and apply technical practical expertise. In year 10 and year 11, pupils will also have the opportunity to develop their 3D CAD modelling skills and use our CAD/CAM machinery such as the laser cutter and 3-axis milling machine.

Our GCSE allows students to study core technical and designing and making principles, including a broad range of design processes, materials techniques and equipment. They will also have the opportunity to study specialist technical principles in greater depth.

During the year 10 and year 11, we are looking for Students to further develop their independent learning skills.

#### **How the course is assessed:**

This GCSE comprises 50% Non-Examined Assessment (NEA) and 50% exam assessment, which is broken down into the following 3 sections:

- Section A- Core technical principle: A mixture of multiple choice and short answer questions assessing a breadth of technical knowledge and understanding.
- Section B- Specialist technical principles: Several short answer questions (2-5 marks) and one extended response to assess a more in depth knowledge of technical principles.
- Section C- Designing and making principles: A mixture of short answer and extended response questions

For the NEA, students choose one of three contexts provided by the exam board and they produce a folder of work and a practical outcome. The NEA can be divided into these assessment objectives:

- Identify, investigate and outline design possibilities
- Design and make prototypes that are fit for purpose
- Analyse and evaluate

#### **AQA Food Preparation and Nutrition at KS4**

GCSE Food Preparation and Nutrition is an exciting and creative course which focuses on practical cooking skills to ensure students develop a thorough understanding of nutrition, food provenance and the working characteristics of food materials. At its heart, this

qualification focuses on nurturing students' practical cookery skills to give them a strong understanding of nutrition.

Students are equipped with an array of culinary techniques, as well as knowledge of nutrition, food traditions and kitchen safety. The course has been designed to cover a range of different topics which ensure students have a broad and deep understanding of all areas of food. Students will study:

- Food Preparation Skills
- Food Nutrition and Health
- Food Safety • Food Science
- Food Provenance
- Food Choice

During the course students will be given the opportunity to practise a wide range of practical skills along with having a greater understanding of nutrition, the science behind food as a material and the wider environmental aspects associated with food.

#### **How the course is assessed In Year 11:**

Students will complete two Non Examination Assessments (NEA): • Task 1: investigation (approx.10 hours) 15% of GCSE • Task 2: Food preparation Assessment (approx.20 hours including a 3 hour practical assessment) 35% of GCSE Written examination: • 1 hour 45 minute exam, 50% of GCSE

Suitable Candidates: This course would suit anyone with a passion for food and who is interested in learning more about the subject while enhancing their practical skills.

#### **Opportunities to support literacy, numeracy, and cross-curricular links**

Supporting students with their written evaluation is a key part of their progress. During KS4, written evaluation is a constant factor to succeed. We therefore support all students with their literacy during KS3 and KS4. Aside from encouraging students to use the key words and terminology, we scaffold their progress in subject relevant literacy; we do this in lesson time, by teaching them how they should construct their written evaluations to describe and explain their decision making.

Design and Technology requires students to practise their use of numeracy. Students consistently use their skills to calculate dimensional sizes of their product components to enable their construction. As they move through the year groups, they will be required to calculate the areas of materials that they require for their products. In terms of CAD, students learn how to use complex software tools that encourage them to use to transform

the size of an object, translate, rotate, mirror, which are all functions that they are taught in Maths. In Food and Nutrition, students must regularly calculate the weights, measures and timings required for their recipes.

Our syllabus offers many cross-curricular links with Business, Computing, Science, Maths and Geography.

### **Extra-Curricular clubs**

Outside the regular teaching hours, we offer a variety of clubs depending on the year group.

To help drive the vocational links that our subject offers, we encourage our students to explore an entrepreneurial in their approach to D&T at our Young Entrepreneurs Club; where students use CAD/CAM to design and produce small products that are then sold within the school environment. All proceeds are then ploughed back into the club with the investment in new hardware to support their activities.

We also offer catch-up clubs for our KS4 students to help them with their coursework.

### **Curriculum enrichment week**

During the penultimate week of the summer term, the school is off timetable during Curriculum Enrichment week. In Design and Technology, we offer four different activities which are, Model Car Design, Silversmithing, Stringer Bake-Off and Surfboard Building.

### **School trips**

To help students to gain a better understanding of how D&T can be pursued outside and beyond the school environment, we organise a variety of trips during KS3 and KS4 including:

1. Brighton University degree show
2. Design Museum in London
3. Brighton Museum

### **Facilities**

Within the department we have two workshops, two CAD suites and one fully equipped kitchen. To implement student designs produced using 2d or 3D software, we have CAM machinery including a Vinyl Cutter, two laser Cutters and a 3-Axis CNC Router.

