



Curriculum Intent

The focus of Design and Technology is to enable students to approach ideas in both a literal and lateral manner, providing them with the skills to effectively communicate ideas, designs and processes in a professional manner to industry standard. Students will use their knowledge of Maths and Science and apply it to their work to create both their own designs as well as a commercially viable product. Students will be introduced to a varied diet of tools and machinery that is commonplace in the design industry, developing skills which will eventually allow them to complete GCSE projects.

Autumn Term | Design and Technology | Wood Theory

Students will learn:-

GCSE Criteria 3.1.6

Students should have an overview of the main categories and types of natural and manufactured timbers: hardwoods including:

- ash
- beech
- mahogany
- oak
- balsa

softwoods including:

- larch
- pine
- spruce

manufactured boards including:

- medium density fibreboard (MDF)
- plywood
- chipboard.

What does excellence look like?

- Explain in detail the working properties of different timbers and manmade boards and apply them successfully to products.
- Students can identify sustainable products and/or alter products to make them sustainable.
- Students can apply their knowledge to correctly apply their knowledge of wood and sustainability to the block bot project.



Knowledge, Understanding & Skills

- Using the workshop in a safe manner. Workshop rules and guidelines.
- What safety equipment is, when are they required and how they are used.
- Students learn the differences of natural timbers:
 - Properties
 - Deciduous/ Non-deciduous
 - Life cycle
 - Visual appearance
 - Applications to products
- An understanding of manufactured boards, why are they required? Costings, properties and uses.
- 6 Rs – what is sustainability, why is it important, how can the 6 Rs help us become more sustainable?
- Sustainable forests – wood life cycle, Why are they important, what do they do etc.
- Apply knowledge of woods to be able to identify different types of wood from their properties.
- Explain the basic properties of Natural timbers and manufactured boards.
- Interpret information provided to decide on the suitability/potential to be sustainable.

How is homework used to enhance learning?

Students work from a booklet that includes quizzes, activities, exemplars.

Students are provided graded exemplars for most activities.

Students are provided assessment criteria's for assessment activities in booklets.

H/W – further research (developing research and extended writing skills) on sustainability and sustainable forests.

How will we assess impact?

- Peer and self-assessment
- SMHW Quiz of wood theory
- 6rs assessment piece.
- In booklet tests

Students will learn:-

Develop, communicate, record and justify design ideas using a range of appropriate techniques such as:

- freehand sketching, isometric and perspective
- 2D and 3D drawings
- system and schematic diagrams
- annotated drawings that explain detailed development or the conceptual stages of designing

What does excellence look like?

- Clean straight lines when drawing
- Good contrast between light and dark when shading.
- Rendering and colour is within the assigned areas.
- Can draw medium to complex isometric shapes using the isometric grid.

How is homework used to enhance learning?

- Students are provided with exemplar.
- Isometric grids
- LA students provided a block bot sheet to aid motor control and muscle memory.

H/W to design and create block bots for a selected target market – Assessed on drawing skills and creativity.

How will we assess impact? (3D)

Drawing assessment takes place twice a year
 New assessment booklets to start 2019-20
 Peer assessment
 H/W drawing of block bots are assessed.

Knowledge, understanding & Skills

Students will understand how to:

Confident lines/ mark making
 Smooth shading
 Cross sectional shading
 Tone
 Shade

Faint lines for construction
 Thick and thin line techniques
 Render to suggest textures and materials.

Can add colour to emphasis shape.
 Can add colour to make the shape stand out.

Isometric drawing

Oblique drawing

1-point perspective

AMA - 2 point perspective

Properties

Deciduous/ Non-deciduous

Life cycle

Visual appearance

Applications to products

To apply drawing subject knowledge to successfully design isometric block bots accurately

To apply shading and colour to help communicate design ideas.



Students will learn:-

Prototype development

Students should know and understand how to evaluate prototypes and be able to:

- reflect critically, responding to feedback when evaluating their own prototypes
- suggest modifications to improve them through inception and manufacture
- assess if prototypes are fit for purpose.

Tolerances

Work accurately using tolerances.

- How a range of materials are cut, shaped and formed to designated tolerances.
- Why tolerances are applied during making activities.

Specialist tools and equipment

- How to select and use specialist tools and equipment, including hand tools, machinery, digital design and manufacture, appropriate for the material and/or task to complete quality outcomes.
- How to use them safely to protect themselves and others from harm.

Selecting finishes and treatments

- Students should know and understand that surface treatments and finishes are applied for functional and aesthetic purposes.

Knowledge, understanding & Skills

Students will understand how to use:

- Tenon Saw
- Coping Saw
- Sand paper – Different grades
- Disc Sander
- Electric Sander
- Pillar Drill
- Electric cordless drill
- Wood glue
- Applying sealant
- Applying wax
- Vice

- How to assess the smoothness and finish of the wood.

- How to apply wax successfully

- To apply an objective analysis of their work in order to improve the overall quality.
- Being able to analyse and evaluate work objectively.

To apply shading and colour to help communicate design ideas.

What does excellence look like?

- To be able to cut accurate straight lines.
- Can use a coping saw to create smooth curves.
- Control the depth of drilled holes.
- Able drill holes in the right place.
- Highly smooth finish from sanding.
- Apply sealant and wax in a controlled manner.
- Create a fully finished product.

Detailed objective analysis of prototype_with the ability to modify manufacturing processes to improve.

How will we assess impact? (3D)

Peer and self-assessment
Previous lesson recap quiz
Land mark tasks
End of topic test

How is homework used to enhance learning?

- Students are guided through how to use equipment.
- Students are made aware of safety concerns and how to remain safe at all times.
- Students are directed to www.DTStudent.com

To watch how to guides to further develop their understanding at home.



International Opportunities

Within the curriculum

Term 1: Introduce students to a range of woods from around the world and discuss the different climates and growing conditions. Gain an understanding of the ethical and environmental impact of wood usage around the world, focusing on sustainable forestry.

Term 2: Students given a selection of international designers and movements to explore and research.

Term 3: Examples, such as, LouLou and Tummie Dutch design studio who design, make and work with a range of international companies to produce fun and creative products and service.