

WHAT ARE THE BIG AIMS OF YEAR 9 RESISTANT MATERIALS?

Based on having explored the Design Process and a range of material technologies, pupils have selected two disciplines to focus on for the last year of KS3. Resistant Materials will provide a foundation in industrial practises and processes through a variety of projects and tasks, so pupils are prepared for the new GCSE qualifications.

WHAT WILL EXCELLENCE LOOK LIKE IN YEAR 9?

To be able select and apply a range of thermoforming processes for manufacturing with polymers.

Have a range of detailed working drawings to demonstrate how technical detail is communicated in a global economy.

Used the design practise of product disassembly to inform and guide their own designing.

Demonstrated a range of hand tools and machine processes to batch produce a flat pack product and user centred product.

WHAT KNOWLEDGE DO THE PUPILS NEED TO ACQUIRE?

- Develop products that require attention to tolerances and ergonomic factors.
- How to create a product by focusing on the needs of the user.
- Understand how the different types of polymers can be used to manufactured components and how they impact on the environment.
- Implement industry drawing standards when communicating final designs with working drawings.

WHAT SKILLS DO THE PUPILS NEED TO DEVELOP?

- Use tessellation in the manufacture of a sustainable flat pack mirror product.
- Mark out components using CAD/CAM to ensure quality control during batch manufacturing of a timber desk organiser.
- How to construct simple polymer structures using vacuum forming, hot wire strip heater and press forming including cutting/finishing processes.
- Be able to draw an orthographic projection and include BS dimension lines and units.

WHAT MISCONCEPTIONS MAY THEY HAVE FROM PREVIOUS LEARNING?

Drawings are only good or poor, and that there are no rules.

Plastics objects and components are just 3D printed not cut/shaped/formed and finished. Flat pack products are not just for fitting through your letterbox.

WHAT ASSESSMENTS WILL BE USED ACROSS THE YEAR TO DEMONSTRATE HOW THE PUPILS HAVE ACQUIRED THE KNOWLEDGE AND DEVELOPED THE SKILLS?

- Knowledge checker at start of unit of work – multiple choice questions.
- Ongoing teacher assessment of design and practical skills in order to inform planning.
- Peer and self-assessment of Orthographic projection / polymer thermoforming skills / ergonomic data.
- Ongoing formative assessment of level 2 words and subject specific terminology.
- Summative assessments of design and practical tasks for practical projects – flat pack mirror and desk organiser. End of unit knowledge checker – multiple choice questions.