

Product Design

"Creativity is allowing yourself to make mistakes, Design is knowing which ones to keep" - Scott Adams

All Product Design staff will strive to enthuse, facilitate and shape our Byrchall students to be creative problem solvers who are confident, resilient and most importantly passionate about the products they design & make. Students will build on previous experiences and will develop key skills in each specialist area.

- Resistant Materials: Children's Toy Train
- Systems & Control: Using Micro bits to create a 21st Century badge
- More Resistant Materials: Glass and bag fusing jewellery project

Homework will be set in the following formats to support independent learning in our subject.

- Keywords followed by a spelling test in lesson.
- Watching a video to learn a specific skill or to support a research activity.
- Reading an article online with regards to product evolution – new materials /processes and products.

Practising a particular skill just as:

- Sketching (2D & 3D)
- Producing a working drawing with measurements
- Generating design ideas
- Developing ideas
- Simple card modelling
- CAD (Corel Draw/Google sketch up)

Collecting research information.

- Measurements to ensure a product is ergonomic
- Imagery / inspiration to help with design ideas
- Customer interviews / feedback to help with evaluation.
- Visits to shops to look at existing products
- Product Analysis to see how a product works or is made.
- Exploring a design movement
- Looking at the work of famous designers
- Finding out about careers related to Product Design
- Investigating possible pathways with local colleges & universities
- Finding out local industries & jobs including apprenticeships

Unit	Duration (lessons)	Learning Objectives/Outcomes
Toy Train	10	<p>Communication and designing skills</p> <ul style="list-style-type: none"> • Be able to produce simple orthographic drawings of basic shapes • Be able to use isometric grid paper to communicate in 3D • Be able to read an orthographic drawing and explain key features which should be included to help manufacture a product • Be able to produce a 3D sketch of a traditional wood joint using isometric grid paper. • Learn how to use google sketch up (3D CAD) to help model your ideas and help decide on paint colours for your train. • Use CAD (Corel draw) to design and develop your train wheels ready for machining <p>Practical skills</p> <ul style="list-style-type: none"> • Develop skills in measuring and marking out accurately. Understand how to reduce waste (material management) • Develop skills using manufacturing aids such as templates and jigs, when marking out, drilling and joining materials together. Understand where and how they can be used. • Develop skills in shaping materials. Be able to explain which tools are best to use and why. • Develop skills in drilling using the pillar drill and be able to explain which drill bit to use. • Develop skill in accurately joining materials together using standard components. Understand how to work out sizes needed when using screws and nails. • Develop skills in using CAD CAM (Laser cutter) to create components (wheels) for your train. • Develop skills in applying finishes to your train and how to achieve a good outcome. <p>Knowledge and understanding</p> <ul style="list-style-type: none"> • Gain technical knowledge in working with natural & manufactured boards and be able to explain – where timber comes from, how it is processed, what standard sizes it comes in and the different stock forms that are available. • Be able to explain how “wood” can be joined using traditional wood joints. • Be able to explain how quality control can be when manufacturing a product. • Be able to explain the benefits of using manufacturing aids / jigs. Learn how to use a jig • Understand what checks need to be carried out before machining • Be able to explain why materials need to be finished and the different types of surface finishes that can be applied to wood.

