

Product Design

“Creativity is allowing yourself to make mistakes, Design is knowing which ones to keep” *Scott Adams*

All PD 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 learn to solve problems creatively by experiencing a range of specific subject areas to help develop key skills such as:

- Graphic drawing & modelling techniques
- Computer Aided Design (CAD) & Computer Aided Manufacturing (CAM)
- Resistant Materials – Mood light
- Textiles – Weaving and pencil case

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 such 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 such as:
 - 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 something works.
 - Exploring a designer
 - Looking at the work of famous designers

Resistant Materials

Unit	Duration (lessons)	Learning Objectives/Outcomes
Mood light	10	<p>Students will:</p> <ul style="list-style-type: none"> • Be able to mark out your work ready for shaping • Be able to identify hand tools & equipment and explain what they do. • Be able to list different types of timbers, how they are classified and what the main differences are. • Explain the difference between hardwoods & softwoods. • Learn how to pre-empt problems based on previous experiences so similar mistakes are not made. • Develop confidence by working independently and demonstrate safe practices when using hand tools and specialist equipment. • Explore how work can be improved by testing & checking • Be able to communicate ideas using 2D sketches and CAD (Computer Aided Design – Corel Draw) • Be able to prepare designs for machining using CAD / CAM (laser cutter) and explain how this machine works. • Be able to identify standard components • Create simple electronic circuits & be able to identify basic components. • Be able to explain the differences between permanent & non-permanent joints. • Work accurately & efficiently to produce a high-quality outcome. • Understand where materials come from, their environmental impact on the planet & how they are processed into standard stock. • Be able to value opinions from others to help improve your final outcomes. • Be able to explain why timber is a renewable source
Weaving and pencil case	10	<p>Students will:</p> <ul style="list-style-type: none"> • Develop an understanding of textile fibres • Be able to explain the differences between synthetic and natural fibres • Be able to explain where natural fibres come from and why they are classed as a renewable source. • Understand how everyday products use textile fibres in

their construction.

- Develop and understanding of weaving techniques
- Be able to explain the differences between warp and weft
- Develop skills in using a weaving loom to create their own woven material
- Design and make your own unique pencil case using textile materials.
- Develop research skills to help explore and inspire your design work
- Be able to create a series of design ideas based on themes.
- Develop skills on how to choose the best ideas to make
- Develop understanding of how applique can be used in the manufacture of a textile product.
- Learn how to transfer your design idea on to fabric by making a simple template
- Develop skills in marking out, shaping and joining textile materials using hand stitching.
- Develop skills in being able to evaluate your work to help refine and improve

