D&T- YEAR 7

Topic	 Head	 Heart	 Hand
H&S	• To understand what a hazard and risk is within a workshop and that there are workshop rules in place • To know some methods of reducing H&S risks in D&T	• I can explain safe practice in workshop by using my **initiative.** I can use my **leadership** to ensure others are safe within a workshop	• I can explain how to keep myself and others safe in a workshop • I can identify a range of hazards that are within a school workshop area
Product Analysis	• To know the term ACCESS FM and how it can be applied to a product analysis (Aesthetics, Cost, Customer, Environment, Size, Safety, Function and Materials.	• I can use my **initiative** to analyse a product and communicate my ideas in full sentences.	• I can identify the term ACCESS FM and begin to explain the key words behind the acronym • I can analyse a product in some basic detail using each letter of ACCESS FM

Graphic Design	• To know some 2D and 3D sketching techniques (1 point perspective, 2 point perspective, orthographic, isomteric) • To know how to use the appropriate equipment to draw in different techniques • To understand the term rendering and how it benefits a sketch	• I can **communicate** through sketching and rendering	• I can identify orthographic, 1 and 2 point perspective and isometric drawings • I can demonstrate the drawing techniques named above to some accuracy using a range of equipment • I can demonstrate rendering, shading and adding texture to a number of basic shapes
Brief and Research	• To know the concept of a design brief • To know the difference between primary and secondary research • To know how and where to find relevant research to inform design decisions (materials, interviews, questionnaires, design movements, sustainability) • To know what timbers, metals and polymers are and where they are used	I can **organise** my thoughts and ideas into a structured mind map • I can use my **organisational** skills to arrange my research	• I can analyse a design brief and plan out the research that needs to be carried out in the form of a task analysis • I can list some examples of primary and secondary research and explain the benefits of both • I can research and communicate my findings from a range of sources and topics. • I can identify 2 different design movements including, pop art and retro. • I can explain the different material categories and able to give some examples of each

Responsible Design	• To know some environmental issues of product design and the 6 R's (Reduce, refuse, re-use, repair, recycle and rethink) • To know some of the effects of global warming	• I can **communicate** and use my **resilience** to answer an exam style question	• I can answer an exam style question to explain how materials can impact on the environment and the risks of global warming • I can identify the 6 R's and explain them in basic detail • I can explain responsible design by listing materials that have minimal impact on the environment
Specification and Design Ideas	• To understand the term design specification • To know how to communicate design ideas using sketching, CAD and annotations. • To know how to develop a design idea to a working drawing of a final design	• I can **organise** my research to help me inform my design specification • I can you my creativity to form ideas and **communicate** them effectively	• I can analyse research to inform and write a basic specification • I can use my graphic design skills to communicate 2 design ideas for my mood lamp and explain them in some detail using ACCESSFM. • I can analyse my design ideas and evaluate which design to develop further with reasons for this • I can communicate my final design to some detail (including a orthographic sketch), starting to explain the design in detail using ACCESS FM

Electronics	• To know a range of electrical components and what they do (including, LED, Battery, Resistor, Switch, Positive and Negative wires). • To know how to solder effectively and safely	• I can use my **initiative** to analyse a working circuit board • I can use my **resilience** to solder accurately	• I can identify a number of electrical components and their role within the mood lamp circuit • I can demonstrate soldering by completing my mood lamp circuit accurately and safely
Realising Design Ideas	• To know a range of tools and machinery and how to use them safely and accurately (Pillar drill, coping saw, screwdriver, tri-square, tenon saw, bench hook, steel ruler) • To understand how to convert cm to mm's • To know the terms CAD/CAM and CNC and the benefits of these processes in product design • To know the software photoshop and how it is used in product design • To know how to apply paint to MDF	• I can use my **resilience** in the workshop to overcome practical mistakes or issues • I can **organise** a range of tools and materials to complete the practical tasks set • I can use my **leadership** skills and **communications** skills to work as a team in presenting this knowledge to the class • I can use my **resilience** to achieve a good finish	• I can demonstrate practical skills by using a number of tools, equipment and processes accurately to achieve a MDF casing for a mood lamp • I can convert cm's to mm's to measure my materials and components • I can explain the benefits of using CAD and CAM in industry by presenting these to the class • I can demonstrate the use of photoshop by producing a design for my mood lamp lid • I can demonstrate application of paint to achieve a good finish

Evaluation	• To understand the term evaluation and the purpose of this design stage	• I can use my **communicational** skills and **self-awareness** to evaluate my project	• I can carry out some basic testing of some aspects of the final prototype against the design brief and specification • I can explain some features of my product and justify any alterations and improvements
Packaging	• To understand the 6 reasons for packaging • To know some example of packaging and how they are manufactured (die cutting, nets, tessellation, laser cutter, printing methods). • To know how to draw a net and develop suitable packaging for the mood lamp • To know the basic tools of photoshop to produce a packaging design on a net • To know how nets are built up using tabs and scores.	• I can use my **creativity** to design a piece of packaging for my mood lamp • I can **communicate** my design using sketch work and adobe photoshop	• I can explain in some basic detail why packaging is important in product design • I can analyse and then explain a number of different examples of packaging and how they have been manufactured • I can demonstrate my graphic design skills to draft out my packaging design on a net • I can demonstrate my photoshop skills and design a packaging design for my mood lamp • I can demonstrate building a net and gluing it together accurately.

Forces and Structures	• To know some Famous bridges of different structure designs (suspension, truss, cable stayed). • To know the 4 different types of movement (linear, rotary, reciprocal, oscillating). • To know 5 different forces including, tension, compression, torsion, shear and bending forces. • To know the structures which are designed to resist these forces including struts, ties, pillars and girders of different cross sections.	• I can use my **independence** to research a number of famous structures and **communicate** them verbally to my peers	• I can briefly explain the 6 different forces • I can identify the 4 types of movement. • • To be able to explain a number of structures and identify these in different products, including bridges