Curriculum planning Sept 2023 Year 9 Product Design 9 weeks. 3 lessons a week.

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|  | **Lesson** | **Design brief and target market/PC** | **Introduction to electronics and componets** | **Materials and Textures** | **Health and Safety and equipment** | **Using CAD/CAM to add detail and finishes** | **Manufacture and assembly of components** | **CST** |
|  | Year 9 |  |  |  |  |  |  |  |
| Lesson 1 | Introduction to LED Mood lamp project and Product analysis and mind maps | Use of mood lights around the home and industry | The roles of the resistor and switches |  |  | Solid Works - CAD |  |  |
| Lesson 2 | Introduction to Solid works and orthographic design of components (geometric shapes) | Why do designers use orthographic drawings BS8888 |  |  |  | Children’s 3D building block Use of lines, shapes |  |  |
| Lesson 3 | Key tools in Solid works and working to dimensions |  |  |  |  | Using millimetres (mm) for accuracy |  |  |
| Lesson 4 | Completing the first 3D component and adding materials and backgrounds for presentation to a client |  |  | Applying texture and materials for manufacture |  | Children’s 3D building block – background for presentation |  |  |
| Lesson 5 | 3rd Angle clock design (BS8888)  Using elevations and different views of a clock in 2D Design CAD | Product analysis of a clock | Parts that make up an analogue clock | Types of woods and materials |  | 2D design orthographic designs |  |  |
| Lesson 6 | Working to BS8888 in 2D design, adding dimensions, centre lines and different orthographic views |  |  |  |  | 2D design orthographic designs |  |  |
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| Lesson 7 | Adding materials and rendering to the orthographic views of the clock design for presentation. |  |  |  |  | 2D design – materials and effects with dimensions |  |  |
| Lesson 8 | Safety in the workshop – introduction to Health and safety and wearing PPE/Risk assessment |  |  |  | Use of safety goggles and aprons / ventilation when soldering |  | Soldering components to the circuit board (PCB) |  |
| Lesson 9 | Mood lamp project – the roles of electronic components and soldering safely | Product analysis of the mood lamp |  |  | Wearing PPE  (Personal Protective Equipment) |  | Soldering components to the circuit board (PCB) |  |
| Lesson 10 | Practical Lesson 1:  Pupils to solder the resistor and on/off switch for the mood light |  | The role of the resistor and switches in a circuit – soldering safely |  |  |  | Soldering components to the circuit board (PCB) |  |
| Lesson 11 | Practical Lesson 2:  Pupils to solder the LED and connections to mood light |  | The role of the LED and connections – Soldering safely |  |  |  | Soldering components to the circuit board (PCB) |  |
| Lesson 12 | Practical Lesson 3:  CAD/CAM manufacture – using 2D design and vinyl sticker printer to personalise the design of the mood light |  |  |  |  | Use of silhouettes to create designs for the mood lamp screen and for effects to personalise the product |  |  |
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| Lesson 13 | Practical 4:  Applying design ideas onto the mood lamp and assembly of the mood lamp |  |  |  |  | Using the Vinyl sticker machine to cut the silhouettes and applying them to the lamp screens |  |  |
| Lesson 14 | Practical 5:  Assembly continued – using hot glue gun safely to complete the enclosure of the mood lamp |  |  |  | Wearing PPE  (Personal Protective Equipment) |  | How products are assembled in manufacturing. |  |
| Lesson 15 | CAD:  Mood lamp parts in Solid works |  |  |  |  | Using key tools in CAD to design the mood lamp sides / windows |  |  |
| Lesson 16 | CAD:  Mood lamp parts in Solid works continued |  |  |  |  | Using dimensioning and editing the designs |  |  |
| Lesson 17 | CAD:  Mood lamp parts in Solid works |  |  |  |  | Adding slots and extruding parts |  |  |
| Lesson 18 | CAD:  Mood lamp parts in Solid works |  |  |  |  | Adding materials and textures |  |  |
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| Lesson 19 | Using dimensions and measurements with accuracy on 2D Design |  |  |  |  | Part drawing to BS8888 |  |  |
| Lesson 20 | Using a manufacturing parts list | Part list of components and dimensions for mass production using a parts table. |  |  |  |  |  |  |
| Lesson 21 | Research task:  Pupils research components and their roles in a PCB | Itemise the roles of each component that makes up the mood lamp and the manufacturing process. Materials used. |  |  |  |  |  |  |
| Lesson 22 | Health and Safey – Risk assessment | Conclusion of Health and safety in manufacturing and the importance of a risk assessment |  |  |  |  |  |  |
| Lesson 23 | Assessment | Pupils to sit an assessment from what they have learnt in the project and scheme of learning |  |  |  |  |  |  |
| Lesson 24 | Quality control / quality assurance |  |  |  |  | Pupils allowed time to complete any finishing for final completion of the mood lamp. Pupils to reflect on the quality. |  |  |
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| Lesson 25 | Manual skills –  Orthographic drawing exercise of different components / geometric shapes | Pupils to work in booklet to manually complete orthographic drawings to BS8888 |  |  |  |  |  |  |
| Lesson 26 | Scale and proportion | Measurements in relation to other parts and scale drawings to BS8888 |  |  |  |  |  |  |
| Lesson 27 | BS8888 dimensioning skills | Lines, hidden lines, centre lines and orthographic elevations |  |  |  |  |  |  |
| **Homework** |  |  |  |  |  |  |  |  |
| **HW1 – Products around the house**  **HW2**  **3D drawings and rendering**  **HW3 – Isometric design sheet** | HW Tasks set on bromcom at 3 week intervals. |  |  |  |  |  |  |  |