**TERM: Summer 2017**

**SUBJECT: Technology, Engineering and Design**

**YEAR GROUP: 8**

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| **TERM TOPIC: Amplifier Speaker** | |
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| Skill KPIs | To be able to successfully solder a working circuit with precision and skill. |
| To be able to assess the hazards and risks of soldering and apply suitable control measures and PPE. |
| To be able to accurately and neatly solder components to a circuit board and accurate map a functioning circuit on circuit wizard. |
| To be able to quality control circuit and component problems and problem solve effectively to find solutions. |
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| Theory KPIs | To be able to analyse existing products in detail using the ACCESSSFMM model and to discuss strengths and weaknesses of current products in relation to a target consumer. |
| To be able to discuss the strengths and weaknesses of renewable energies and to be able to discuss the environmental impact of non-sustainable materials. |
| To be able to identify, draw the circuit symbols and explain the function of battery cells, switches, capacitors, LEDs, microchips and resistors. |
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| **TERM TOPIC: Bottle** | |
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| Skill KPIs | To be able to communicate ideas clearly through freehand sketching, rendering and details and justified annotation. |
| To be able to successfully use a range of modelling tools including cutting blades and sandpaper to create a well presented Styrofoam model. |
| To be able to assess the quality of work, identify problems and develop solutions which lead to stronger outcomes. |
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| Theory KPIs | To be able to analyse existing products in detail using the ACCESSSFMM model and to discuss strengths and weaknesses of current products in relation to a target consumer. |
| To write a design brief/ context and an 8 point specification that clearly communicates the aim of the project and the criteria which the project must follow. |
| To understand and discuss how to manufacture in a sustainable way and the impacts non-sustainable design and manufacture has on the environment. |
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| **TERM TOPIC: Clock** | |
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| Skill KPIs | To create a range of innovative 2D CAD designs that are suitable to be successfully laser cut. |
| To be able to effectively implement quality control checks to both practical and design tasks in order to improve outcomes. |
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| Theory KPIs | To be able to discuss the advantages and disadvantages of CAM in relation to mass, batch and one off production methods. |
| To be able to analyse more than one existing product using ACCESSSFMM and reflect on strengths and weaknesses of designs. |
| To write a design brief/ context and an 8 point specification that clearly communicates the aim of the project and the criteria which the project must follow. |
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| **TERM TOPIC: Graphics** | |
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| Skill KPIs | To be able to clearly communicate ideas through isometric drawing, rendering, freehand sketching, orthographic drawing perspective drawing and exploded diagrams. |
| To create technical drawings with precise measurements and interpret measurements between 2D and 3D drawings. |
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| Theory KPIs | To be able to evaluate and identify strengths and weaknesses of their own work. |
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| **TERM TOPIC: Structures** | |
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| Skill KPIs | To be able to successfully and independently use a Tenon saw, band facer, hand drill, tri square and mitre square to create a stable structure. |
| To accurately interpret 2D dimensions into a 3D structure. |
| To be able to effectively implement quality control checks to both practical and design tasks in order to improve outcomes. |
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| Theory KPIs | To be able to discuss the properties of materials suitable for structures in relation to their mechanical properties and their abilities to withstand forces. |
| To be able to discuss sawing techniques, creating angles with materials, the advantages of pilot holes and counter sinking and the advantages and disadvantages of different joining methods. |
| To be able to discuss workshop and classroom health and safety in relation to hazards, risks and PPE for the structures project. |
| To be able to evaluate and identify strengths and weaknesses of their own work and discuss areas for improvement. |
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| **TERM TOPIC: Trophy** | |
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| Skill KPIs | To successfully join materials through brazing and tap and die cutting. |
| To always work safely and apply/select the correct health and safety control measures when needed. |
| To accurately take measurements from technical drawing and measure, mark and cut materials with precision to create an accurate practical outcome. |
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| Theory KPIs | To be able to discuss the scientific properties and qualities of Aluminium, Steel and composite metals. |
| To be able to describe and explain the brazing procedure, tapping, die cutting and polishing. |
| To be able to assess the foundry and workshop for hazards and risk and suggest suitable control measures. |
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