

<b>Subject</b>	Product Design
<b>Term</b>	Rotation 1&2
<b>Duration (approx.)</b>	18 hours
<b>Module</b>	Electronic, Automatic Night Light

AO1 through quality and range of designing and design development through the explanation of how the product could be made using notes, diagrams and a sequence of making.  
AO2 through quality of the final product including the accuracy in assembly and functionality of the final product.

AO3 through quality of annotation sharing design thinking, Product analysis, quality of product development.

AO4 through application of knowledge of electronics, materials, adhesives, finish and making in final product and annotation/subsidiary sketches to show construction technique.

**Skills and concepts to be developed and assessed (linking to identified AOs)**

AO1 Independent Client identification, complex brief writing, evaluation of designers work, product evaluation, Use of alloy for soldering, Design idea generation, creative use of light, Low energy solutions. Manufacturing plans and materials selection Design development showing forward thinking to address and solve manufacturing problems.  
Development of 3D sketching and shading techniques  
Factual knowledge to be taught and assessed (including subject specific vocabulary).

AO2 Manufacturing of night light.  
Plan of making in sequence, mould making and plastic forming processes, materials and process selection, Hand and machine processing techniques, CAD/CAM processing of components testing and fault finding, successful assembling techniques, quality assurance.

AO3 Evaluation of existing products  
Evaluation of own and others designs  
materials selection & justification

**Factual knowledge to be taught and assessed (including subject specific vocabulary).**

AO4 Electronics theory and practical circuit building, Simple circuits, sensing circuits, Voltage, current resistance, component function and identification, sensing circuit explanation.  
plastics forming techniques including:strip bending, vacuum forming, injection moulding, blow moulding.  
Use of light through refraction, reflection, diffusion and focus.

**Formative Assessment/key piece of work prior to end of unit:**

In this module we will be assessing the following:  
AO1: Designing skills  
AO2: Making skills  
AO3: Evaluating  
AO4: Technical knowledge

**Summative Assessment**

Application of KS3 assessment matrix for AO1,2,3& 4 to assess

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

In this unit pupils will be expected to further build upon their designing skills through a high challenge product requiring them to design a product around an electronic circuit. Pupils are given even more independence and opportunity to become more creative and innovative. Pupils will not only design but also develop their product through producing sets of sketches and quality annotation explain exactly how they will make their product. They will also produce a sequenced plan of making. Complex making skills will require a range of moulding techniques and combination of materials to create quality products.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

There will be opportunities to promote good standards of literacy through the use of extended writing. Pupils will independently identify and describe a target market, formulate a design brief and articulate their opinions about existing products. They will write extensively to describe how the electronic circuit works using good technical language and they will also explain the role of each key component in the circuit. They will complete a comprehension activity answering questions about voltage current and resistance.

The use of writing stems, exemplars, stimulus questions and breaking down the description of a target market into key questions to help structure extended writing are strategically used to support this.

**Link forward: where next for the learning?**

For pupils who go on to opt to study at GCSE there will be a need to and broaden their knowledge of materials and build upon upon the range of drawing and sketching techniques to further develop their design skill set. The expansion and refinement of their manufacturing skills set will