

## Year 9 – Design Technology

### National Curriculum 'Plus'

**Subject: Design Technology**

**Project Title:**

Concrete USB Desktop Lamp Project

<b>Key Objectives</b>	<b>Key Knowledge Covered:</b>	Different materials that can be used to design a full product – Concrete/MDF/acrylic/plywood/hips for vac forming Linkages and mechanisms Applying appropriate manufacturing methods to produce product – new skills to be added vacuum forming – bigger focus on making use of the laser cutter as a manufacturing tool Re-cap of manufacturing skills from Y7 – traditional wood cutting methods – how they can be applied in this project Y8 – traditional hand cutting methods – casting – working with acrylic – introduction to the laser cutter All pupils to produce component parts on Techsoft 2d design
	<b>Key Skills Covered:</b>	Concrete Moulding Basic electronics Making use of Techsoft 2d design to produce component parts Designing of the light shade – this is the design aspect to the project – pupils design and make how the lamp shade will look and attach to frame. Vacuum forming – the process – materials you can use with it and how it is applied in real life - baths/sinks/yoghurt pots etc Develop their communication skills through sketching, planning, apply mathematical skills to solve problems and present using oral and digital skills. Evaluate work completed in the past and present. Test an evaluate their own products and those of their peers. Evaluate the impact of their product and materials on the environment.

**How is this project designed so it covers and goes beyond the National Curriculum?**

Design

Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools – pupils will have supporting booklets to produce designs in and annotations – and draw their work on Techsoft 2d design.

Make

Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture – pupils to identify and select the correct tools and processes for the project – pupils to independently make use of the laser cutter – this goes beyond as they are not just getting an experience of the machine but actually making use of it and are aware of the whole process from design to manufacture.

Select from and use a wider, more complex range of materials, components and ingredients, considering their properties

Pupils will be using concrete as a material – this is a new material they will be aware of it but not aware how it is made and can be shaped and the dangers of it.

Evaluate as the development of the product progresses.

Technical Knowledge

Understand how more advanced electrical and electronic systems can be powered and used in their products.

Apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].

To be discussed as a class exercise how programming could be used to control the light – the input could be an LDR (light dependent resistor) could operate the light – how a P.I.R could turn it on.