

	Half of Carousel rotation - Approx 6-7 weeks	Half of Carousel rotation - Approx 6-7 weeks	
Subject	Design and Technology	Year Group: 8	8
	Half of Carousel rotation - Approx 6-7 weeks	Half of Carousel rotation - Approx 6-7 weeks	
Scheme title	D&T Materials - Using electronics and CAD/CAM to make a lamp	D&T - Technical drawing and making 'Block-Bots'	
Purpose of scheme	For this scheme pupils will be introduced to electronics as a manufacturing resource. This introduction will enable pupils to recognise and identify how electronic products are made up of inputs/ outputs and roles that different components have in a circuit. Pupils will also learn the advantages and disadvantages of CAD/CAM and further develop their understanding of the laser cutter and 2D design. For the project, pupils will need to identify a client, and in doing so learn about the importance of identifying and meeting customers needs and how this is crucial to the economy of product design.	This Year 8 scheme of work introduces pupils to essential technical drawing methods, including isometric, one- and two-point perspective, and orthographic projection. Students will also explore the integration of CAD/CAM technologies to bridge the gap between digital design and physical production. By applying these skills, pupils will design and construct a custom timber "Block Bot." This foundational curriculum provides a direct pathway into further education and careers in manufacturing, product design, and engineering, equipping students with the spatial reasoning and graphical communication skills required for the modern industry.	
Knowledge in sequence	Pupils will initially learn about the importance of establishing an appropriate client and their specific needs. Pupils will learn about electronic systems and how they are made up of inputs and outputs. Pupils will then focus on the purpose of a resistor in a circuit and how resistance is measured. Using this initial knowledge, pupils will begin to build their electronic lamp by soldering their components to their PCB's in the correct order. In doing this, pupils will learn how to solder both safely and accurately. Pupils will need to manufacture a lamp shade and to do this they will use the laser cutter. Pupils will further develop their knowledge of 2D design, learning how to trace and vectorise images sourced from the internet, as well as drawing designs to a specific size. All practical elements will finally be pieced together to make a fully functioning lamp to take home. Final products will be evaluated, giving pupils an opportunity to further develop their understanding of evaluating practical outcomes.	Pupils begin by identifying various drawing strategies, learning to distinguish between 2D orthographic views and 3D pictorial representations. Emphasis is placed on the importance of technical accuracy and how these methods serve as the universal language of industry. Through focused practice, students master the mechanics of isometric and perspective drawing. This iterative process allows them to improve their application over time, developing the precision required for professional standards. Students experience the design-to-make pipeline by producing detailed isometric drawings for a "Block Bot." This stage mimics real-life product development, where 2D concepts are translated into a workable 3D blueprint. The sequence culminates in the physical construction of the Block Bot from timber, using their own drawings as the primary reference. Finally, pupils evaluate the outcome, comparing their finished product against their original technical drawings to measure success and identify areas for improvement.	
Skills	In no particular order, pupils will learn the following skills; 2D design, Soldering, using a screw driver and evaluative skills such as PEE.	In this project, pupils develop a versatile toolkit of graphical communication and practical fabrication skills. By mastering technical drawing conventions, such as orthographic and isometric projection—they enhance their spatial awareness and ability to visualise 3D forms..	
Key words	Solder, CAD/ CAM, Resistor, LED, Acrylic, Thermoplastic, Thermosetting plastic, Input, output, client, brief, 2D design ,laser cutter, biodegradable	Isometric, perspective, orthographic, and CAD/CAM for design, alongside timber, grain, tolerance, assembly, and prototype for the manufacturing phase. Students will also focus on scale, specification, aesthetics, and evaluation to ensure their final "Block Bot" meets professional standards.	
End point	By the end of this project, pupils will have a much better understanding of how electronic products function and how they are manufactured. They will have confidence in soldering and will be much more accurate when doing it. pupils will know the role of a resistor in a circuit and how resistance is measured. Pupils will be able to make design decisions about using a laser cutter and will have full understanding of its potential use in manufacturing. Pupils will end up with a good quality product and gain confidence in using the applied D&T process as well as continuing to develop their skills using practical tools and machinery.	By the end of this project, pupils will have achieved a professional foundation in graphical communication by successfully translating complex 3D ideas into accurate isometric and orthographic drawings. They will have gained practical autonomy in the workshop, demonstrating the ability to safely use tools to transform raw timber into a finished "Block Bot" that matches their technical specifications. Ultimately, students will have developed the analytical skills to evaluate their work, proving they can bridge the gap between digital or paper-based design and physical engineering.	
Assessment Methods	Key assessment pieces includes design, manufacturing , literacy (Usually in the form of evaluation or analysis) and technical assessment (Socratic online assessment assessing theoretical understanding of the chosen materials and its processes.)	Key assessment pieces includes design, manufacturing , literacy (Usually in the form of evaluation or analysis) and technical assessment (Socratic online assessment assessing theoretical understanding of the chosen materials and its processes.)	

