


DESIGN AND TECHNOLOGY

[LINK – To lesson resources](#)

YEAR 9 – Electronics Unit (KS3) – Speaker Project															
INTENT:		The bigger picture:													 <p>Character & Culture Character and Culture is embedded within the curriculum map and coded as shown.</p> <p>Society Design and Technology can lead to many careers in society. An example of this is within the STEM routes.</p>
To play a part in developing knowledge and understanding of the Design and Technology National Curriculum. Students are to... create an amplifier circuit with the addition of a laser cut housing.		This scheme plays an important role within the technology curriculum as it is essentially teaching skills from the National Curriculum and preparing students for the challenges of key stage 4. The Next Step: This unit is preparation for the Engineering Design Course at Key stage 4. It focusses predominantly on Unit R108 / R040 which is based upon the planning and manufacture of a product.													
Lesson	Standard Components		British values – BSI / EU		- Culture of technology		- Society – why is there a need.		- BSI PPE Health & safety		- Society Evaluative skills		- Society Iterative D		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Retrieval Task:	What is the purpose of the product?		What are the key dimensions?		What is the best way to solder?		How do resistors work?		What does PPE stand for? Give examples.		How would you rate your performance?		What is Engineering? At Bilton		
Objective: I do, we do & you do...	CAD Design 1. *Share the design brief. Use CAD template to create. Use the correct component sizes.	CAD Design 2. - Add text to your design to personalise - Use the insert text, edit, and explode process to do this.	CAD Design 3. - Add a silhouette image from the internet. - Use the vectorise, edit, and explode process to do this. FAR 1 CAD Design - Give feedback	CAD Design 4. - Check design and send to the technician s.calwell@ - once sent you can start the circuit creation using the picture diagram. FAR 1 Respond	CIRCUIT Design 1. - Use the pictorial diagram to create the circuit step by step. - Use the step-by-step plan of making sheet, - Start with the resistors.	CIRCUIT Design 2. - Use the pictorial diagram to create the circuit step by step. - Finish with the LED and speaker	CIRCUIT Design 3. - Use the pictorial diagram to create the circuit step by step. - When finished create a risk assessment sheet	CIRCUIT Design 4. - Use the pictorial diagram to create the circuit step by step. - When finished start to construct	Overspill Finish off. - Finish the risk assessment Stretch 1 Create a PPE page. Stretch 2 Create a control measures column on the plan of making sheet.	Construct Final Design - Start putting the acrylic pieces together. - Use the MEK if necessary - Use standard parts - Use impact adhesive	Construct Final Design *FAR- Give Feedback – allow time for students to respond to actions	Construct Final Design - When finished start the evaluation FAR 2 Allow time to respond to actions	Construct Final Design Stretch 1 -Evaluate final design.	Construct Final Design Stretch 2 Create an improved drawing, justify what and why you have changed certain aspects. (4 different ways)	
	<p>Science: Within this unit students will develop their electronics skills and making skills which will benefit the science curriculum.</p> <p>ICT: This unit will give students an understanding of how you can design in 3D using CAD/CAM</p> <p>LESSON STRUCTURE:</p> <ul style="list-style-type: none"> ALL lessons will use the whole school strategy I DO, WE DO, YOU DO ALL lessons will have a retrieval task that engages learners immediately after arrival. In practical settings this may not use a PowerPoint. All lessons will have a period of SILENT STUDY. All lessons will have Learning objectives visible. <p>(TOPIC SHEET INFORMATION)</p> <p>WHAT SKILLS WILL BE DEVELOPED:</p> <ul style="list-style-type: none"> To be able to understand, apply and create a circuit and acrylic (laser cut) housing. <p>WHY WE ARE LEARNING THIS:</p> <ul style="list-style-type: none"> To apply the use of circuit design and CAD/CAM when designing an authentic product. To develop practical skills To develop planning and evaluative skills. <p>HOW TO BECOME AN EXPERT IN THIS TOPIC:</p> <ul style="list-style-type: none"> Practice the software 2D design and Google Sketchup in the library at lunch or after school. Purchase an electronics kit and work through at home Use Youtube.com to watch tutorials of home projects you can complete with a kit soldering iron. 														
Silent Study:	B M E	B M E	B M E	B M E	B M E	B M E	B M E	B M E	B M E	B M E	B M E	B M E	B M E	B M E	
Assessment			FAR 1								FAR 2		INPUT GRADES		
Homework	TEAMS INTERACTIVE *10 questions						TEAMS INTERACTIVE *10 questions						End of year assessment - QUIZZIZ		
Key Vocab	Design Brief, 2D Design software, vectorise, bitmap, explode, user requirements, accuracy, precision, health and safety, circuit, LED, resistor, capacitor, amplifier, needle nose pliers, wire strippers, risk assessment, control measure, PPE – personal protective equipment, plan of making sheet, evaluation, improvements, justify, function, aesthetics, cost, customer, environment, safety, size, materials and manufacture														
Cultural Capital	Electronics in Local Industries: Electronics projects fit within year 7,8 and 9, creating a lamp, a steady hand game and an amplifier. Understanding the application of electronics in local industries, such as motorsports, electrical engineering and automotive engineering, provides students with essential practical knowledge, enhancing their ability to connect classroom learning to real-world applications.														
Connected Knowledge	This is a unit designed to... prepare students for the future of design and technology at Bilton School as having electronics and CAD/CAM skills is a priority and plays a big part of the future curriculum. Following this it supports the journey into KS4 and 6th form Art and Design. Across the school this supports the Art, ICT and Business departments as these skills are transferable and are beneficial in their curriculum plans. Beyond school , the world of work is becoming more increasingly automated, and we are in an area of the country with a huge amount of engineering companies and potential future jobs. CAD/CAM is a perfect steppingstone to further education, apprenticeships and university.														
IMPACT	Students measure progress using the department <u>F.A.R tracking sheets</u> which are in the <u>Assessment Booklets</u> , Teachers track the marks given using the <u>department shared mark book</u> and SIMS. This will show progress over time and prepare students for future <u>learning at Bilton School</u> .														