Sheldon School

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Curriculum Plan

KS3 – Design & Technology

Year 9

Golden Threads	Enrichment	Review and Evaluation

	Topics & Substantive Knowledge	Disciplinary Knowledge	Assessment	Misconceptions	Key Vocabulary	Knowledge Tracking
Resistant Materials	Design Communication. (Design Ideas/ Concepts) Soldering a complex circuit. Testing and problem solving and fault checking. Plastic Identification. CAD design (TechSoft Design). CAM manufacturing. Product assembly of PCB 2D CAD drawing of their chosen design for torch body and key chain attachment. laser cut acrylic body and key chain. Sustainability and finite resource analysis. **Making/Technical processes** • Design communication for concept designs for USB torch. • Soldering a complex circuit. • Plastic identification and coding. • CAD Design. • CAM Manufacture. • Finite resources and renewables **Assembly techniques** • Assemble and screw together all pieces. (high level of dexterity required)	Soldering station and PCB holder. Testing and problem-solving faulty circuits. CAD Design on TechSoft Design V3. Laser cut product using CAM manufacturing (laser cutter). Assembly of 7 stackable pieces plus completed PCB once tested. Fabrication of switch adapter to custom fit the torch design	End of unit test. End of module Design & Make mark. 4 x Multiple choice question homework's	Confusing Thermo and Thermosetting plastic. Soldering components in the wrong way around reversing the polarity of the circuit. Design restrictions or mistakes resulting in incorrect sized pieces. Alignment issues when assembling components.	Design Graphics Manufacture Brand Identity Client Laser Cutter Solvent cement Analysis Development Soldering	Building on prior knowledge of year 7 plaque project soldering a simple circuit to Soldering a complex circuit. Building on prior knowledge of year 7 plaque project and the year 8 embellishment project to complete a complex CAD design and CAM manufacture. All skills learnt will become transferable to GCSE Design and Technology (Resistant Materials).

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Textiles	**DESIGN**: Research and exploration looking at the impact of single use plastic on the environment. Working with a context of producing an eco-friendly tote bag. Generation of creative design ideas with the use of annotated sketches. **MAKE**: Use of specialist tools, techniques and processes such as CAD/CAM, printing, seams, hems, finishing techniques, working with a sewing machine etc. Moving from a 2D product to a 3D accessory. **EVALULATE**: Test and evaluate final product. **TECHICAL SKILLS**: understand the properties of materials eg Fibres and Fabrics, understanding allowances eg seam allowance. Understanding the impact of textiles on the environment and the responsibility of the sustainable designing and products. • Environmental challenge • Design strategies • Communication of design ideas • Specialist techniques and processes • Surface treatments and finishes • Specialist tools and equipment • Materials and their working properties	**DESIGN**: The environmental impacts of single use plastic on the environment and possible solutions. How to produce a high-quality design solution eg design ideas, final design with the use of annotation. **MAKE**: Using the appropriate tools and equipment for use on fabric. Using CAD/CAM to produce stencils for effective printing. Working with accuracy and precision on seams, pockets, gussets and hems. Safe use of the sewing machine and textiles equipment. **EVALUATE**: Looking at the positives and negatives of final outcomes. Self and peer assessment and reflection. Methods to improve and modify. **TECHNICAL SKILLS**: Natural and man-made fibre knowledge. How to add colour and decoration to fabric through printing. The use of detailed plans to aid in manufacture. Responsibility of the designer to be sustainable.	End of unit test. End of module Design & Make mark. 4 x Multiple choice question homework's	Using bridges and islands when making a stencil. Improper application of paint when printing onto fabric. Improper threading up of the sewing machine. Improper use of the sewing machine and other tools/ equipment used in the textiles room. Incorrect cutting of fabric and the use of seam allowances. Remember to use seam allowances when sewing a product. Knowing the right side and wrong side of fabric during practical. Differences between hems and seams. Environmental impact of using natural fibres over synthetic fibres.	Seam Calico Stencils Recycle Prototype Annotation Allowance Environment Nature Laser cutter	**Prior Learning:** Building on the knowledge acquired in Y7 and Y8. Students will learn more advanced textiles techniques and processes including: How to add pockets, gussets, and working with bought-in components. **Future Learning**: KS3 projects provide a sound foundation for GCSE Design and Technology specialising in textiles.

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Food	International and British Cusine Practical Skills Careers in the Food Industry • What is the definition of Cuisine? • What dishes represent British Cuisine? • What dishes represent International Cuisine? • What are the factors that determine the cusine of a region or a country? • Making SIX dishes that represent the cuisine of certain countries whilst developing practical ability and skills. • Understanding the varied breadth of careers that are in the food industry.	Students to name the top ten British dishes that are recommended to international student visitors to Britain Students to match 16 different international dishes with 16 different countries and which is the national dish of each country. Discussion and note making on the many factors that shape the cuisine of a region or country: • Geography and Climate • Culture and Tradition • Religion • Wealth • Sustainability • Migration • Social Factors **Dishes made**: 1. Chilli con Carne (Mexico) (Encourage use of chocolate) Key skills – Reduction Sauce and Vegetarian Preparation 2. Thai Green Curry (Thailand) (Unlikely Year 9 have had this before – new experience) Key Skills - Handling of raw meat 3. Meatballs and Ragu Sauce (Italy) (Two processes in one practical, making meatballs and making a tomato sauce) Key Skills – Multiple Processes 4. New York Mac n Cheese (USA) (Dish that meats ALL the aspects of the Eatwell Guide) Key Skills – Roux Sauce 5. Cheese and Onion Pasties (UK) (A vegetarian version of classic Cornish Pasty) Key Skills – Shortcrust Pastry 6. Dutch Apple Cake with Citrus Creme Fraiche (Holland) Key Skills – Creaming Method Discover the various levels of chefs there are. Look at how studying food at higher levels, can open varied careers in the food industry. Watch biographical videos on several different careers in the food industry.	End of Module Test	That studying food at a higher level can only lead to a job as a CHEF.	Cuisine Traditional Environmental Religion Celebration Financial Sustainability Migration Ingredients Cultural	Builds on practical skills and techniques learned in Year 7 and Year 8. Increases practical independence. Allows more freedom of choice of ingredients Prepares students for rigour of GCSE food practical tasks. Allows students to see how GCSE and Sixth Form food can support a career in the food industry.

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Graphics	Understand the concept of sustainability with regard to the built environment. Understand the term eco-architecture. Understand the requirement to design buildings for a particular function, size, style, and cost. Understand the concept of an appropriate area size for a classroom of 30 pupils. Understand the ergonomic requirements of an individual and groups using a building. Understand different modelling techniques, physical/virtual **DESIGN** Work of others to include a diverse range of architects with a particular emphasis on eco-architecture. Concept sketches Orthographic projection One/two point perspective drawings CAD virtual modelling using Sketchup Mathematical modelling space requirements. **MAKE** Modelling in card and foam **EVALUATE** Designer evaluation Client evaluation	**DESIGN** Review the work of others using a diverse range of 20th and 21st century architects. Create concept sketches using appropriate graphic pencil and pen techniques. Introduce the concept of scale (1:100 or 1:200) to produce a suitably sized scale front elevation, end elevation and plan view. Generate 0ne point and two point perspective view of your chosen design. Using CAD create a detailed virtual model of your design highlighting the **MAKE** Concept foam model Card model Present design and model to an audience **EVALUATE**	End of unit test. End of module Design & Make mark. 4 x Multiple choice question homework's	Scale: Using an appropriate scale to enable clear drawing to be completed on A3 paper.	Architecture Atrium Cladding Eco-friendly Elevation Environment Fossil fuel Insulation Scale Sustainable Ventilation	Building on the skills learnt through the previous Graphics projects in year 7 and 8