

	Systems and Control	Product Design	Food Preparation and Nutrition		
Year 7	<p>The fuse-tester project introduces pupils to electronics and the different processes involved, from theory to practical skills.</p> <p>One of the main areas of focus during the theory section is on resistance. Pupils are taught how to read resistors and how to correctly identify them in different values. For instance, ohms and kilo ohms.</p> <p>Pupils are taught how to use workshop machinery and tools safely. Pupils use the pillar drill, CAD/CAM (laser cutter) and soldering irons. The correct process for inserting, cutting and soldering the components are all taught at this stage.</p> <p>Curriculum Links:</p> <p>D1: Develop detailed design specifications to guide your thinking. D6: Produce models of your ideas using CAM to test out your ideas.</p> <p>E1: Evaluate your products against the original specification and identify ways of improving them.</p> <p>M3: Make use of specialist equipment to mark out materials.</p> <p>M4: Use a broad range of material joining techniques including stitching, mechanical fastenings, heat processes and adhesives.</p> <p>T3: How more advanced electrical and electronic systems can be powered and used in their products.</p> <p>T4: How to use simple electronic circuits incorporating inputs and outputs.</p>	<p>The linkage project focuses on basic skills - skills such as setting out a page and using a ruler accurately. Pupils design and make a character, which is capable of holding a bag, dressing gown or personal item from a hook/peg.</p> <p>After scaling up the chosen character, it will be vectorised using 2D CAD and cut out. The character will contain a linkage and an elastic band to return an arm, leg or tail, for instance, back to an original position after the item has been removed from the hook</p> <p>Curriculum Links:</p> <p>D1: Develop detailed design specifications to guide your thinking.</p> <p>D4: Develop and communicate design ideas using annotated sketches.</p> <p>D5: Use 2D and begin to use 3D CAD packages to model your ideas.</p> <p>D6: Produce models of your ideas using CAM to test out your ideas.</p> <p>E1: Evaluate your products against the original specification and identify ways of improving them.</p>	<p>This purpose of this project is to introduce the core skills needed in design and technology. The focus will be on practical skills, introducing the students to many of the tools and processes that they will need and providing an opportunity to cover the H&S implications of being in a workshop.</p> <p>The project is a make only SOL and the pupils will be assessed on their initial practical ability.</p> <p>Curriculum Links:</p> <p>M3 Make use of specialist equipment to mark out materials. M4 Use a broad range of material joining techniques. M6 Investigate and develop skills in modifying the appearance of materials. T1 How to classify materials by structure e.g. hardwoods and softwoods</p>	<p>This purpose of this project is to introduce the core skills needed in design and technology. Pupils will design and make their own wooden character, whilst enabling them to understand and improve their design presentation skills. During the making process the pupils will experience working with the tools and processes that are available to them and provide an opportunity to cover important areas such as Health and Safety and basic tool skills. The pupils will then learn some basic CAD</p> <p>Introducing them to both 2D and 3D CAD (Tecsoft 2D Design and Google Sketchup)</p> <p>Curriculum Links:</p> <p>D4 Develop and communicate design ideas using annotated sketches D5 Use 2D and begin to use 3D CAD to test their ideas. M3 Make use of specialist equipment to mark out materials. M4 Use a broad range of material joining techniques.</p>	<p>Skills: theory and practice</p> <ol style="list-style-type: none"> 1. Health and safety procedures. Knife skills. Bridge and Claw method. hazards. hygiene. Cross contamination. Equipment. 2. Understand the eat well guide: food groups, sources. Diet. Influences. 3. Nutritional value of food: Identify main sources of carbohydrate. fat. protein. fibre 4. vitamins and minerals 5. Introduction to food provenance. sustainability. Seasonality 6. Understand functions of ingredients. Starches/Bread. Thickening, Gelatinisation. 7. Be able to use technical language. Proving. Kneading. Gluten. Ferment. <p>Making: personal . practical . technical tasks</p> <ol style="list-style-type: none"> 1. Competence: utensils . electrical equipment (Use of hob . oven . grill) . knife skills 2. Creativity . research . plan . prepare . make . experiment 3. Identify hazards. cross contamination . standards of hygiene 4. Team work . ability to work independently . Communication. Presentation 5. Function of ingredients: understand how starches work/yeast produces CO2 <p>Product: outcome . presentation</p> <ol style="list-style-type: none"> 1. Tomato Soup – Gelatinisation, Fruits and Veg topic 2. Vegetable Enchilada’s – Fruits and Veg topic 3. Apple and Berry crumble - Fruits and Veg topic 4. Macaroni Cheese – Gelatinisation/Carbohydrates topic 5. Pizza – (Bread based) yeast experiment Gelatinisation/Carbohydrates topic 6. Chocolate orange melting middle cakes 7. Cereal bars – Design task

		<p>M3: Make use of specialist equipment to mark out materials.</p> <p>M4: Use a broad range of material joining techniques including stitching, mechanical fastenings, heat processes and adhesives.</p> <p>M5: Use CAD/CAM to produce and apply surface finishing techniques.</p>		<p>M6 Investigate and develop skills in modifying the appearance of materials. T1 How to classify materials by structure e.g. hardwoods and softwoods</p>	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Year 8</p>	<p>The moisture sensor is a step up from the year 7 circuit and includes more components. Resistance is re-addressed as the circuit contains more than one resistor. Pupils are also introduced to new components such as the transistor.</p> <p>Pupils design with 2D Techsoft (CAD), using different processes - including vectorising an image. Pupils use the laser cutter to realise their designs and solder their electronic circuit using appropriate tools and equipment.</p> <p>Curriculum Links:</p> <p>D14: Use mathematical modelling to indicate likely performance before using physical materials and components, for instance when developing circuits or gearing systems.</p> <p>E5: Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups.</p> <p>M7: Select appropriately from specialist tools, techniques, processes, equipment and machinery, including computer-aided manufacture.</p>	<p>The tea light project is designed to extent students designing skills and enables them to take creative risks when designing. They will follow an iterative design process to reformulate a design brief into a viable solution.</p> <p>They will produce 3D models to explain their design ideas and they will use CAD to improve their presentation.</p> <p>Through the making process students will expand upon their knowledge and understanding learnt in year 7. They will use a broad range of manufacturing techniques, including hand craft skills</p> <p>Curriculum Links:</p> <p>D8 Take creative risks when making design decisions.</p>	<p>Skills: theory and practice</p> <ol style="list-style-type: none"> 1. Health and safety procedures . hazards . hygiene . cross contamination 2. Understand and apply principles of eat well guide . food groups . sources/Identify main sources of carbohydrate . fat . protein . fibre . vitamins and minerals 3. Develop understanding of food provenance. sustainability. Seasonality. World foods. Air miles. Culture. Religion 4. Understand the effect of raising agents in Biscuits and Cakes 5. Be able to write hypothesises and conduct experiments, 		

	<p>M8: Select appropriately from a wider, more complex range of materials and components taking into account their properties such as water resistance and stiffness.</p> <p>M10: Use a broad range of manufacturing techniques including handcraft skills and machinery to manufacture products precisely.</p> <p>T5: Use learning from science to help design and make products that work.</p> <p>T6: Use learning from mathematics to help design and make products that work.</p>	<p>D11 Use specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations.</p> <p>D13 Produce 3D models to develop and communicate ideas.</p> <p>M7 Select appropriately from specialist tools, techniques, processes, equipment and machinery, including computer-aided manufacture.</p> <p>M8 Select appropriately from a wider, more complex range of materials and components taking into account their properties such as water resistance and stiffness.</p> <p>M9 Use a wider, more complex range of materials and components, taking into account their properties.</p> <p>M10 Use a broad range of manufacturing techniques including handcraft skills and machinery to manufacture products precisely.</p> <p>M11 Exploit the use of CAD/CAM equipment to manufacture products, increasing standards of quality, scale of production and precision.</p> <p>M12 Apply a range of finishing techniques, to a broad range of materials including metals, polymers and woods.</p> <p>E5 Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups.</p> <p>E6 Know about an increasing range of designers, engineers, technologists and manufacturers and be able to relate their products to their own designing and making.</p>	<p>Making: personal . practical . technical tasks</p> <ol style="list-style-type: none"> 1. Competence: utensils . electrical equipment (Use of hob . oven . grill) . knife skills 2. Creativity . research . plan . prepare . make. ability to innovate . experiment 3. Identify hazards . cross contamination . standards of hygiene 4. Choose appropriate method when preparing . cooking . combination of ingredients .use of herbs . spices . flavourings 5. Team work . ability to work independently . communicate . professionalism . presentation 6. Function of ingredients: understand and deploy 7. Reflect . evaluate . self assess . peer assess <p>Product: outcome . presentation</p> <ol style="list-style-type: none"> 1. Stir Fry – Knife skills/World Foods 2. Thai Green Curry – Meat/World Foods 3. Lasagna – Meat/World Foods 4. Pasta – World foods 5. Cake – Raising agents 6. Gateau – Design and Presentation 7. Biscuits – Raising agents 8. Bread – Yeast Experiment
Year 9	<p>The systems linkage project combines skills and knowledge learned by pupils in year's 7 and 8. Pupils design and build a mixture of systems; electronic and mechanical in order for a linkage, run by a motor and gears, to strike a micro-switch.</p> <p>Once the micro-switch is struck a light emitting diode (LED) lights up. The LED is positioned in a design, which pupils have to create.</p> <p>Curriculum Links:</p>	<p>Skills: theory and practice</p> <p>Health and food safety procedures. Hazards. Hygiene. cross contamination. Danger zone. Temps. Food poisoning bacteria.</p>	

	<p>D15: Develop design specifications that include a wider range of requirements such as environmental, aesthetic, cost, maintenance, quality and safety.</p> <p>D18: Use 3D CAD to model, develop and present my ideas.</p> <p>D19: Use CAD and related software packages to validate their designs in advance of manufacture.</p> <p>E7: Select appropriate methods to evaluate their products in use and modify them to improve performance.</p> <p>E8: Produce short reports, making suggestions for improvements.</p> <p>M7: Select appropriately from specialist tools, techniques, processes, equipment and machinery, including computer-aided manufacture.</p> <p>M14: Make simple use of planning tools, for instance Gant charts.</p> <p>M15: Communicate their plans clearly so that others can implement them.</p> <p>M17: Adapt their methods of manufacture to changing circumstances.</p> <p>T11: Understand how more advanced mechanical systems used in their products enable changes in movement and force.</p> <p>T13: Make adjustments to the settings of equipment and machinery such as drilling machines</p> <p>T14: Apply computing and use electronics to embed intelligence in products that respond to inputs.</p> <p>T15: Make use of sensors to detect heat, light, sound and movement such as thermistors and light dependant resistors.</p> <p>T16: Apply the concepts of feedback in systems.</p> <p>T17: Control outputs such as actuators and motors.</p> <p>T18: Use software and hardware to develop programmes and transfer these to programmable components for example, microcontrollers.</p> <p>T19: Make use of microcontrollers in products you design and manufacture.</p> <p>T20: Construct and use simple and compound gear trains to drive mechanical systems from a high revving motor.</p>	<p>Understand and apply principles of eat well guide. Understand the role of micronutrients. Macronutrients in nutrition: function. Sources. Values.</p> <p>Factors that influence choice: sensory qualities. Preference. Availability. Cost. Lifestyle. Time of day religion. Culture. Intolerance</p> <p>Be able to create a range of high skilled technical dishes. Handling of meat.</p> <p>Understand the functions of ingredients in a variety of dishes</p> <p>Be able to write a hypothesis and evaluate results from a range of experiments.</p> <p>Understand ratios in a range of pastry products</p> <p>Making: Personal. Practical. technical tasks</p> <ol style="list-style-type: none"> 1. Competence: utensils. Electrical equipment (Use of hob . oven . grill) . knife skills 2. Identify hazards. Cross contamination. standards of hygiene. Temperatures. 3. Function of ingredients: understand and deploy. 4. Shortcrust pastry, Puff pastry and Choux pastry ratios 5. Choose appropriate method when preparing . cooking . combination of ingredients . use of herbs . spices . 6. Creativity . research . plan . prepare . make. ability to innovate . 7. Team work . ability to work independently . communicate . professionalism . presentation 8. Hypothesis. Experiment. Plan. Team work. Evaluate ingredients functions. 9. Reflect . evaluate . self assess . peer assess <p>Product: outcome. Presentation</p> <ol style="list-style-type: none"> 1. Stir Fry – Knife Skills 2. Bread – Testing Flours
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