



Scheme of Work

SUBJECT: **Design & Technology**

YEAR - 9

	Topic – Pewter Jewellery	Topic – Passive Amplifier	Topic – Technical knowledge
Key concepts	Forming metals, creating moulds using various techniques, design for client, purpose and function of jewellery.	Using design criteria to objectively generate then select design concepts. Using materials in novel ways including electrical circuits.	See DT curriculum overview document for extensive list.
Themes	Ergonomics, forming, finishing metals, presenting products to appeal to potential purchasers.	Ergonomics, anthropometrics, fabrication, combining materials, understanding sound.	See DT curriculum overview document for extensive list.
Challenge	Use source material to create imaginative, original designs. Use complex mould techniques (e.g. multiple layers) to create product.	Adding complexity to design through layering materials (fabricating). Aesthetics developed to suit end user of product.	Pupils always prompted to extend their thinking in response to questions or worksheet tasks.
Support	Design work supported by use of templates. Simple practical outcomes supported by fail-safe techniques such as drilling or stamping.	Templates supplied to enable manufacture of functional, basic product which can be improved or added to as pupil is able.	Keywords, sentence starters used to allow pupils access to each topic.
Literacy focus	Technical vocabulary used to describe/annotate work. Keywords relevant to non-ferrous materials.	Industrial terms used, keyword such as aesthetics, ergonomics, anthropometrics. Annotation applied to design presentation.	Written response to topic may include free-text, labelling of diagrams or creation of revision notes such as flash-cards.
Numeracy focus	Temperatures relevant to non-ferrous materials. Volumes / costs calculated.	Measuring, scale, adapting product to fit existing item (phone).	Topics such as 'Power Generation' are numeracy rich. E.g. conversion of Watts to KW, MW etc. Understanding of scale – how many



			EVs may be charged by one wind-turbine or how many wind turbines are required to replace on nuclear power station. Gears, torque/speed - calculations
Cross-curricular links	Science – non-ferrous metals, melting temperatures.	Sound waves (revision of year 8 science topic).	Some Technical Knowledge crosses over with Science curriculum and/or geography. (e.g. Power generation.)
SMSC & MBV	Reasons for wearing jewellery including religious and symbolic. Environmental implications of material sourcing and use.	Environmental impact of using manufactured boards rather than natural timbers. Pollution, energy consumption etc.	Technology as an agent for social change, impact of changing demands, climate change, greenhouse gas emissions etc.
ASSESSMENTS	Analysis of existing products and situation, design work/presentation, practical outcome, presentation (e.g. box/package).	Design work, presentation, planning, practical assessment, evaluation.	Verbal feedback to questions, peer review, paired discussion.
Out of school learning	<b>IST</b> – Graphics, modelling and investigation of products/materials.		



**NB: Module is split into the following:**

- **Theory** – These sessions are linked to the theme/project and skills/knowledge feeds into the project. However, these may be ‘stand-alone’ lessons with immediate outcomes, feedback and progression.
- **Portfolio** – These sessions are focused on design, development and activities specifically feeding into the practical element of the module.
- **Practical** – These sessions provide pupils with workshop time to build, construct and finish the product(s) they have designed during portfolio lessons.

Sessions are colour coded in the SOW to indicate category.

It is important to note that the sequence of these lessons is highly dependent on the ‘pattern’ of time allocated in the timetable (e.g. double sessions would be mostly used for practical while end-of-day shorter sessions preclude practical work and would be used to focus on theory or portfolio work).

Other factors such as interruptions to the normal timetable or pressure of completing practical work with a less practically able group mean the sequence in which sessions are delivered may alter. Indicative time is suggested for each activity and may be split over more than one week.

Sequence of activities would ideally be as follows – subject to pace of group, prior knowledge and other external factors. (Assuming 5 weeks X 5 lessons.)

**Module 1**



**Module 2**





Lesson	Key concepts	Learning outcomes	Differentiation	Resource
<p>Portfolio 1 (2 sess)</p>	<p><b>Intro to project and analysis</b></p> <ul style="list-style-type: none"> <li>• Examples of jewellery – what might be included or not</li> <li>• Reasons for wearing jewellery – inc. religious, cultural or similar.</li> <li>• Suitable themes for inspiration.</li> <li>• Sketching ideas based on chosen theme</li> <li>• Techniques for presentation of ideas.</li> </ul>	<ul style="list-style-type: none"> <li>• <b><u>The Big Picture - 1</u></b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Designing Jewellery.</li> </ul> </li> <li>• <b><u>Learning Objective</u></b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Using group discussion to analyse situation.</li> </ul> </li> <li>• <b><u>Success Criteria</u></b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Complete mind-maps analysing situation.</li> <li>○ <b>Better</b> – Annotate mind-map with further detail.</li> <li>○ <b>Best</b> – Adapt/extend a design brief and specifications based on analysis.</li> </ul> </li> <li>• <b><u>The Big Picture - 2</u></b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Designing Jewellery.</li> </ul> </li> <li>• <b><u>Learning Objective</u></b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Using sketches and annotations to</li> </ul> </li> </ul>	<p><b>Support:</b> Drawing / writing 'frames' or sentence starters provided to support engagement</p> <p><b>Challenge:</b> Adapt/extend design brief and specifications.</p> <p>Fully annotate concept presentation</p> <p>Draw using formal methods including rendered 3D</p>	<p>Presentation Stationary Books Support materials Internet (if available) for source material</p>



		<p>communicate a wide range of ideas for our jewellery.</p> <ul style="list-style-type: none"> <li>• <b>Success Criteria</b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Show a range of ideas for different jewellery products that would meet your specifications/criteria.</li> <li>○ <b>Better</b> – Present these ideas as 3D drawings with shading.</li> <li>○ <b>Best</b> – Develop one or more of these ideas showing exactly how it could be made.</li> </ul> </li> </ul>		
<p><b>Portfolio 2</b> (2 sess)</p>	<p><b>Developing design / planning</b></p> <ul style="list-style-type: none"> <li>• Conversion of concept ideas to working drawings</li> <li>• Scale &amp; form of mould</li> </ul> <p>Sequence planning of making process including check stages. (Flow chart)</p>	<ul style="list-style-type: none"> <li>• <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Designing Jewellery.</li> </ul> </li> <li>• <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Developing design ideas ready for production</li> </ul> </li> <li>• <b>Success Criteria</b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Show careful, accurate development of mould</li> </ul> </li> </ul>	<p><b>Support:</b></p> <p>Tutor support for pupils as they develop ideas into working mould layouts</p> <p>Verbal feedback.</p> <p><b>Challenge:</b></p> <p>Tutor challenge to extend complexity of mould.</p>	<p>Stationary</p> <p>Books</p> <p>Planning layouts</p> <p>60mm x 60mm mould blanks</p>



		<ul style="list-style-type: none"> <li>○ <b>Better</b> – include additional features in design</li> <li>● <b>Best</b> – Complete a plan of the making process incorporating check stages.</li> </ul>		
Portfolio 3 (1 sess)	<p><b>Assessment &amp; Evaluation</b></p> <ul style="list-style-type: none"> <li>● Self/peer assessment</li> </ul> <p>Teacher assessment against agreed criteria</p>	<ul style="list-style-type: none"> <li>● <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO</u>: Assess &amp; evaluate our work</li> </ul> </li> <li>● <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE</u>: Assessing against agreed criteria and evaluating our progress</li> </ul> </li> <li>● <b>Success Criteria</b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Show understanding of assessment criteria</li> <li>○ <b>Better</b> – Write a reflective evaluation</li> </ul> </li> <li>● <b>Best</b> – Write a detailed evaluation including areas for development</li> </ul>	<p><b>Support:</b></p> <p>Self-assessment sheet Writing frame Sentence starters</p> <p><b>Challenge:</b></p> <p>Identify areas for development of product &amp; own practice.</p>	<p>Self-assessment sheet Stationary Books</p>



<p><b>Theory 1</b> (1 sess)</p>	<p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>• Demonstration of casting</li> <li>• Materials – metals (ferrous – recap) and non-ferrous</li> <li>• Alloys</li> <li>• Casting as a manufacturing method</li> <li>• Products manufactured using this method</li> <li>• Application to polymers</li> </ul>	<ul style="list-style-type: none"> <li>• <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO</u>: Acquire subject technical knowledge</li> </ul> </li> <li>• <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE</u>: Learning about non-ferrous metals and casting</li> </ul> </li> <li>• <b>Success Criteria</b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Notes &amp; diagrams used to record subject knowledge</li> <li>○ <b>Better</b> – Additional information included to aid recall</li> <li>○ <b>Best</b> – Flash cards, mind-maps and question structures used to aid future recall.</li> </ul> </li> </ul>	<p><b>Support:</b> Writing frames &amp; sentence starters. Visual prompts such as diagrams pre-printed.</p> <p><b>Challenge:</b> Most able pupils enhance involvement through generation of revision aids (see SCs) and peer assessment.</p>	<p>Materials for demonstration Writing frames / sentence starters Diagrams printed PPT</p> <p><a href="https://www.youtube.com/watch?v=RMjtmsr3CqA">https://www.youtube.com/watch?v=RMjtmsr3CqA</a></p> <p><a href="https://www.youtube.com/watch?v=aIBtOuFwjY8">https://www.youtube.com/watch?v=aIBtOuFwjY8</a></p>
<p><b>Theory 2</b> (1 sess)</p>	<p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>• Scales of manufacturing <ul style="list-style-type: none"> <li>○ One-off</li> <li>○ Batch</li> <li>○ Mass</li> <li>○ Continuous</li> </ul> </li> <li>• Quality production methods</li> </ul>	<ul style="list-style-type: none"> <li>• <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO</u>: Acquire subject technical knowledge</li> </ul> </li> <li>• <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE</u>: Learning about industrial manufacture</li> </ul> </li> <li>• <b>Success Criteria</b></li> </ul>	<p><b>Support:</b> Writing frames &amp; sentence starters. Visual prompts such as diagrams pre-printed.</p> <p><b>Challenge:</b> Most able pupils enhance involvement through generation of revision aids (see SCs) and peer assessment.</p>	<p>Writing frames / sentence starters Diagrams printed PPT Worksheet – scales of manufacturing</p>



	<ul style="list-style-type: none"> <li>○ Quality Control</li> <li>○ Quality assurance</li> </ul>	<ul style="list-style-type: none"> <li>○ <b>Good</b> – Notes &amp; diagrams used to record subject knowledge</li> <li>○ <b>Better</b> – Additional information included to aid recall</li> <li>○ <b>Best</b> – Flash cards, mind-maps and question structures used to aid future recall.</li> </ul>		
<p><b>Theory 3</b> <b>(1 sess)</b></p>	<p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>○ Design eras</li> <li>○ Design movements and motivations</li> <li>○ Key designers (link to KS4)</li> </ul> <p>Social &amp; ethical considerations for designers</p>	<ul style="list-style-type: none"> <li>● <b><u>The Big Picture</u></b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Acquire subject technical knowledge</li> </ul> </li> <li>● <b><u>Learning Objective</u></b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Learning about designers and design movements</li> </ul> </li> <li>● <b><u>Success Criteria</u></b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Notes &amp; diagrams used to record subject knowledge</li> <li>○ <b>Better</b> – Additional information included to aid recall</li> <li>○ <b>Best</b> – Flash cards, mind-maps and question structures</li> </ul> </li> </ul>	<p><b>Support:</b> Writing frames &amp; sentence starters. Visual prompts such as diagrams pre-printed.</p> <p><b>Challenge:</b> Most able pupils enhance involvement through generation of revision aids (see SCs) and peer assessment.</p>	<p>PPR Visual resources Writing frames Examples of products Video clips</p>





		used to aid future recall.		
<p><b>Theory</b> 4 (1 sess)</p>	<p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>○ Correct names &amp; technical terms for tools used in this and previous projects</li> <li>○ Care of tools</li> <li>○ Sharpening of tools</li> </ul> <p>Describing use of tools and techniques.</p>	<ul style="list-style-type: none"> <li>• <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO</u>: Acquire subject technical knowledge</li> </ul> </li> <li>• <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE</u>: Revising tool names and uses</li> </ul> </li> <li>• <b>Success Criteria</b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Notes &amp; diagrams used to record subject knowledge</li> <li>○ <b>Better</b> – Additional information included to aid recall</li> <li>○ <b>Best</b> – Flash cards, mind-maps and question structures used to aid future recall.</li> </ul> </li> </ul>	<p><b>Support:</b> Writing frames &amp; sentence starters. Visual prompts such as diagrams pre-printed.</p> <p><b>Challenge:</b> Most able pupils enhance involvement through generation of revision aids (see SCs) and peer assessment.</p>	<p>Range of tools Writing frames Printed examples</p>



<p><b>Practical 1</b> (2 sess)</p>	<p><b>Practical work</b></p> <ul style="list-style-type: none"> <li>• Cutting moulds</li> <li>• Filing, shaping</li> <li>• Casting pewter</li> <li>• Finishing surface</li> <li>• Drilling</li> <li>• Adding detail</li> <li>• Forming 'jump-ring'</li> </ul>	<ul style="list-style-type: none"> <li>• <b><u>The Big Picture</u></b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Manufacture jewellery</li> </ul> </li> <li>• <b><u>Learning Objective</u></b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Using workshop processes to create pleasing products.</li> </ul> </li> <li>• <b><u>Success Criteria</u></b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Work accurately to cut mould and cast jewellery</li> <li>○ <b>Better</b> – Add detail to cast shape</li> <li>○ <b>Best</b> – Finish cast product to a high standard including adding features</li> </ul> </li> </ul>	<p><b>Support:</b> Tutor &amp; peer support as necessary.</p> <p><b>Challenge:</b> Level of challenge set by complexity of design selected (with tutor guidance). Detail &amp; features added for extension.</p>	<p>Workshop tools MDF blanks Pewter for casting Heat treatment Pillar Drill Shooting boards Range of abrasives Buffing wheel Soldering iron Engraver Brass/copper wire</p>
<p><b>Practical 2</b> (2 sess)</p>	<p><b>Practical work</b></p> <ul style="list-style-type: none"> <li>• Cutting moulds</li> <li>• Filing, shaping</li> <li>• Casting pewter</li> <li>• Finishing surface</li> <li>• Drilling</li> <li>• Adding detail</li> <li>• Forming 'jump-ring'</li> </ul>	<ul style="list-style-type: none"> <li>• <b><u>The Big Picture</u></b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Manufacture jewellery</li> </ul> </li> <li>• <b><u>Learning Objective</u></b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Using workshop processes to create pleasing products.</li> </ul> </li> <li>• <b><u>Success Criteria</u></b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Work accurately to cut</li> </ul> </li> </ul>	<p><b>Support:</b> Tutor &amp; peer support as necessary.</p> <p><b>Challenge:</b> Level of challenge set by complexity of design selected (with tutor guidance). Detail &amp; features added for extension.</p>	<p>Workshop tools MDF blanks Pewter for casting Heat treatment Pillar Drill Shooting boards Range of abrasives Buffing wheel Soldering iron Engraver Brass/copper wire</p>



		<p>mould and cast jewellery</p> <ul style="list-style-type: none"> <li>○ <b>Better</b> – Add detail to cast shape</li> <li>○ <b>Best</b> – Finish cast product to a high standard including adding features</li> </ul>		
<p>Practical 3 (2 sess)</p>	<p><b>Practical work</b></p> <ul style="list-style-type: none"> <li>● Cutting moulds</li> <li>● Filing, shaping</li> <li>● Casting pewter</li> <li>● Finishing surface</li> <li>● Drilling</li> <li>● Adding detail</li> <li>● Forming 'jump-ring'</li> <li>● Creating presentation box for completed product</li> </ul>	<ul style="list-style-type: none"> <li>● <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Manufacture jewellery</li> </ul> </li> <li>● <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Using workshop processes to create pleasing products.</li> </ul> </li> <li>● <b>Success Criteria</b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Work accurately to cut mould and cast jewellery</li> <li>○ <b>Better</b> – Add detail to cast shape</li> <li>○ <b>Best</b> – Finish cast product to a high standard including adding features</li> </ul> </li> </ul>	<p><b>Support:</b> Tutor &amp; peer support as necessary.</p> <p><b>Challenge:</b> Level of challenge set by complexity of design selected (with tutor guidance). Detail &amp; features added for extension.</p>	<p>Workshop tools MDF blanks Pewter for casting Heat treatment Pillar Drill Shooting boards Range of abrasives Buffing wheel Soldering iron Engraver Brass/copper wire</p>



End of Module 1				
<p>Portfolio 1 (2 sess)</p>	<p><b>Project Introduction</b></p> <ul style="list-style-type: none"> <li>• Technical knowledge of sound (refer to yr 8 science)</li> <li>• Analysis of features</li> <li>• Understanding form/construction</li> </ul>	<ul style="list-style-type: none"> <li>• <b><u>The Big Picture - 1</u></b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Research &amp; discover</li> </ul> </li> <li>• <b><u>Learning Objective</u></b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Using source material to understand concepts and design</li> </ul> </li> <li>• <b><u>Success Criteria</u></b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Analyse existing products</li> <li>○ <b>Better</b> – Identify transferrable features</li> <li>○ <b>Best</b> – Adapt design brief &amp; specifications</li> </ul> </li> </ul>	<p><b>Support:</b> Drawing / writing ‘frames’ or sentence starters provided to support engagement</p> <p><b>Challenge:</b> Adapt/extend design brief and specifications.</p>	<p>PPT Stationary Books How-to video Sound concepts revision materials</p>
<p>Portfolio 2 (2 sess)</p>	<p><b>Concept Design generation</b></p> <ul style="list-style-type: none"> <li>• Sketching design concepts</li> <li>• Use of Pugh selection matrix</li> <li>• Adaptation / development</li> <li>• Incorporation of graphic elements</li> <li>• Style / Logo development</li> </ul> <p>Quality presentation of final idea</p>	<ul style="list-style-type: none"> <li>• <b><u>The Big Picture - 1</u></b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Think and present ideas</li> </ul> </li> <li>• <b><u>Learning Objective</u></b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Using formal drawing methods to present ideas</li> </ul> </li> <li>• <b><u>Success Criteria</u></b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Present a range of ideas including graphical elements.</li> </ul> </li> </ul>	<p><b>Support:</b> Drawing layouts – part done Tutor support</p> <p><b>Challenge:</b> (See SCs) Add graphical features to functional design Incorporate electrical circuit into ‘passive’ design.</p>	<p>Support materials Stationary Books Plain paper Visual examples PPT</p>



		<ul style="list-style-type: none"> <li>○ <b>Better</b> – Annotate &amp; show component layout</li> <li>● <b>Best</b> – Present rendered images &amp; show exploded views.</li> </ul>		
<p><b>Portfolio 3</b> <b>(1 sess)</b></p>	<p><b>Assessment &amp; Evaluation</b></p> <ul style="list-style-type: none"> <li>● Self/peer assessment</li> <li>Teacher assessment against agreed criteria</li> </ul>	<ul style="list-style-type: none"> <li>● <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO</u>: Assess &amp; evaluate our work</li> </ul> </li> <li>● <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE</u>: Assessing against agreed criteria and evaluating our progress</li> </ul> </li> <li>● <b>Success Criteria</b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Show understanding of assessment criteria</li> <li>○ <b>Better</b> – Write a reflective evaluation</li> </ul> </li> <li>● <b>Best</b> – Write a detailed evaluation including areas for development</li> </ul>	<p><b>Support:</b></p> <ul style="list-style-type: none"> <li>Self-assessment sheet</li> <li>Writing frame</li> <li>Sentence starters</li> </ul> <p><b>Challenge:</b></p> <ul style="list-style-type: none"> <li>Identify areas for development of product &amp; own practice.</li> </ul>	<ul style="list-style-type: none"> <li>Self-assessment sheet</li> <li>Stationary</li> <li>Books</li> </ul>



<p><b>Theory 1</b> (1 sess)</p>	<p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>• Timber – natural timber             <ul style="list-style-type: none"> <li>○ Softwood</li> <li>○ Hardwood</li> </ul> </li> <li>• Timber products             <ul style="list-style-type: none"> <li>○ Range of boards</li> <li>○ Adv/Dis of use</li> <li>○ Environmental implications</li> </ul> </li> <li>• Origins, sources of timber             <ul style="list-style-type: none"> <li>○ Social, moral implications of timber harvesting</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO</u>: Acquire subject technical knowledge</li> </ul> </li> <li>• <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE</u>: Learning about timber types, sources and uses</li> </ul> </li> <li>• <b>Success Criteria</b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Notes &amp; diagrams used to record subject knowledge</li> <li>○ <b>Better</b> – Additional information included to aid recall</li> <li>○ <b>Best</b> – Flash cards, mind-maps and question structures used to aid future recall.</li> </ul> </li> </ul>	<p><b>Support:</b> Writing frames &amp; sentence starters. Visual prompts such as diagrams pre-printed.</p> <p><b>Challenge:</b> Most able pupils enhance involvement through generation of revision aids (see SCs) and peer assessment.</p>	
<p><b>Theory 2</b> (1 sess)</p>	<p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>• Understanding power generation / storage</li> <li>• Including small-scale storage for projects / products</li> <li>• Understanding battery types and uses</li> <li>• Power distribution</li> </ul>	<ul style="list-style-type: none"> <li>• <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO</u>: Acquire subject technical knowledge</li> </ul> </li> <li>• <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE</u>: Learning about energy generation</li> </ul> </li> <li>• <b>Success Criteria</b></li> </ul>	<p><b>Support:</b> Writing frames &amp; sentence starters. Visual prompts such as diagrams pre-printed.</p> <p><b>Challenge:</b> Most able pupils enhance involvement through generation of revision aids (see SCs) and peer assessment.</p>	<p>Writing frames / sentence starters Diagrams printed PPT Coal fired power station interactive resources</p>



	<ul style="list-style-type: none"> <li>• Environmental impacts of generation             <ul style="list-style-type: none"> <li>○ Coal / gas</li> <li>○ Wind / Solar</li> </ul> </li> <li>• Nuclear</li> </ul>	<ul style="list-style-type: none"> <li>○ <b>Good</b> – Notes &amp; diagrams used to record subject knowledge</li> <li>○ <b>Better</b> – Additional information included to aid recall</li> <li>○ <b>Best</b> – Flash cards, mind-maps and question structures used to aid future recall.</li> <li>○</li> </ul>		
<p><b>Theory 3</b> <b>(1 sess)</b></p>	<p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>• SMART materials</li> <li>• Definitions</li> <li>• Uses</li> <li>• Applications of technology</li> <li>• Advantages of SMART textiles             <ul style="list-style-type: none"> <li>○ Concept product design to incorporate SMART material functionality</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b><u>The Big Picture</u></b> <ul style="list-style-type: none"> <li>○ <b><u>TO:</u></b> Acquire subject technical knowledge</li> </ul> </li> <li>• <b><u>Learning Objective</u></b> <ul style="list-style-type: none"> <li>○ <b><u>WE ARE:</u></b> Learning about SMART materials &amp; textiles</li> </ul> </li> <li>• <b><u>Success Criteria</u></b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Notes &amp; diagrams used to record subject knowledge</li> <li>○ <b>Better</b> – Additional information included to aid recall</li> <li>○ <b>Best</b> – Flash cards, mind-maps and question structures</li> </ul> </li> </ul>	<p><b>Support:</b> Writing frames &amp; sentence starters. Visual prompts such as diagrams pre-printed.</p> <p><b>Challenge:</b> Most able pupils enhance involvement through generation of revision aids (see SCs) and peer assessment.</p>	<p>Writing frames / sentence starters Diagrams printed PPT Physical examples of materials</p>



		used to aid future recall.		
<p><b>Theory</b> 4 (1 sess)</p>	<p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>Gears and calculations</li> <li>Torque / speed</li> <li>Cranks</li> <li>Cams</li> <li>Conversion of motion type</li> <li>Application in engines &amp; other mechanisms</li> </ul> <p>(Application to Automotive Studies – KS4)</p>	<ul style="list-style-type: none"> <li><b>The Big Picture</b> <ul style="list-style-type: none"> <li><u>TO</u>: Acquire subject technical knowledge</li> </ul> </li> <li><b>Learning Objective</b> <ul style="list-style-type: none"> <li><u>WE ARE</u>: Learning about gears, cranks, cams, drive systems</li> </ul> </li> <li><b>Success Criteria</b> <ul style="list-style-type: none"> <li><b>Good</b> – Notes &amp; diagrams used to record subject knowledge</li> <li><b>Better</b> – Additional information included to aid recall</li> <li><b>Best</b> – Flash cards, mind-maps and question structures used to aid future recall.</li> </ul> </li> </ul>	<p><b>Support:</b> Writing frames &amp; sentence starters. Visual prompts such as diagrams pre-printed.</p> <p><b>Challenge:</b> Most able pupils enhance involvement through generation of revision aids (see SCs) and peer assessment.</p>	





<p><b>Practical 1</b> (2 sess)</p>	<p><b>Practical work</b></p> <ul style="list-style-type: none"> <li>• Cutting shapes</li> <li>• Drilling / sawing</li> <li>• Shaping / sanding</li> <li>• Finishing surface</li> <li>• Fabricating</li> <li>• Adding detail inc. colour</li> <li>• Applying surface finish</li> </ul>	<ul style="list-style-type: none"> <li>• <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Manufacture passive amplifier</li> </ul> </li> <li>• <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Using workshop processes to create products.</li> </ul> </li> <li>• <b>Success Criteria</b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Work accurately to cut &amp; shape components</li> <li>○ <b>Better</b> – Finish all parts to a high standard</li> <li>○ <b>Best</b> – Accurately assemble and apply surface finish</li> </ul> </li> </ul>	<p><b>Support:</b> Tutor &amp; peer support as necessary.</p> <p><b>Challenge:</b> Level of challenge set by complexity of design selected (with tutor guidance). Detail &amp; features added for extension.</p>	<p>Workshop tools MDF blanks Pillar Drill Hole saws Range of abrasives Coping saws Acrylic Adhesives</p>
<p><b>Practical 2</b> (2 sess)</p>	<p><b>Graphical / Logo / Electrical</b></p> <ul style="list-style-type: none"> <li>○ Electrical circuits / symbols</li> <li>○ Incorporation into design to 'add value'</li> <li>○ Logo design / graphics</li> </ul>	<ul style="list-style-type: none"> <li>○ <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Develop features of our product</li> </ul> </li> <li>○ <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Adding appeal to products</li> </ul> </li> <li>○ <b>Success Criteria</b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Incorporate graphical elements into design.</li> <li>○ <b>Better</b> – Consider potential for electrical circuits or features</li> </ul> </li> </ul>	<p><b>Support:</b> Cut/stick electrical circuit exercises Writing frames</p> <p><b>Challenge:</b> Fully incorporate features into design – work independently</p>	<p>Support materials Stationary Books Plain paper Visual examples PPT Pupils' prior knowledge of design eras</p>



		<ul style="list-style-type: none"> <li>○ <b>Best</b> – Use graphics / electrical features effectively</li> </ul>		
<p>Practical 3 (2 sess)</p>	<p><b>Practical work</b></p> <ul style="list-style-type: none"> <li>● Cutting shapes</li> <li>● Drilling / sawing</li> <li>● Shaping / sanding</li> <li>● Finishing surface</li> <li>● Fabricating</li> <li>● Adding detail inc. colour</li> <li>● Applying surface finish</li> </ul>	<ul style="list-style-type: none"> <li>● <b>The Big Picture</b> <ul style="list-style-type: none"> <li>○ <u>TO:</u> Manufacture passive amplifier</li> </ul> </li> <li>● <b>Learning Objective</b> <ul style="list-style-type: none"> <li>○ <u>WE ARE:</u> Using workshop processes to create products.</li> </ul> </li> <li>● <b>Success Criteria</b> <ul style="list-style-type: none"> <li>○ <b>Good</b> – Work accurately to cut &amp; shape components</li> <li>○ <b>Better</b> – Finish all parts to a high standard</li> <li>○ <b>Best</b> – Accurately assemble and apply surface finish</li> </ul> </li> </ul>	<p><b>Support:</b> Tutor &amp; peer support as necessary.</p> <p><b>Challenge:</b> Level of challenge set by complexity of design selected (with tutor guidance). Detail &amp; features added for extension.</p>	<p>Workshop tools MDF blanks Pillar Drill Hole saws Range of abrasives Coping saws Acrylic Adhesives</p>