

Design Technology: Working to drawings and enhancing products – Year 9 - 15 lessons		
Working accurately to reproduce a working drawing and using materials knowledge to enhance a simple lamp product		
Substantive knowledge: Practical (knowing what)	Substantive knowledge: Theoretical Design/Designers	Disciplinary knowledge (knowing how to)
Being able to work to a drawing with some accuracy to make a lamp. Understanding drawing views, dimensions and basic drawing symbols. 2D design/lasercutting	Examine technical drawings, their uses and conventions	Independent selection of materials taking account of the properties
<b>Specialisms</b>	Product design/ Engineering	
<b>Materials</b>	MDF strips, clear acrylic, acrylic lamp tops, nails, PVA glue	Assorted materials as required
<b>Tools to create the product</b>	Pencil, ruler, tri square, gent saws, files, sandpaper, mini pillar drill, laser cutter, computers with 2D design	
<b>Key vocabulary</b>	Dimension, working drawing, constraints, enhancements, accuracy, tolerance	
<b>Reading</b>	Encourage the ability to read instructions quickly and accurately – Keep instructions concise and ensure students understand the vocabulary	
<b>Golden threads – research, design, make, evaluate</b>	<b>Research</b> 3D LED lamps <b>Design</b> a 3D LED lamp <b>make</b> a 3D LED lamp <b>evaluate</b> the quality and enhancements of the lamp	
<b>Cultural capital</b>	Encourages creativity, curiosity, confidence and pride in being able to create their own piece more independently	
<b>What prior knowledge needs to be revisited to underpin the learning of new content</b>	<ul style="list-style-type: none"> <li>- materials properties (year 7) in order to make an informed choice about materials</li> <li>-joining and finishing woods (Year 8) to work independently to join wood</li> <li>-adapting designs (Year 8) to understand the difference between enhancing and redesigning</li> </ul>	
<b>Common Misconceptions</b>	<ul style="list-style-type: none"> <li>- Poor measuring and/or cutting will stop the lamp fitting together correctly</li> <li>- Students fail to adapt the design enough</li> <li>- Students prefer to stick to ‘safe’ ideas and need to be pushed to use materials rather than just paint.</li> </ul>	
<b>How can the content be extended for HPA?</b>	<ol style="list-style-type: none"> <li>1. More independence in practical tasks encouraged with the aid of instructions</li> <li>2. Higher level of technical terminology and greater descriptive detail expected in evaluation</li> </ol>	
<b>How can the content be adapted for SEND</b>	<ol style="list-style-type: none"> <li>1. Instructions/ tasks chunked on cream paper with wide spaces between words if required</li> <li>2. More support in practical work may need to be given depending on the nature of the need.</li> <li>3. Some may produce a less technical outcome in practical work depending on the nature of the need</li> <li>4. Evaluation outline if required</li> </ol>	
<b>What is the homework?</b>	<ol style="list-style-type: none"> <li>1. Edpuzzle quiz on wood types</li> <li>2. Edpuzzle quiz on plastic types</li> <li>3. Edpuzzle quiz on metal types</li> </ol>	

Lesson objectives <i>and misconceptions</i>	Assessment and <i>success criteria</i>
<ol style="list-style-type: none"> <li>1. Mark out wood as per the drawing</li> <li>2. Cut wood as per the drawing</li> <li>3. Smooth wood. <i>Students rush this stage and then the wood doesn't join properly</i></li> <li>4. Join wood using a butt joint</li> <li>5. Research lamp designs and themes</li> <li>6. Draw design ideas neatly including enhancements and possible materials <i>students try to stick to the basic designs and need pushing to be more creative</i></li> <li>7. Draw design ideas neatly including enhancements and possible materials</li> <li>8. Start creating clear acrylic top section on 2D design</li> <li>9. Complete clear acrylic top section on 2D design</li> <li>10. Refine lamp base design with a plan taking account of completed top section.</li> <li>11. Add materials and finishes to lamp base</li> <li>12. Complete adding materials and finishes to lamp base.</li> <li>13. Solder electrical parts</li> <li>14. Assemble all components and photograph</li> </ol>	<ol style="list-style-type: none"> <li>1. Self-assessment using grid. <i>Marking should be accurate to the drawing within 2mm</i></li> <li>2. Self- assessment using grid. <i>Cutting should be accurate to the drawing within 2mm</i></li> <li>3. Self-assessment using grid. <i>Edges should be smooth and straight to join effectively.</i></li> <li>4. Self-assessment using grid. <i>Joins should meet up, be neat and angles should be +/- 3 degrees of a 90 degree angle</i></li> <li>5. Teacher written assessment in order to make suggestions according to chosen theme. <i>Students should have a clear idea of a theme to work to.</i></li> <li>6. Self-assessment using drawing grid. <i>Drawings should be clear and include enhancements and materials</i></li> <li>7. Self-assessment using drawing grid. <i>Drawings should be clear and include enhancements and materials</i></li> <li>8. Self-assessment using grid. <i>Students should have used some of the tools to on 2D design to create the lamp top design. At this stage they might not be accurate</i></li> <li>9. Self-assessment using grid. <i>Students should complete the lamp top design on 2D design accurately and saved it for laser cutting</i></li> <li>10. Self-assessment using drawing grid. <i>A plan should be produced showing what the student intends to do including an order and materials needed</i></li> <li>11. Self-assessment grid. <i>Apply surface finishes</i></li> <li>12. Self-assessment grid. <i>Apply materials and processes to complete lamp design to match final drawing</i></li> <li>13. Self-assessment grid. <i>All parts should be secure and the circuit should work</i></li> <li>14. Self-assessment grid. <i>The parts should fit together securely and be complete</i></li> </ol>



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**DT Intent - Developing students to be informed consumers, provide life skills for adulthood, including leisure and mental health, and for a wide range of careers**

15. Evaluate final outcome against the initial drawing and adaptations

15. Teacher final assessment on SIMS. *Evaluation should be critical and should describe the materials, processes and quality.*