

YEAR 8	SUBJECT: Product Design	TITLE: Small Scale Casting - Pewter
OBJECTIVE: To introduce the pupils to basic drawing techniques. Introduction to small scale casting using pewter and MDF.		

STAGE	ADDITIONAL SKILLS	EXTENSION WORK	RESOURCES	H&S
<p>Stage One: The pupils will be introduced to small scale casting. They will be shown how to produce a pattern, using 4mm MDF. Cutting using the fretsaw will be demonstrated. The hot air gun will be used as the heat source.</p> <p>Safety will be discussed in detail at all points especially the pouring of the molten metal.</p> <p>Cutting the pattern with a fretsaw and coping saw will be demonstrated.</p>	<p>L. Key words will be emphasized. Pewter, casting, etc.....</p> <p>C. The role of casting in the manufacture of everyday items and the way in which Britain manufactures much of its cast products abroad, in India and China.</p> <p>ICT. Animations of the casting procedure will be shown and explained.</p> <p>HWK. Complete the sequence drawing of pewter casting.</p> <p>N. Casting temperature, centigrade explained.</p>	<p>List as many products as possible that rely on casting during production.</p>	<p>General workshop equipment. Heat treatment area. Computer and projector General writing and drawing equipment. Sample castings.</p>	<p>CONTROL MEASURE Demonstration only. Pupils behind glass. Teacher pours pewter.</p> <p>CLEAPPS REF. 1.015 - Casting Fumes 1.016 - Casting process 1.066 Handsaws and files 1.067 Fretsaws</p> <p>RESIDUAL RISK Medium</p>
<p>Stage Two: The pupils will be shown how to produce the designs for their casting. Basic geometric shapes as well as more traditional images will be discussed. Using initials will also be explained.</p> <p>Shading techniques will be introduced. Single tone, two tone and three tone shading followed by line techniques.</p> <p>The pupils will draw one of their initials in single point perspective. This will be a drawing of their pattern.</p>	<p>L. Key words linked to the project - drawing equipment listed.</p> <p>C. Recycling discussed in relation to pewter and other casting techniques. Responsibilities of citizens and the environment.</p> <p>ICT. Potential use of CAD/CAM in production of drawings and pattern.</p> <p>HWK. Complete five designs for the pattern.</p> <p>N. measurements given in relation of size of pattern.</p>	<p>Produce two more designs using different media - ie. Felt pens or CAD.</p>	<p>General workshop equipment. Heat treatment area. Computer and projector General writing and drawing equipment. Sample castings.</p>	<p>CONTROL MEASURE</p> <p>CLEAPPS REF.</p> <p>RESIDUAL RISK</p>
<p>Stage Three: The pupils will begin to manufacture the pattern using 4mm MDF. Two samples will be attempted - one by hand and the other by fretsaw.</p> <p>Demonstration on use of coping saw and fretsaws.</p> <p>Pupils will their two patterns.</p>	<p>L. Key words relating to tools and equipment required.</p> <p>C. Sustainability discussed in relation to the pine used.</p> <p>ICT. Animations of the stages of making displayed - computer system allowing.</p> <p>HWK. Produce a sequence drawing of each stage of manufacture.</p> <p>N. Measurements and accuracy are a critical factor in the marking out of joints.</p>	<p>Research alternative shapes and images that could be used for the pattern.</p>	<p>General workshop equipment. Heat treatment area. Computer and projector General writing and drawing equipment. Sample joints.</p>	<p>CONTROL MEASURE Teacher instruction Ventilation</p> <p>CLEAPPS REF. 1.066 Handsaws and files 1.067 Fretsaws</p> <p>RESIDUAL RISK Low</p>

STAGE	ADDITIONAL SKILLS	EXTENSION WORK	RESOURCES	H&S
<p>Stage Four: Demonstration on the casting procedure. Using the Hot Air Gun - demonstrated. Safety emphasised. Fitting the pattern between two MDF blocks. Heating the pewter and pouring.</p> <p>The pupils will cast their completed molds.</p>	<p>L. Key words reinforced in relation to casting. EG. Ladle, sprue etc..... C. Health and safety, Every Child Matters. ICT. Animations of casting procedure. N. Temperatures discussed again. HWK. Work Pewter information sheet.</p>	<p>Research alternative materials for small scale casing.</p>	<p>General workshop equipment. Heat treatment area. Computer and projector General writing and drawing equipment. Sample castings.</p>	<p>CONTROL MEASURE Demonstration only. Pupils behind glass. Teacher pours pewter.</p> <p>CLEAPPS REF. 1.015 - Casting Fumes 1.016 - Casting process</p> <p>RESIDUAL RISK Medium</p>
<p>Stage Five: Methods of the cleaning up the castings will be discussed.</p> <p>Cutting of sprues. Use of filing techniques., Use of grades of wet and dry / emery cloth. Demonstration of the use of the buffer.</p> <p>Pupils clean up their castings and drill holes for chain / ribbon.</p>	<p>L. Key words and phrases regarding new techniques. E.G. through filing, draw filing etc..... ICT. animations of stages of cleaning up castings. Pupils could produce their log book using DTP. HWK. Complete log book of manufacture. C. Quality discussed with pupils. Product quality and critical evaluation.</p>	<p>Collect images of small scale casting / jewelry from different cultures.</p>	<p>General workshop equipment. Heat treatment area. Computer and projector General writing and drawing equipment. Sample castings.</p>	<p>CONTROL MEASURE</p> <p>CLEAPPS REF. 1.031 Drilling machine 1.033 Polisher 1.066 Handsaw - metal.</p> <p>RESIDUAL RISK Low</p>