

LOW TEMPERATURE CASTING PROJECT OUTLINE NO4

ART & DT DESIGN PROJECT - WALKING STICK

THE TASK:

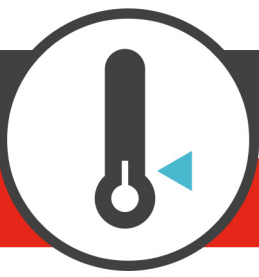
To understand a range of materials and processes used in manufacturing.

LEARNING OBJECTIVES

- understand the processes involved in the production of a small object cast in metal.
- To be in a position to go from initial design to the finished manufactured product.
- To develop an understanding of the use of a low melt metal (Pewter) as a design material.
- To understand the process of Lost Wax.
- To observe safety aspects required for a practical activity in a classroom.

PRE-LESSON PREP (PREVIOUS WEEK)

- Explain the project - making references to what they will know, understand and be able to do by the end of the project.
- Show examples of branches suitable for shaping Explain that they must not cut branches but only take well seasoned wind or natural falls.
 - Look at the Casting and Lost Wax processes and explain how each works, making reference to any possible constraints.
 - Show examples of designs that they might develop with examples of designs already cast.



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THE LESSON:

A PROJECT ACROSS ART AND DESIGN TECHNOLOGY.

Materials:

Wood: Collected from dried fallen branches of suitable shape and size.

Copper: Sheet copper for shaping into a cap.

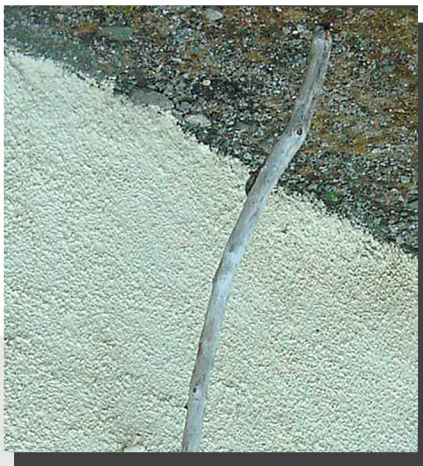
Wax: For carving the design of the walking stick head.

Clay: For moulding around the wax to form a mould created using the lost wax process.

Pewter: Lead free low melting point for pouring into the mould.



ORIGINAL STICK



FINISHED STICK

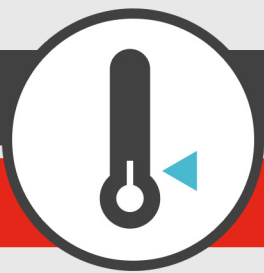


Sequence: ART

- Design the head of the walking stick.
- Carve design in wax.
- Encapsulate the wax carving in clay and fire.

Sequence: DT

- Clean and prepare stick ready to receive a stain and polish.
- Shape and form the two pieces of copper to form a cap to fit the bottom of the walking stick.
- Cast walking stick head in low melt pewter.



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1. Preparing the stick.

The cleaning and preparation of the stick is very important.

All blemishes should be removed and any cracks filled with a suitable wood filler.

Sand down and apply a stain and wax polish.



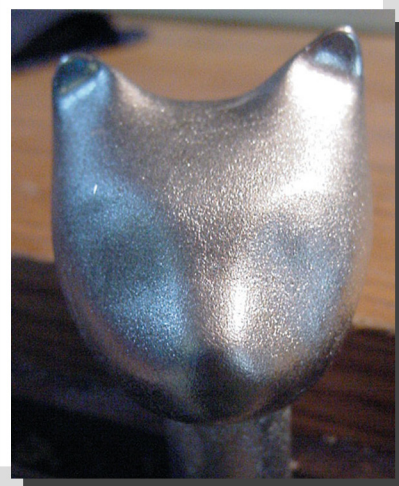
2. Making the ferrule. Shape the copper into a cylinder to fit the bottom end of the stick. Silver solder the joint and clean.

The end of the cylinder can receive a copper cap which can also be silver soldered. An ornamental cap can be fitted. In the example an old French coin, which is no longer legal tender, is used.



3. Producing the artefact.

The design of the artefact for the top end of the walking stick can initially be carved in wax which is then encapsulated within the clay. Fire the clay in the normal way and the wax will melt leaving a cavity for the casting of the pewter.



4. Finished artifact.

The finished artifact attached to the top of the walking stick.





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5. Casting tip.

Make sure that the design will fit within the entry channel of the LT1. The edges of the mould need not be square.

However it must be remembered that a lot of heat will be generated during casting and therefore the design of the mould should be such that it can act as a heat sink. Using MDF packing will insulate the mould and keep the heat within the mould.

6. Safety tip. Because of the size of mould, more pewter than normal will be used.

As the heat increases the pewter can spit out of the top of the mould. If this happens stop pouring and when the spitting stops begin pouring again.

Sufficient heat is being generated to allow short stops. It may also be advisable to use the low setting during the pour. This setting was used for the casting of the figure used in this design.

Ensure that you allow the mould to fully cool after casting. If the mould is wider than the mould tray hold the mould in place using metal working tongs or similar.

