



Pearson

**Entry Level Certificate**  
**Design and Technology (8911)**  
**Resistant Materials**

**Level 2 – Portfolio guidance**



## Introduction

This material is provided for guidance only, it is by no means compulsory and centres can and are encouraged to use their own interpretation.

The examples are taken from real portfolios that have been presented for moderation in past years.

The notes that go with the slides are written to give guidance to centres so that it is clear what the Principal Moderator is looking for under each title in the Candidate Assessment Booklet.

The portfolio can be either A4 or A3 in size and suitably bound to keep the pages in order, it may be more advantageous to the student to use A4 at this level so that filling the sheet is not too daunting. Students can be allowed to design some of their own sheet layout for a portfolio but need careful guidance with some sheets prepared by the teacher. These teacher prepared sheet should give guidance but not be too restrictive or prescriptive.

The work can be on a formatted design sheet with a border and title block. Cut and paste techniques enable mistakes to be made without wasting a whole sheet. The last task to be completed in the portfolio is to number the pages which makes annotation easier.



## Investigate: Analysing the Brief

Identify key points in your design brief to guide your research.

| Design Brief                                      |  |
|---|--|
| To design and make a wooden box for storing Lego. |  |
| Who is the target market for the product?         | Children and young people who use Lego.  |
| What does the product have to do?                 | The product has to hold Lego and have a handle so the Lego can be carried elsewhere. |

One page containing some comment as to what research may be needed to lead to some design ideas. This could be in the form of a series of questions to be answered by some research or may be a brainstorm carried out in groups.

## Research

Present relevant and selective research that addresses the key points identified in your design brief. Investigate a similar existing product to find out some useful information about the materials it is made from that will help your designing.

| Research: Existing Products  | Target Market   |                         |                      |                         |       |       |        |       |                      |
|--|---|-------------------------|----------------------|-------------------------|-------|-------|--------|-------|----------------------|
|  <p>This box can be another view of the product or a close up. Use the lines below to explain what is shown.</p> <p>6cm x 4cm</p> | <p>What age range is this type of product aimed at?</p> <p>4-14 years old</p> <p>Is the product suitable for males and females?</p> <p>Yes.</p> <p>Carry out a survey to find some more information about your target market: (Create a tally chart.)</p>                 |                         |                      |                         |       |       |        |       |                      |
| <p>What is the product made from?</p> <p>Oak wood box with metal hinges.</p> <p>How has the product been made?</p> <p>Wood measured and cut to size.</p>   | <p>What colours do you like?</p> <table border="1"> <tr> <td>wooden<br/>wood<br/>    </td> <td>red<br/>  </td> <td>blue<br/><del>blue</del></td> <td>white</td> </tr> <tr> <td>green</td> <td>yellow</td> <td>black</td> <td>560/1000<br/>wood<br/>  </td> </tr> </table> | wooden<br>wood<br>      | red<br>              | blue<br><del>blue</del> | white | green | yellow | black | 560/1000<br>wood<br> |
| wooden<br>wood<br>   | red<br>   | blue<br><del>blue</del> | white                |                         |       |       |        |       |                      |
| green  | yellow  | black                   | 560/1000<br>wood<br> |                         |       |       |        |       |                      |

Careful guidance from the teacher is needed here to ensure the research is relevant and targeted. Some suggested web pages may be found by the teacher beforehand



to help guide the information that could be gathered. Analysis of an existing similar product could include a disassembly task to help focus the student and could be a group activity.

## Specification

**Develop** a design specification for your product using the following headings:

- form
- function
- material and component requirements.

### Specification

What shape will it be?

*My bathroom cabinet is a rectangle*

What is its purpose?

*It will be a place to store things I use in bathroom*

What materials will I use?

*I will be making it from MDF with a wooden door*

How will it be made?

*I will make it by joining wood to make a rectangle shape it will have a hinges and a handle on the front to open it*

What will it cost?

*It will cost about 8 pound*

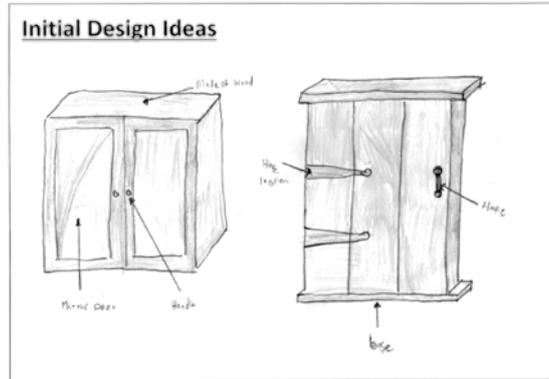
Will it be environmentally friendly?

*Yes it is mainly using wood which we can recycle or reuse*

*In this section a prepared sheet can guide the students to give easy access to a suitable series of statements under each heading. Some prepared statements could be used to guide students, these could be cut and pasted onto a pre-prepared sheet.*

## Design: Initial Ideas

**Present** a range of different initial ideas for your product that meet most of the points in your specification. **Annotate** your designs/plans showing the materials, components and processes you will need to make them. **Justify** the use of some of the materials you have selected. **Discuss** your designs with peers focusing on general and technical points to decide on improvements for development.



A range of up to three designs could be proposed here and should be presented in 3D by use of grid paper. Each design should be different to the others and include some important detail such as materials, finishes or dimensions with some reason for their inclusion. The designs could be discussed in groups to help identify parts of the design where improvements could be made.

## Review

**Review** your design ideas against your specification criteria and choose the best **one** to develop in more detail. Use feedback from peers to help you form your decision.

Review of my ideas

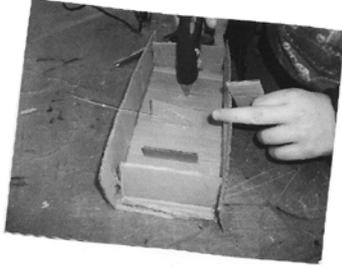
| specification            | Point  | Idea 1 | Idea 2 | Idea 3 |
|--------------------------|--|--------|--------|--------|
| Form                     | My storage box must be rectangle.              | no     | no     | yes    |
| Function                 | To hold 25 Xbox games.                         | no     | No     | Yes    |
| User requirement         | To keep my games safe.                         | yes    | No     | Yes    |
| Performance requirements | To allow easy access of my games.              | Yes    | Yes    | Yes    |
| Materials and components | Made from wood.                                | Yes    | Yes    | Yes    |
| sustainability           | The wood used could be recycled and reclaimed. | no     | no     | Yes    |

Use some of the points from the specification to compare the design ideas against, this could be done as a group activity and then a conclusion which highlights the best idea can be proposed.



## Develop

**Develop** your best design idea into a final design idea that improves your initial idea. Make a **model** of your final idea to test an aspect of design. **Draw** your final design showing all the major dimensions and the materials it is made from.



### WHAT I HAVE LEARNT FROM MAKING A MODEL

I didn't learn too much from making a proto type. But I did realise just how big this is going to be. And from making my prototype I have gotten a good idea of how it will look like.

*Some development that may be cosmetic should be included in the drawings of the chosen designs. These drawings should include all the major details of construction as well as dimension. Models of one part of the product should be included to help work out how that aspect of the product might work or be made.*

## Make: Production Plan

**Plan** a sequence of tasks in an appropriate order for making your product.

### Production Plan

Stages I did to make my cabinet:

- Measure out wood to cut
- Cut wood to length with saw
- File wood
- Plane wood smooth
- Cut out wood joints
- Glue and screw wood joints together
- Make box shape with clamps
- Cut out wood for door and glue pieces together
- Cut wood for back
- Glue and nail back onto box
- Put hinges on door
- Rub wood smooth with sand paper
- Paint cabinet with white paint
- Add handles

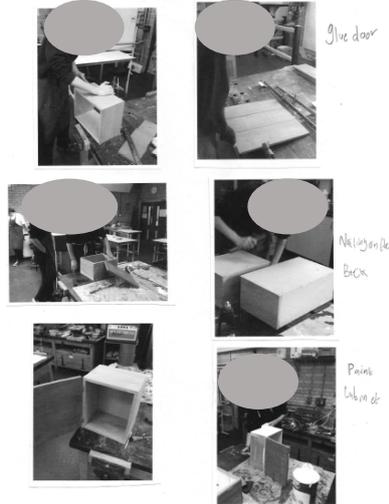
*Work out a list of the correct sequence of production and include some timings to guide the progress of the making process. This is best completed on a teacher prepared sheet that again could use cut and pasted statements.*



## Making Skills

**Make** a product using a range of component parts using different materials, components, equipment, techniques and processes that functions adequately and matches some specification points. **Select**, with guidance, tools, equipment and processes, including CAD/CAM where appropriate, for specific uses. **Use** different making skills that demonstrate some accuracy, in most cases, of manufacture and construction of component parts and their assembly. **Make** your product safely.

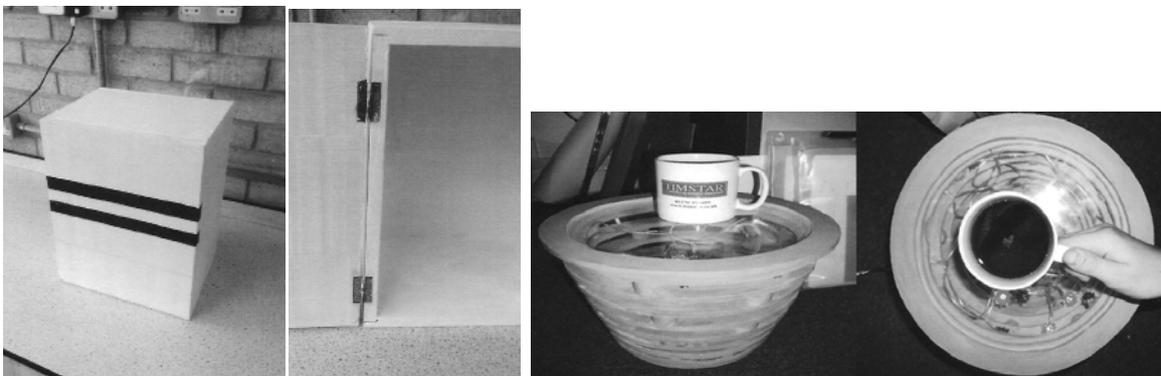
### Making Photographs



*A photographic diary of the main processes of making give the best evidence here for the moderator. It should be of each individual as the product progresses to show selection of tool and equipment as well as safe working practice.*

## Quality of Final Outcome

**Make** component parts that are functional, complete and assembled into a finished product or sub-systems of the product. **Produce** a product that matches the specification criteria but whose function is limited.





*There should be a completed product and here too photographic evidence is best to assist moderation. There should be at least three photographs of the completed product as required on the CAB. These photographs should include one of the whole product with some indication of scale, the other photographs should be detailed close-up pictures of joints, assembly, fitting etc. to enable the quality to be seen.*

## **Test and Evaluate: Test and Evaluate Final Outcome**

**Test and review** your final product against your specification criteria.

### Specification Testing

What shape will it be?

*My bathroom cabinet is a rectangle – more square shaped*

What is its purpose?

*It will be a place to store things I use in bathroom – Yes I can put things I use in the bathroom in it*

What materials will I use?

*I will be making it from MDF with a wooden door – it was made from hardwood and MDF*

How will it be made?

*I will make it by joining wood to make a rectangle shape it will have a hinges and a handle on the front to open it – I joined wood to make a square shape. I used hinges for the door. It has a handle*

What will it cost?

*It will cost about 8 pound – it would cost about 15 pounds to buy*

Will it be environmentally friendly?

*Yes it is mainly using wood which we can recycle or reuse - yes it was made from wood*

*Simple testing of the completed product can be recorded on a pre-prepared sheet and again cut and paste can be used to assist students.*



## Suggest Improvements

**Identify** some ideas for how your product could be improved if it were made again.

### Improvements

If I made my bathroom cabinet again I would:

- Have a mirror on the front
- Have shelves inside
- I might use plastic as well as wood
- Put my initials on the side
- Use different wood
- Have a lock on it

*Group work can be used to help students to suggest improvements that could be made to their completed product.*

## Candidate Assessment Book (CAB)

Ensure the CAB is completed with some annotation. Basic page numbers is the minimum to show where the evidence assessed for each assessment point can be found in the portfolio.

Better annotation includes notes from the teacher assessor to help explain why that point has been accepted.

## Assessor Witness Statement

Ensure the main processes are listed and commented on as to how well the candidate managed each task and what help or assistance they had during manufacture.

Make sure this is signed and dated by the teacher assessor.

## Candidate Declaration

Ensure that the candidate and the teacher assessor both sign and date the declaration or the work may be returned to the centre for this to be completed.

