Pearson

Entry Level Certificate
Design and Technology (8911)
Resistant Materials

Level 3 – 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 examples 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. At this level students can be allowed to design their own sheet layout for a portfolio rather than have too much guidance with sheets prepared by the teacher. Care must be taken, however, to make sure the student is not left with a large area of blank space and no idea of what to do to fill it that is going to be worthy of award or be too restricted by sheets that are too prescriptive.

The work can be on a formatted design sheet with a border and title block with some guidance as to the possible content for the section to be completed; this might be on a separate sheet. 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

Analyse your design brief by identifying the design needs you will need to consider before designing your product.

I will write and design a wood container for treasure jewelery store. This container holds personal items and be no larger than a standard jewelery box. made out of sustainable materials.

Analysis

What are we storing in the box?

It will be used to store headset and charger

Who will use the box?

I am going to make a storage box for me.

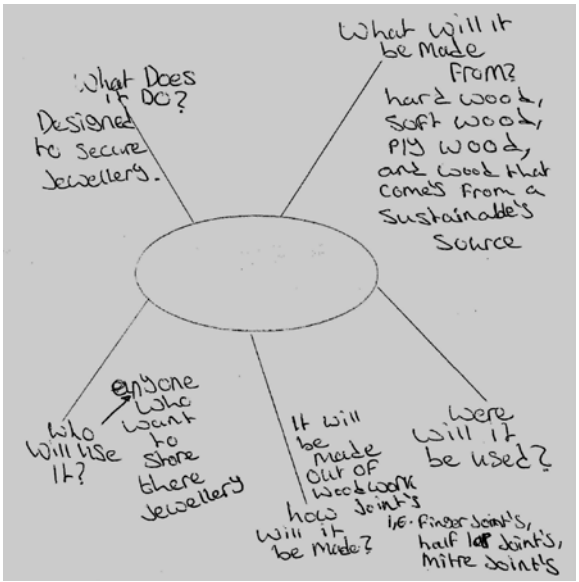
Where will it be kept?

I am going to keep in my bedroom.

What will it be made of?

I'm going to storage my phone, fishing kit, headset and charger, tool and keys.

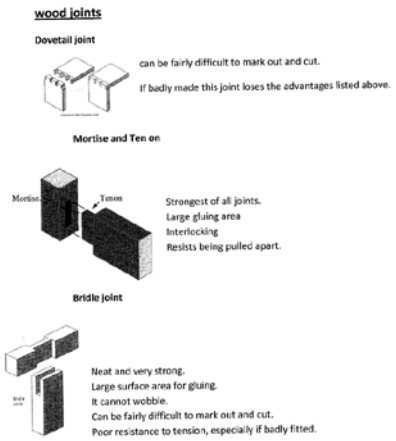
A single sheet is sufficient here with some indication of what the main areas of research that is needed to allow the student to design a suitable solution to the brief.



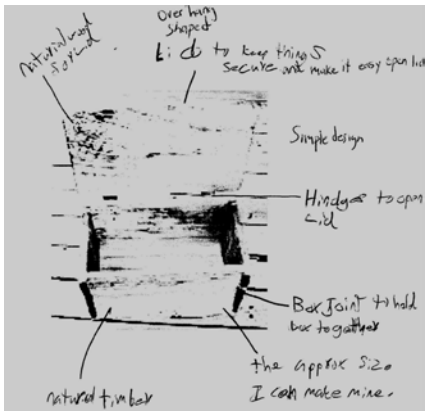
This can also be aided by the use of a brainstorm that could be a group activity. Another inclusion here could be consideration of the area where the product will be sited.

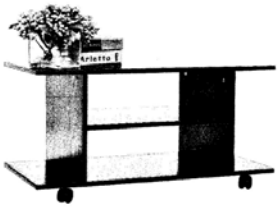
Research

Present selective and focused research that is guided by the analysis in your design brief. **Investigate** a similar existing product to find out useful information to use when designing, to include how it is made, what materials it is made from and how it is assembled.



The key word here is selective, there is no point in including lots of information about joints or materials that are not suitable for the project i.e. making a box and including mortice and tenon joint research.





Colour: **Black**

This is a solid and well-built piece of furniture with fantastic quality and value.
It is not only ideal to be TV standing but also a perfect side table or a storage shelf. It offers you a 3-tier shelf for storing stuff.
Four 360°castor wheels under the cabinet enable you to move it with ease to wherever you'd like. They also complete with 2 brakes so the table can be kept static in a certain place.
Made of high quality particle board, surface is matt finish effect carcass, made from melamine, water and scratch resistant.
Overall Dimensions: 80x40x32.5cm cm (LxWxH)

At this level the inclusion of some research of existing products is expected but there must be some analysis of these considering materials, features, finish and possible manufacturing processes. The use of user surveys can guide the project and give some indication of what is required and need not be too exhaustive, the results can be presented in simple pie charts or bar charts can be generated to highlight important results from the survey. There is no point in including questions that express opinions about the colour or material that could be used.

Specification

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

- form
- function
- user requirements
- performance requirements
- material and component requirements.
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Aesthetics	My box with be oblong and made out of wood. Should look attractive and durable. Smooth edges.
Customer	Treasure Jewellery store and anyone that wants to buy a jewellery box.
Cost	£20 - £25 approximate
Environment	Made from recycled wood from a sustainable source
Size	250 mm x 150 mm approx. 10mm larger than a normal jewellery box.
Safety	Wood must be smooth and sanded to prevent splinters. All joints must be secure
Function	It will be used as a jewelling box
Materials and manufacture	Soft wood. Ply wood, Box joint and half lap, joint mitre, box joint.

Form

- The shape will be an oval design.
- If will be designed to be sold as a flat pack product.

Function

- It must be sturdy enough to hold a flat screen TV on the top shelf.
- The product will have two shelves to start with, the top shelf will be adjustable.

User requirements

- It must be easy to assembly.
- It must be light enough to move once assembled.

Performance requirements

- It must be finished to a good standard.
- It must be safe to use.
- Any paint used must not be toxic to children or animals in case they chew the table.
- It will be marketed at a price range that is almed at students and customers on lower incomes.

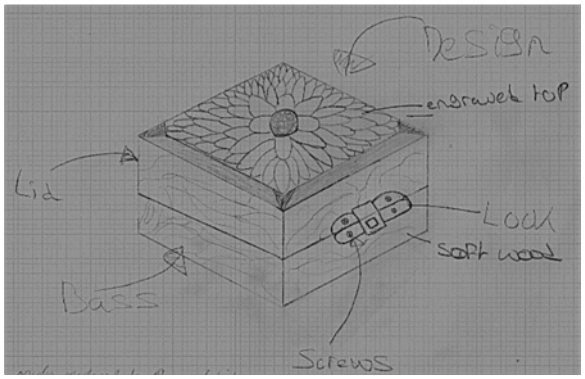
Material requirements

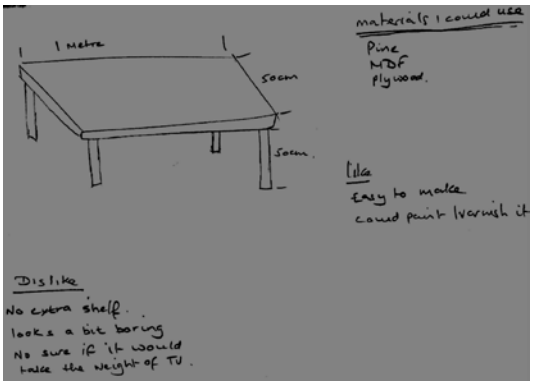
- It will be made out of a mix of MDF and pine.
- The materials used were possible will be recyclable / reusable after the products life span.

This is one section where a prepared sheet can guide the students to give easy access to a suitable solution rather than relying on written text. There only needs to be one comment on each bullet point.

Design: Initial Ideas

Present a range of different initial ideas for your product that are creative, realistic, workable and detailed and meet all the points in your specification. **Explain** your designs/plans using annotation to show the materials, components and processes you will need to make them. **Justify** your selection of specific materials, components. Explain how your designs meet your specification points. **Discuss** your designs with peers and gather general and technical information based on specification points to use in design development.





Different designs should be proposed for this section and not just the same basic design with cosmetic differences; they can be presented as either simple line drawings giving some indication of 3D or a CAD drawing. Grid papers are a great help for students, either squares, isometric or oblique.

Each drawing should include some annotation to show important dimensions, features and possible construction referring back to the research, these should have an explanation as to why they are appropriate. Consideration of points from the specification can be noted and the opinion of some of the users may be included either by discussion or by the addition of a simple survey. A range of three or more design is appropriate for this level.

Review

Review your design ideas against your original specification criteria and choose the best **one** to develop in more detail. **Explain** how feedback from peers will be used in development.

In my first idea I chose a rectangle shape with a disc shape shelves in the **middle.**

My idea 1 will be able to spin in the corner

Idea one is better because the game you want will be easier to find because it **spins.**

Idea 1 will fit easier in my bedroom.

My product will be made from plywood.

I shall make this product by hand.

It will match and fit in with other furniture in my bedroom.

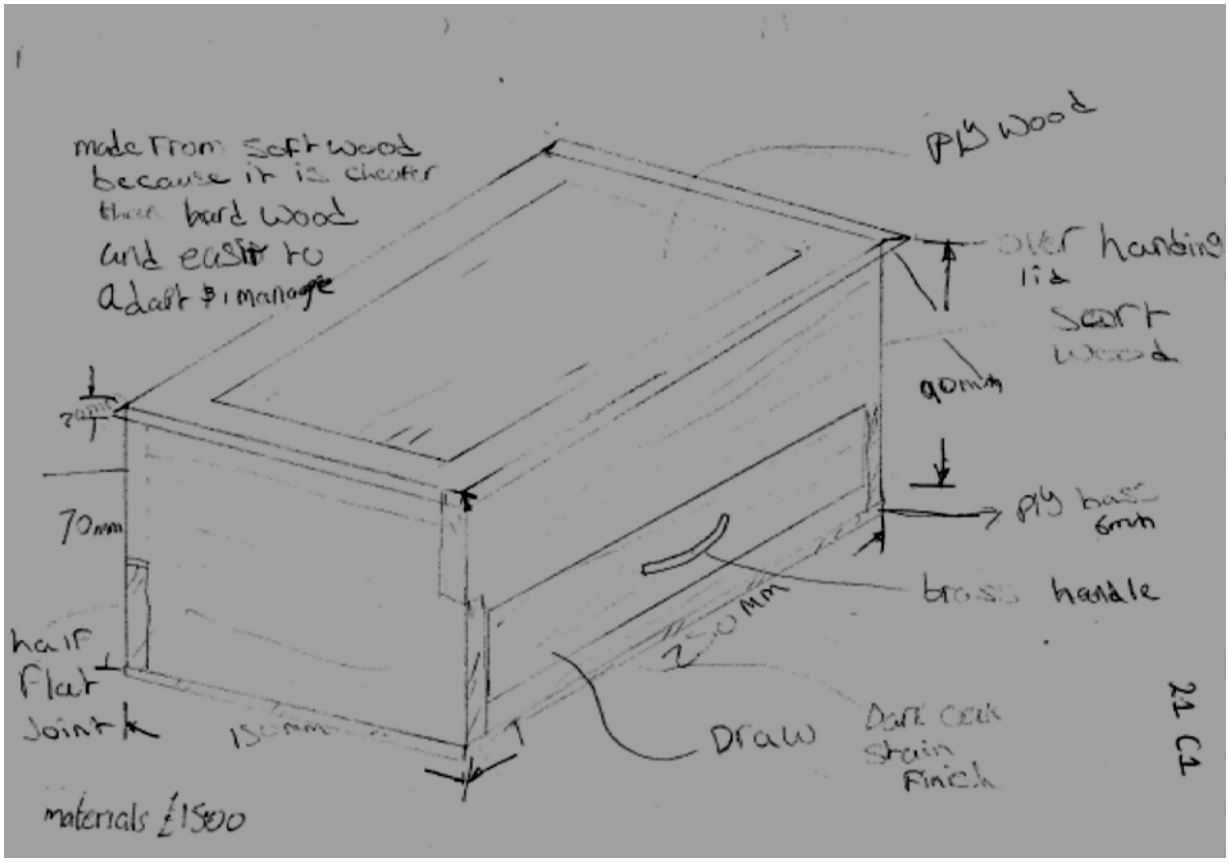
It will cost up to £50 to make as it spins.

Compare each design against each specification point and comment on how well they fit; this can best be guided by a prepared sheet once again. Some conclusion should be drawn based on user feedback as well as the review.

Develop

Develop your best design idea into a final design proposal that is improved and refined compared to the original. **Explain** how your design changes have improved your design. **Model and test** an important part of your design idea as it progresses. This could be a 2D/3D model using traditional materials and/or a 3D model using CAD. **Draw** your final design showing the major dimensions and the materials/ components it is made from.

The student is expected to produce a working drawing of the chosen idea giving construction details such that the product can be made.



Some annotation to help explain the construction along with a CAD model or simple card, foam or paper model in 3D showing how one feature might look. There may be to models showing how different constructions could be used.

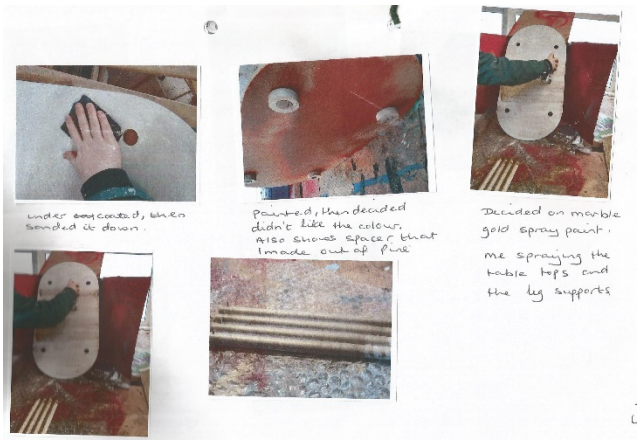
Make: Production Plan

Outline a production plan that shows the main stages for making your product, including some quality control checks.

This can again be best approached by using a template to guide the student. The plan need to be exhaustive but should show the main stages of production.

Making Skills

Make a product that involves different component parts using different materials, components, equipment, techniques and processes that functions fully and matches most specification points. **Select** the correct tools, equipment and processes, including CAD/CAM where appropriate, for specific uses. **Use** different making skills that demonstrate precision and accuracy in manipulating and using materials, tools, equipment and processes. **Make** your product safely.



At the start of every practical lesson fill in the log noting what tasks you will be working on. It doesn't matter if you don't get them finished as long as you have a focus.

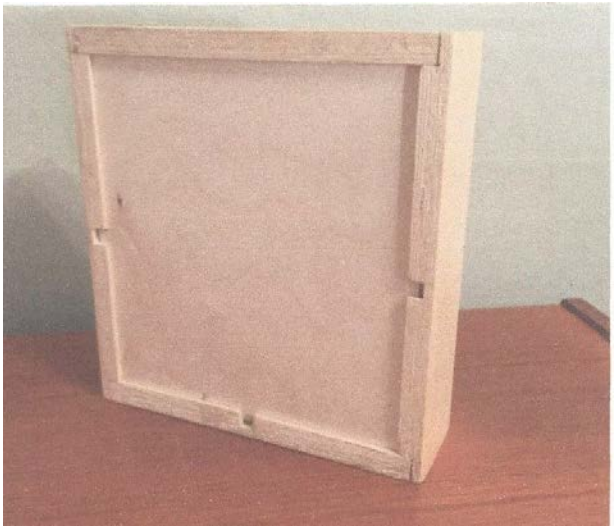
The tasks must be specific and include the time you think it will take to complete.

Date	Task	Time	Tools/Materials Needed	Completed?
20/10	making Top for TV stand.	1hr40	Panel Saw, Disc sander, Pencil, Belt Sander m.D.F.	
	make notes for supports	70 min	Pencil, T- Square, MDF	
10/11	making Bottom for TV shelf.	70	Panel Saw, disc Sander, Pencil, MDF.	
17/11	Designing and making wooden markers	70	hole saw, electric hand drill. Forstner drill bit	
24/11	mark out & drill holes for bottom shelf	70min	Forstner [illegible] electric hand drill	
5/3/15	Fitted product together.	30 min	Piece parts.	

There should be a series of tasks involved that needs to be reported photographically as the production progresses. This is important to show the moderator the making that has gone on, along with the assessor witness statement this shows the use of equipment and how safety has been followed.

Quality of Final Outcome

Make component parts that are accurate, well finished and well assembled into an intended product or demanding sub-systems of the product. **Produce** a product or demanding sub-system of the product that matches the specification criteria and functions as intended.



The photographic diary from making skills as well as the assessor witness statement assist moderation of this section. The three photographs of the completed product that are required on the CAB also assist moderation. 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 evaluate your final product against the measurable points of your specification criteria.

Test and Evaluation of jewellery box.

	Test	Evaluate
Aesthetics	Is it good to look at?	It is good to look at and is nicely ~~Gav~~ carved and has perspect lid
Construction	are the joint accurately for the construct of the box?	Yes ~~the~~ the joint are ~~ski~~ and sturdy and strong
Cost	did materials cost More than I budgeted for?	the materials were less then my original budget so I would sell my box ~~as~~ for 20-25£ Pounds
Environment	are the materials recyclable?	all of the Parts in my Jewellery box can be recyeable
Safety	Is it harmful to the Public in ~~any~~ way?	It is only harmful if the glass has been broken.

Testing

- Put a flat screen TV or Pc monitor on to the top self, to check that it can take the weight.
- check its sturdy and does not wobbly or fall the ~~piece~~ shelf
- Check ~~Shelf~~ is flat and straight.
- I like my oval design, it was time consuming, and took a lot time to get both shelfs the same.
- I would ~~a~~ keep the oval shape, but make it ~~no~~ long and wider. ~~an~~ Also make it a bit higher., as when I got it home it was not as ~~long~~ tall as my sofa.

Some testing of the finished product in use as well comments comparing the product against the specification. This does not have to be exhaustive and could be guided by a template.

Suggest Improvements

Suggest and sketch how your product could be modified to improve its performance and/or quality if it were made again.

Either a written or drawn document to show how the product could be improved is sufficient to complete the project. There might be some details picked up from potential users comment can be included here.

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.