4.4.4.4 Section D: Developing design ideas (20 marks)

Students will develop and refine design ideas. This may include, formal and informal 2D/3D drawing including CAD, systems and schematic diagrams, models and schedules. Students will develop at least one model, however marks will be awarded for the suitability of the model(s) and not the quantity produced.

Students will also select suitable materials and components communicating their decisions throughout the development process. Students are encouraged to reflect on their developed ideas by looking at their requirements; including how their designs meet the design specification. Part of this work will then feed into the development of a manufacturing specification providing sufficient accurate information for third party manufacture, using a range of appropriate methods, such as measured drawings, control programs, circuit diagrams, patterns, cutting or parts lists.

Mark band	Description
16–20	Very detailed development work is evident, using a wide range of 2D/3D techniques (including CAD where appropriate) in order to develop a prototype.
	Excellent modelling, using a wide variety of methods to test their design ideas, fully meeting all requirements.
	Fully appropriate materials/components selected with extensive research into their working properties and availability.
	Fully detailed manufacturing specification is produced with comprehensive justification to inform manufacture.

Student Guide – Prototype development planning

Introduction- Have you:

Explained why you are completing this page which identifies where you could use the materials and/or processes from your ‘materials and process research’ page and how it will help you to develop the product.

Planning prototype manufacture:

- Add a sketch of your final product at this stage of development.
- Next to each part of your design sketch add potential materials and/or process and **justify** why this would be appropriate.
- You should include multiple options for material and process choices at this stage which you can test with further sampling.

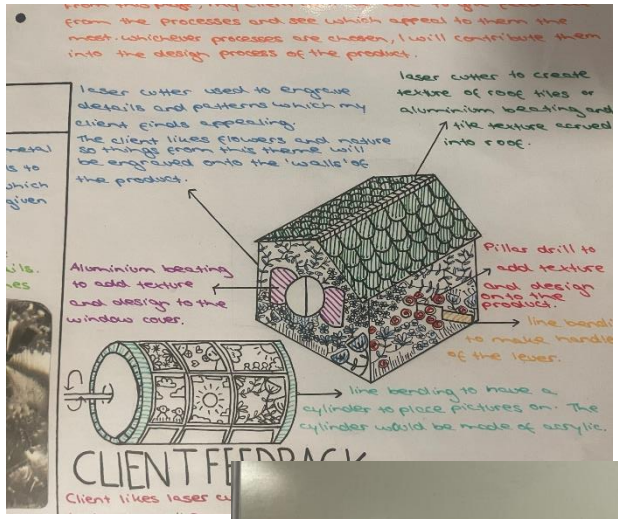
Possible extra ideas for inclusion:

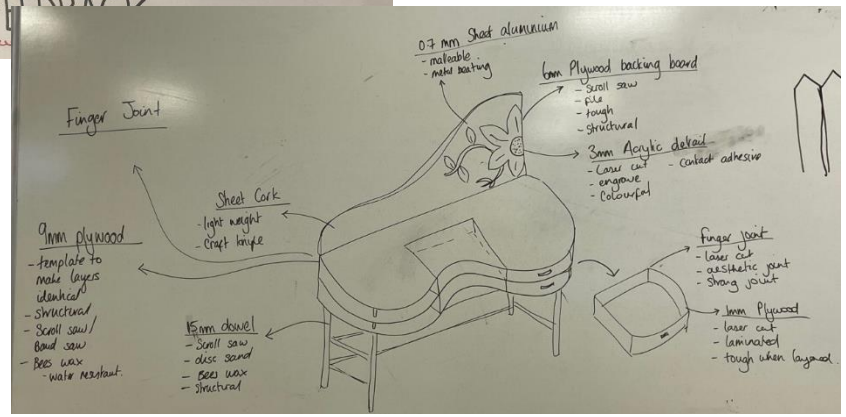
- Research additional materials and/ or processes that could be appropriate for use in your final prototype.
- Client feedback – speak to your client about your intended final material/processes choices and record any feedback they have.
- Review against spec/brief – does this design fully meet the developed design brief and spec? Are there any areas you still need to develop?

Summary - Have you:

- Explain which materials and/ or processes you believe you would like to explore further as you intend to use them in your final prototype and explain that you will now complete further sample testing to evaluate their suitability.

Exemplar pages





Parent guide – Prototype development planning

Introduction to this page

This page is a chance for students to show they have fully considered the suitability of the materials and processes they have researched and identify any parts of their prototype that they are unsure how they could manufacture.

They should look at every aspect of their prototype including materials and processes they could use for the main body, any additional parts and also consider joining and finishing methods in addition to this.

How can you support your child at home?

Look over your child's page:

- Have they included a detailed sketch/ sketches of a product that shows the parts that will need to be manufactured?
- Have they identified a suitable material and process for every aspect of their design? Has every choice been justified?
- Have they included a range of materials and processes rather than repeating the same ones again and again?
- Is there a range of considerations e.g. material types, shape manufacture, joining methods and finishing techniques?

Could you encourage them to add in the extra ideas for inclusion (in green) to help them gain more marks.

Exemplar pages