

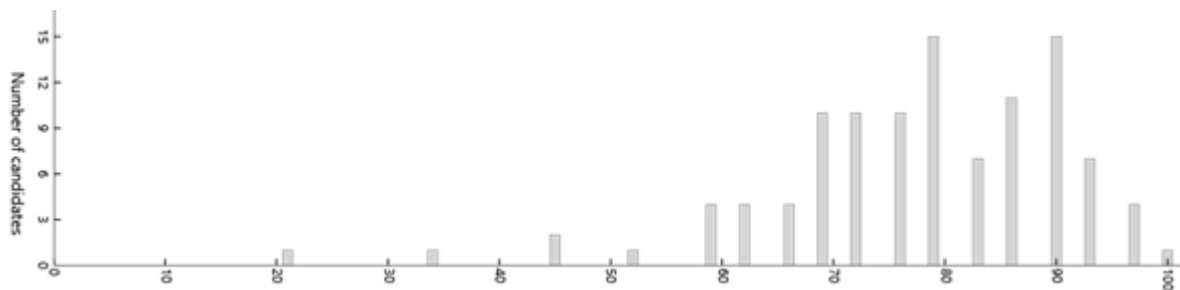


## Summary report of the 2020 ATAR course examination: Materials Design and Technology

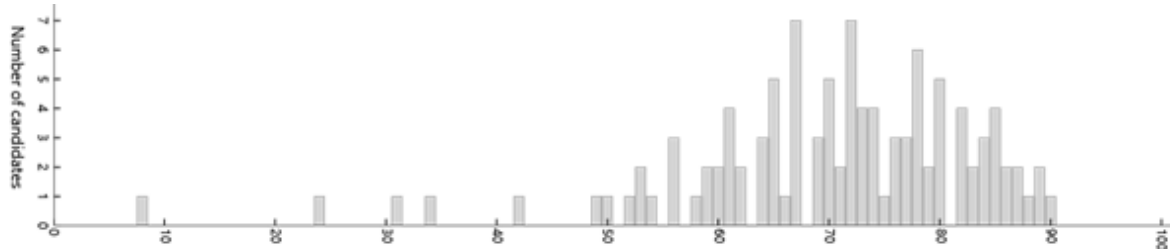
Year	Number who sat all examination components	Number of absentees from all examination components
2020	107	1
2019	151	1
2018	165	0
2017	200	0

The number of candidates sitting and the number attempting each section of the examination can differ as a result of non-attempts across sections of the examination.

### **Examination score distribution–Practical**



### **Examination score distribution–Written**



### **Summary**

The practical portfolio mean score (77.70%) was higher than 2019 (70%) and 2018 (70.26%). Historically, Textiles performs better than the other contexts, with a pronounced higher mean of 82.46% this year.

The incremental increase in practical portfolio scores over the past years suggests a refinement of delivery from teachers. Many candidates are completing each criterion to a satisfactory level, but need to focus on conducting adequate primary research and develop concepts in an authentic way. For example, a number of candidates included material testing but failed to explain how it related to the design of their project.

The written examination was well balanced, with a range of scaffolded questions and more rigorous, higher order questions. Candidates struggled with sketching skills and generally did not justify their design reasoning through annotation. Many candidates struggled with questions that required them to 'justify' a response.

## Practical examination

Attempted by 107 candidates	Mean 77.70%	Max 100.00%	Min 20.69%
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Section means were:

Practical Portfolio (Metal)	Mean 76.85%		
Attempted by 7 candidates	Mean 76.85(/100)	Max 89.66	Min 62.07
Practical Portfolio (Textiles)	Mean 82.46%		
Attempted by 46 candidates	Mean 82.46(/100)	Max 100.00	Min 65.52
Practical Portfolio (Wood)	Mean 73.75%		
Attempted by 54 candidates	Mean 73.75(/100)	Max 96.55	Min 20.69

## Written examination

Attempted by 107 candidates	Mean 68.20%	Max 90.24%	Min 11.88%
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Section means were:

Section One: Short answer	Mean 76.34%		
Attempted by 107 candidates	Mean 11.45(/15)	Max 14.27	Min 1.46
Section Two: Extended answer	Mean 68.72%		
Attempted by 107 candidates	Mean 17.18(/25)	Max 23.26	Min 0.00
Section Three: Wood	Mean 64.30%		
Attempted by 54 candidates	Mean 38.58(/60)	Max 52.08	Min 10.42
Section Three: Metal	Mean 72.12%		
Attempted by 7 candidates	Mean 43.27(/60)	Max 55.83	Min 34.58
Section Three: Textiles	Mean 66.94%		
Attempted by 46 candidates	Mean 40.16(/60)	Max 56.25	Min 15.83

## General comments

The mean of the practical examination (77.7%) indicates a high efficacy level of teacher delivery and candidate understanding of the course requirements and marking key.

The mean of the written examination (68.2%) indicates the paper was fair, supported by comparability across the contexts. Section Three had a higher mean of 72.12% for the Metals context, with Wood at 64.3% and Textiles 66.94%.

## Practical examination

*Advice for candidates*

- Include headers/footers for each criterion.
- Clearly reference how each concept considers the design fundamentals and client needs throughout the process, and not just the final design.
- Ensure you clearly define what the design problem is, and what needs to be resolved.
- Idea development should include reference to construction details, such as joining mechanisms, closures, hems etc.

*Advice for teachers*

- Focus on ergonomics, anthropometric data and environmental impacts in Criterion 1.
- Ensure material testing has relevance to the design requirements of the project.
- Ensure sustainability and green principles are linked to student work.
- Ensure machine use is included in the production procedure.

## Written examination

*Advice for candidates*

- Ensure you understand the difference between the Principles and Elements of Design.
- Read health and safety questions carefully, PPE is not considered a safety check of a machine (only for the user).

- Check calculation answers to ensure errors have not been made.

#### *Advice for teachers*

- Provide students with opportunities to focus on sketching and annotation techniques in an invigilated environment.
- Allow students opportunities to compare materials and justify why one is used in preference to another.
- Explain how CNC equipment is used in industry, and show relevant examples.

### ***Comments on specific sections and questions***

#### **Practical examination**

##### **Practical Portfolio (Metal)**

Due to the small candidature for Metal, no statistical analysis is supplied.

##### **Practical Portfolio (Textiles) (29 Marks)**

The mean of 82.46% indicates a strong performance from the Textiles candidates. Generally, candidates demonstrated a greater understanding of client needs and made relevant links to design fundamentals. However, material testing was evident but the data was not applied as the primary research.

##### **Practical Portfolio (Wood) (29 Marks)**

Overall, candidates performed well in most aspects of the portfolio. A sound understanding of the design process was evident and each criterion was addressed to a high standard. However, there was lack of depth in the design proposal, clarifying the problem and referring to the client needs/requirements. Design fundamentals were addressed but candidates failed to refer to these throughout their research. The consideration of environmental impacts and green design tended to be superficial in nature.

#### **Written examination**

##### **Section One: Short answer (41 Marks)**

Candidates performed well in Section One with a mean of 76.34%, and demonstrated sound understanding of the Design Fundamentals. The quality of sketching and rendering was variable, with many candidates finding it difficult to draw a detailed 3D concept. Many candidates found it difficult to annotate and justify their design reasoning.

##### **Section Two: Extended answer (36 Marks)**

Candidates generally performed well in Section Two with a mean of 68.72%, although some found it difficult to justify the use of materials and finishes. Candidates also struggled with the concept of prototyping and how it is employed in the design process.

##### **Section Three: Wood (72 Marks)**

Candidates found it difficult to interpret data and justify material choice. Most had a general understanding of CNC technology, but limited depth of how the machinery works in industry. The extended question on ethical issues was answered poorly, with many candidates not structuring their answers into five clear responses.

##### **Section Three: Metal (72 Marks)**

Due to the small candidature for Metal, no statistical analysis is supplied.

##### **Section Three: Textiles (72 Marks)**

Candidates found it difficult to interpret data and justify material choice. Most had a general understanding of CNC technology, but not a detailed understanding of how the machinery works in industry. The extended question on ethical issues was answered poorly, with many candidates not structuring their answers into five clear responses.