

Assessment Report

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Part A: Commentary

Commentary is not provided for Technology standards.

Report on Standards

91612: Demonstrate understanding of how technological modelling supports technological development and implementation

Candidates who were awarded **Achievement** commonly:

- showed they could differentiate between functional modelling and prototyping in the process of developing a technological outcome
- explained competing and contestable factors involved in the creation and/or use of the outcome that was being tested by the modelling

- explained how the modelling has influenced their decision making during the development and implementation of an outcome.

Candidates whose work was assessed as **Not Achieved** commonly:

- did not explain how the range of modelling used had meaningfully informed decision making
- described some modelling practices but did not link them to relevant competing or contestable factors.
- included sketches, screenshots, diagrams and photos that were too small to interpret or with no link to how these related to the modelling undertaken
- described technological modelling without identifying how it was used to address competing and/or contestable factors relating to an outcome.

Candidates who were awarded **Achievement with Merit** commonly:

- provided detail about how relevant competing and contestable factors were addressed by the modelling
- explained the changes made in the planned development of an outcome because of the functional modelling that took place
- reflected on what could be changed in the development because of prototyping.

Candidates who were awarded **Achievement with Excellence** commonly:

- based their submission around a comprehensive and reflective discussion which showed how technological modelling can be used to defend and validate decisions made during their own technological development
- showed clearly how key factors were resolved through evidence gained from modelling processes and a clear understanding of the difference between competing and contestable factors.

Standard specific comments

The majority of this year's candidates presented concise reports that met the requirements of assessment specifications: there were very few reports in excess of 10 pages. Where supporting evidence (sketches, screenshots, diagrams, photos, annotations, captions) is included in the report, candidates are advantaged if this is readable and legible.

In 2020, it was common for students to mention the Covid19 lockdown in their reports, with many including it as one of their competing factors.

Many candidate submissions did not show that the breadth and depth of practical work had taken place that is expected at this level.

91613: Demonstrate understanding of material development

Candidates who were awarded **Achievement** commonly:

- clearly described a material and its properties
- described the enhancement of the product in terms of characteristics such as washability, tensile strength, durability, flexibility, weight in relation to enhancement of speed, general speed enhancement, viscosity, taste, flavour, texture, preservative action and extension of shelf life, nutritional value as outlined in EN 3
- clearly related the material to a product/s and described how it enhanced the product
- clearly related the material properties to how the product functions and the contexts in which it is used
- described how the product would need to be maintained
- described how the product or the material can be disposed of at the end of the product life cycle.

Candidates whose work was assessed as **Not Achieved** commonly:

- focussed on the development of the product without focussing on the material aspect of the product
- had a very broad generic product or group of products rather than a specific product - this made it more difficult for candidates to describe the enhancements in a specific context

- described the development of their own product and practices rather than referring to material development or enhancements
- described the product or material's sustainability rather than maintenance and disposal
- described why materials and or products in general are developed (generic)
- used internal assessment evidence as the basis of their report without addressing the criteria of this standard
- used significant downloaded material that was un-mediated and showed limited understanding or links to product enhancement
- identified a material but did not describe the development or enhancement
- described the application of a material in practice but did not describe the enhancement in relation to the product
- described their own product, material(s) used and processes, which did not address the issues of material properties, enhancements or maintenance and/or the design, development, production, ongoing maintenance and end of life disposal of the product
- provided evidence of the construction and issues encountered when developing a project that the candidate had made, without describing the development of the materials used, their impact on the product's performance or the implications of the material chosen in relation to a specific enhancement
- described the packaging material as the disposal issues when this had not been the focus of the material design, development and production focus.

Candidates who were awarded **Achievement with Merit** commonly:

- related the material(s) properties to the chosen product functionality and context
- explained how the properties enhance the product to enable it to function
- gave examples that explained how the material enabled the product to function as intended when in use, in the contexts it is used within
- explained how the material influenced all aspects of the product from the design of the product; production of the product; maintenance of the product and the disposal options for the product. This may have included things such

as shelf life of food products and ultimate disposal of foods, life cycle of garments or other artefacts.

Candidates who were awarded Achievement with **Excellence** commonly:

- explained the material(s) composition and how the material is developed from its natural or raw state into the material used within the product in detail
- explained possible future developments for the materials and or wider and further uses for it
- synthesised the information and wrote a well-structured report using their own voice
- made synthesised statements and relational links between the product, material and performance enhancement
- described the concepts and processes underpinning the development of a specific material and could distinguish between concepts of development and the processes used; then explained the concepts and processes used in the manufacturing and development of the material in detail with valid evidence derived from a range of credible sources including technical data
- explained how the enhancements in material have led to development of enhanced products and explained how these products have significantly enhanced such things as sports performance, market performance, health safety performance, speed, durability, life cycle
- provided evidence when describing the material development e.g. explained the molecular structure and the impact of the structure on the performance of a material and its enhancement of the end product
- explained and provided sufficient evidence to show how the properties of a material have been developed over time to enhance a product.

Standard specific comments

This standard requires candidates to demonstrate understanding of the relationship between the material, the enhancement to the product / material and the product functionality. Candidates were advantaged when could clearly link the material, the specific enhancement and the performance of the product.

Candidates who compared a variety of products and materials were often disadvantaged. Successful candidates provided well-structured reports that used referenced and mediated technical data, charts and diagrams from relevant and

credible sources to explain the concepts and processes that were related to the specific material development.

91614: Demonstrate understanding of operational parameters in complex and highly complex technological systems

Candidates who were awarded **Achievement** commonly:

- identified and explained one or more concepts that lead to the establishment of operational parameters (e.g. concept of optimum ambient temperature for humans)
- provided an example of a highly complex system and identified the operational parameters within this system as a measurable range of values (e.g. 10°C minimum - 25°C maximum temperature in an air conditioning system)
- explained the implications that these concepts had on the design as well as the development of the system
- provided an accurate explanation of how the operational parameters allow the system to function.
- provided an accurate explanation of how the operational parameters enable maintenance in the system. Maintenance is clearly linked to operational parameters.
- identified a highly complex system that is self-regulating and/or intelligent as well as the operational parameters associated with this highly complex system.
- explained social factors that influenced the establishment of the operational parameters in a highly complex system
- explained technical factors that influenced the establishment of the operational parameters in a highly complex system.

Candidates whose work was assessed as **Not Achieved** commonly:

- had no clear understanding of what operational parameters are but instead wrote in general about features of systems without referring to specific values
- chose simple technological systems as opposed to complex and highly complex systems
- produced information that was technically inaccurate
- failed to identify operational parameters associated with a complex system
- wrote in general about concepts used in the design and development of technological systems, but failed to link these to operational parameters
- wrote about maintenance in a technological system but failed to link these to operational parameters..

Candidates who were awarded **Achievement with Merit** commonly:

- explained in detail, with examples of how a highly complex system operates maintains its parameters (e.g. air fuel ratio in fuel injection systems operates between 12:1 to 17:1)
- discussed, taking into account different ideas, why social and technical factors influenced the establishment of operational parameters in a highly complex system.

Candidates who were awarded **Achievement with Excellence** commonly:

- discussed, by comparing and contrasting different ideas, how operational parameters influenced the design, development and maintenance of systems (both complex AND highly complex systems).

Standard specific comments

Overall candidates demonstrated a good understanding of operational parameters in technological systems.

91617: Undertake a critique of a technological outcome's design

Candidates who were awarded **Achievement** commonly:

- structured their report to reflect all the requirements of the standard, including the use of good headings relating to the ENs
- explained the concept of good design
- explained different recognised designer views of design
- explained judgement criteria used to determine the quality of the design of technological outcomes
- recognised that different judgement criteria can be used to judge good design depending on time, tastes and societal values and used contemporary judgment criteria
- explained how ideas about good design have shifted to cater to new societal demands, for example, sustainable products and social benefit
- selected and used recognised and appropriate design judgement criteria to a level that reflected appraisal.
- chose to critique a technological outcome of which they had personal experience and knowledge

Candidates whose work was assessed as **Not Achieved** commonly:

- did not appraise a specific technological outcome but rather a generic product type
- focussed on what is good design and design eras but did not complete the critique in enough depth or detail
- misinterpreted appraisal to be broadly describing and explaining the function and/or appearance of a technological outcome rather than judging it against recognised judgement criteria (refer to EN3)
- omitted to include evidence that related to one or more of the assessment criteria for Achievement
- chose a technological outcome that had limited scope
- chose a technological outcome that was overly complex
- chose to critique the use of design elements within an outcome rather than using recognised design judgement criteria.

- applied established judgment criteria to a technological outcome as well as a limited critique rather than choosing contemporary judgment criteria to make the critique
- chose design judgment criteria that did not allow them to demonstrate their understanding of the application of the chosen criteria.

Candidates who were awarded **Achievement with Merit** commonly:

- discussed why contemporary judgement criteria are important for design decision making
- evaluated the quality of a selected technological outcome using judgement criteria chosen based on relevance to the technological outcome
- proportioned evidence within the report to ensure that the critique was the crux of the report.

Candidates who were awarded **Achievement with Excellence** commonly:

- selected judgement criteria that were appropriate to the technological outcome and the reasons for their selection was clearly articulated
- explored and discussed the impact of utilising specific criteria
- explored how design decisions were a compromise in order to judge whether a technological outcome was a good design using their selected design judgment criteria
- personalised the Judgement Criteria to be used which also promoted greater levels of personal voice.
- justified the evaluation of a technological outcome's design
- identified areas where future enhancements to a technological outcome may be possible.

Standard specific comments

Whilst there are three distinct bullet points that are required to be met to achieve the standard, it is important that the report content should reflect the title of the Standard. The emphasis should be on the critique of a technological outcome.

At this level, a compare and contrast model is often used by candidates. Those that discuss different designers' views and/or perspectives for one technological outcome are often more successful. Candidates that rated two similar products

head-to-head focussed on design details but did not demonstrate understanding or an in-depth critique of a technological outcome.

The design judgement criteria chosen should reflect the technological and societal environment that the outcome was designed to fulfil. User expectations and interpretations can vary significantly between different versions of a product.

Candidates should ensure that the criteria selected are a good fit for the outcome being critiqued. Often contemporary judgment criteria were discussed but not used, instead other judgment criteria were used in place of the contemporary judgment criteria, limiting the ability to reach the higher grades.

Excellence candidates often justified their selection of certain criteria over others and why these were relevant to the product, context, target market, and provided an in-depth and balanced critique.

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Previous years' reports

[2019 \(PDF, 491KB\)](#) [2018 \(PDF, 187KB\)](#) [2017 \(PDF, 75KB\)](#) [2016 \(PDF, 265KB\)](#)