2025 NCEA Assessment Report

Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Subject: Generic Technology

Level: 3

Achievement standard(s): 91612, 91613, 91614, 91617

General commentary

Candidates whose response demonstrated an authentic viewpoint or reflected their own technological practice were more likely to be awarded the higher grades. In contrast, candidates whose responses relied heavily on templates or whose technological practice was less student-led were often awarded lower grades. Responses that exceeded the recommended report length typically included a significant amount of information not relevant to the assessment.

Report on individual achievement standard(s)

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

Assessment

The assessment was a digitally submitted report.

Commentary

A notable proportion of submissions did not fully meet the requirements for prototyping as outlined in the standard. Evidence of prototyping should include clear photographic documentation, alongside supporting images for other stages of technological modelling. Written descriptions of testing alone are insufficient for higher-level achievement.

There continues to be some uncertainty about the concepts of competing and contestable factors. Candidates are expected to define these terms accurately and distinguish between them. Correct identification and discussion of these factors are essential, as they underpin informed, responsive, and defensible decision-making within technological modelling.

Functional modelling was generally stronger than prototyping. Candidates should demonstrate a clear understanding of the differences between these two stages and explain how prototyping informed implementation decisions. Evidence of testing should be used to justify decision-making, and photographic evidence should be legible and relevant to the discussion.

Reports should focus on a single technological outcome and adhere to the assessment specifications. Submissions must be presented in report format rather than portfolio style, using paragraphs, subheadings, correct grammar, and referencing of any resources used. Informal language should be avoided.

While stakeholder feedback supports decision-making, it is not considered a form of modelling. Discussions of risk management should be included only where they contribute to justifying decisions.

Finally, candidates should ensure that all evidence is clearly linked to the development of the technological outcome. Photographic evidence of functional modelling and testing should be included where relevant.

Grade awarding

Candidates who were awarded **Achievement** commonly:

- differentiated between functional modelling and prototyping
- identified, categorised, and explained competing and contestable factors
- explained how their own experience of technological modelling influenced their decision-making to develop and implement an outcome
- clearly demonstrated how functional modelling was used to test competing and contestable factors.

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

- provided evidence (written descriptions and photographic) of how competing and contestable factors were utilised to justify decision-making
- provided detail about how relevant competing and contestable factors were considered and addressed by technological modelling
- explained the changes that took place during the development stage of their technological outcome due to the results from functional modelling
- reflected on what was changed, based on evidence, in their development due to prototyping.

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

- presented a comprehensive and reflective discussion demonstrating how technological modelling was used to defend and validate responsive decisions during key stages of their own technological development
- integrated the identified competing and contestable factors into their explanations of how informed, responsive, and defensible decisions were made
- showed clearly how key factors were resolved through evidence gained from modelling processes, alongside a sound understanding of the distinction between competing and contestable factors
- produced reports that were concise, well-organised, and structured in accordance with assessment specifications.

Candidates who were awarded **Not Achieved** commonly:

- did not present a final technological outcome
- failed to differentiate between functional modelling and prototyping in their discussion
- did not test the prototype in its intended environment to inform implementation decisions
- did not explain how prototyping was used to inform decision-making
- provided little or no explanation of how modelling informed decisions for the outcome
- did not correctly categorise competing and contestable factors
- described some modelling but offered limited discussion of competing and contestable factors
- included sketches, diagrams, photos, or screenshots without referring to them to explain modelling choices

- discussed technological modelling without showing how it addressed competing and / or contestable factors in relation to the outcome
- focused on risk management without explaining, or often even mentioning, contestable and competing factors
- used terminology from the standard (e.g., functional modelling, prototyping, competing and contestable factors, and defensible decisions) without linking these terms to evidence or modelling they carried out.

Achievement standard 91613: Demonstrate understanding of material development

Assessment

The assessment was a digitally submitted report.

Commentary

Overall, most candidates met the requirements of the standard, with some demonstrating a comprehensive understanding of material development and how this contributes to the performance of a product. Stronger submissions provided clear, well-structured discussions that linked material properties to product functionality.

A number of reports presented responses as lists or bullet points without supporting commentary, which limited the depth of explanation. Some candidates placed significant emphasis on the historical aspects of the material rather than focusing on its development and performance in relation to the product. There were also instances of responses concentrating solely on the material itself without applying it to a product context.

Reports that adhered to specifications and provided well-developed explanations of material development in connection with product performance were generally stronger.

Grade awarding

Candidates who were awarded **Achievement** commonly:

- clearly described a material and how it was developed
- described how material properties can enhance a product
- described one or more implications of material development on product design, development, implementation, maintenance, or disposal.

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

- used examples to explain how material properties enhanced the product
- related material properties to a product's intended function
- clearly outlined how material choice impacted product design, development, implementation, maintenance, and disposal.

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

- reflected extensive research and a deep understanding of concepts and processes employed in the development of a material
- included good relational links between material and product
- discussed future developments of a material and how it could impact a product(s)
- synthesised information to establish an authentic viewpoint.

Candidates who were awarded **Not Achieved** commonly:

- did not describe the development of material and how this enhanced its performance but focused heavily on its history
- did not describe the implications of the material on the design, development, implementation, maintenance, and disposal of products
- did not demonstrate understanding of material development.

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

Assessment

The assessment was a digitally submitted report.

Grade awarding

Candidates who were awarded **Achievement** commonly:

- distinguished between complex and highly complex technological systems
- provided an example of a complex system and identified the operational parameters within it as a measurable range of values, e.g. 10 °C minimum to 25 °C maximum temperature in an air conditioning system
- identified and explained one or more concepts that lead to the establishment of operational parameters, e.g. the concept of optimum ambient temperature for humans
- 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
- clearly linked maintenance to operational parameters
- identified a highly complex system that is self-regulating 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 a highly complex system.

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

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

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

- discussed how operational parameters influenced the design, development, and maintenance of systems (both complex AND highly complex systems)
- compared and contrasted different ideas as part of the discussion.

Candidates who were awarded **Not Achieved** commonly:

- identified simple technological systems as opposed to complex and highly complex systems
- included information that was technically inaccurate
- failed to identify specific and quantifiable operational parameters associated with a complex system
- wrote about concepts used in the design and development of technological systems, but did not link them to operational parameters
- wrote about maintenance in a technological system but did not link it to operational parameters.

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

Assessment

The assessment was a digitally submitted report.

Commentary

The standard requires candidates to have a solid understanding of the judgement criteria listed in EN3 of the standard. Those who demonstrated an incorrect understanding of these terms typically struggled to meet the requirements of the standard. At the Excellence level, responses were characterised by robust justification of the selected evaluative criteria, with clear explanations of how and why each criterion was relevant to the product's fitness for purpose in its intended context, target market, and stakeholder needs. Where contemporary criteria were substituted without valid justification, this limited access to higher grades.

Candidates are encouraged to support all judgements with specific, authentic evidence and should not assume the marker has prior knowledge of the selected outcome. Candidates are expected to focus their response on evaluating the outcome against the established criteria, and to avoid including information that is not relevant to the standard, e.g. suggesting improvements or describing the development process. Responses that demonstrated sustained critique across multiple aspects of the outcome (including functionality, usability, aesthetics, materials, construction methods, and suitability for the end user and environment) were more likely to reach the higher grade levels.

Grade awarding

Candidates who were awarded **Achievement** commonly:

- explained the concept of good design, why some criteria for judging the quality of design change over time, and how we see it today
- explained views of design and judgement criteria used to determine the quality of the design of technological outcomes
- provided specific examples to illustrate their points
- provided informative images of the outcome they critiqued
- selected criteria that were appropriate for and relevant to the outcome they were critiquing
- critiqued in an objective and balanced way using appropriate design judgement.

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

- discussed the importance of contemporary judgement criteria
- clearly explained why modern standards and frameworks are essential for evaluating technological outcomes, e.g. using criteria such as environmental impact, accessibility, and usability ensures the critique remains relevant and meaningful in today's context
- selected relevant judgement criteria for the technological outcome
- chose evaluation standards that aligned specifically with the purpose, function, and context of the selected technological outcome, e.g. assessing an electric vehicle might focus on energy efficiency, charging infrastructure, and carbon footprint, while critiquing a smartphone might prioritise criteria such as user interface, durability, and data security
- balanced evidence to emphasise the critique as the core of the report
- structured the report so that the majority of the content revolved around analysing and evaluating the technological outcome against the selected criteria, e.g. presenting clear evidence such as data, user feedback, or case studies and connecting it directly to the judgement criteria, so the critique was the central focus.

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

- examined how applying certain criteria influenced the evaluation process and outcomes, e.g. when critiquing a smart thermostat, the use of energy efficiency and user-friendliness as criteria highlights its sustainability and accessibility
- considered what might be overlooked by focusing on specific criteria, such as affordability or aesthetic design, and justified the emphasis placed on the chosen criteria
- acknowledged that judgement criteria can vary depending on cultural, societal, and personal values, e.g. a critique might explain that environmental impact is important in regions prioritising green technology, whereas cost-effectiveness might hold more weight in economically constrained areas
- demonstrated an awareness of how personal biases or experiences could influence the importance assigned to different criteria
- provided a logical rationale for each criterion selected, tying it directly to the purpose and users of the technological outcome, e.g. if critiquing an e-reader, the report could justify focusing on readability, battery life, and portability because these are key factors for frequent readers and travellers, who are the primary target audience
- effectively adapted the general judgement criteria by integrating personal insights and experiences, e.g. when evaluating a standing desk, prioritising ergonomic benefits and adaptability in the context of a school prototyping project.

Candidates who were awarded **Not Achieved** commonly:

- did not focus on a single technological outcome or were too generic
- used large amounts of uncontextualised material copied from other sources
- chose outcomes that were too broad or complex, for example, cars, boats, motorbikes, museums, or parks
- focussed on general product categories, for example, shoes or remote controls, or future technologies not yet developed
- discussed unrelated design movements, eras, or designers
- used criteria that were unsuitable for the chosen outcome
- lacked depth or detail in the critique
- produced reports limited to descriptions of specifications, aesthetics, or functions
- misunderstood appraisal as merely describing features rather than evaluating against set criteria
- did not provide evidence for one or more assessment criteria, showing a lack of understanding
- critiqued based on design elements instead of recognised design evaluation criteria.