Assessment Report

Level 1 Technology 2017

Standards 91048 91049 91050 91053 91070 91074

Part B: Report on standards

91048: Demonstrate understanding of how technological modelling supports decision-making

Candidates who were awarded **Achievement** commonly:

- identified a technological outcome they had developed
- provided evidence of the modelling they had undertaken
- Identified the decision(s) made as a result of reviewing the evidence of their own modelling.
- described briefly how the decisions used to develop their own technological outcome.

Candidates who were assessed as **Not Achieved** commonly:

- wrote about technological outcomes developed by others without applying the knowledge to their own practice.
- wrote generic responses
- wrote about their practice not their modelling
- undertook modelling that was not relevant to their own outcome
- undertook relevant modelling but did not link it to any decision
- wrote in terms of advantages and disadvantages or pros and cons but failed to demonstrate understanding of modelling/evidence/decision.

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

- explained why they had selected the form of modelling used and how the evidence influenced the subsequent decision
- provided evidence of modelling for technical feasibility, making decisions that would lead to an outcome that could be realised; and/or
- provided evidence of modelling for social acceptability: should the outcome be happening in the intended social environment and how was this decision made?
- presented legible extracts of their work to support the report.

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

- had been guided by a ‘real world’ brief which established the social environment of the issue.
- focussed the report on one technological outcome

- provided a robust discussion as to the purpose of technological modelling, both functional modelling and prototyping, in relation to their own developing outcome
- discussed the technical feasibility of the outcome through the modelling/ evidence/ and subsequent decision.
- provided clear photographic evidence of the modelling and prototyping that had been undertaken.
- discussed the social acceptability of the outcome during development and as a completed outcome.
- embedded risk management in their student practice
- provided photographic evidence showing that the technological outcome actually existed and was evaluated in situ.

Standard specific comments

Establishing an authentic context and issue with stakeholders who will interact with the end product (technological outcome) is key to success in achieving this standard.

Candidates who reported on the development of more than one outcome were less successful. These candidates often became side tracked by unrelated aspects of their modelling and failed to show how the decisions made as a result of modelling contributed to the evolving outcome.

Technological modelling comprises functional modelling and prototyping. It was often the lack of prototyping that prevented candidates from achieving with excellence

Candidates are encouraged to conduct their own relevant modelling rather than rely on class modelling examples. In writing a report for this standard, it is important that candidates link all aspects of modelling to their own practice.

91049: Demonstrate understanding of how materials enable technological products to function

Candidates who were awarded **Achievement** commonly:

- identified what they were designing and highlighted their required specifications, which helped to link the chosen material(s) and their performance properties to the project
- described the performance properties of at least one of their chosen materials
- used diagrams or written text to describe the composition and structure of the basic material(s) being used
- described how the structure of the material(s) affected the performance of the material required for the outcome
- indicated how the performance of the material(s) was relevant to the purpose of the outcome.
- described how their chosen material(s) could be manipulated because of the composition and structure of the material(s)e.g. plywood can be nailed/screwed close to the edge; cotton is easy to dye…..
- explained how they manipulated their chosen material(s) to allow their technological product to function, e.g. to stop the mild steel frame from rusting I coated it with paint; to stop the edges of my garment from fraying, I overlocked all edges; I sanded all surfaces to get them smooth and then coated them with varnish for protection
- based their report on their own technological experience, ie linked the material(s) being researched to their own project work
- structured their report clearly
- completed a bibliography or referenced as appropriate
- used their own words demonstrating their understanding of how their chosen material(s) enabled their outcome to function.

Candidates who were assessed as **Not Achieved** commonly:

- presented information that did not clearly identify either the composition or structure of their chosen material(s)
- presented limited or no evidence describing how composition or structure of their chosen material(s) allowed the material to be manipulated
- presented limited or no evidence explaining how the chosen material(s) were manipulated (worked) to allow their project to function
- misinterpreted what constitutes a material
- focused on a number of materials involved in their project but did not present evidence describing how the composition and structure allowed the material to be manipulated; or explain how a material had been manipulated to allow the project to function
- presented information that did not include performance specifications that linked to the final outcome.

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

- presented evidence of interaction between their project specifications, material research and how they relate to each other
- presented evidence explaining how composition and structure determines the performance properties of a material or materials *e.g. it depends on how long the length of the cotton fibre is when it is picked because the longer the fibre the stronger the yarn is that is spun from cotton*
- presented evidence explaining how the composition and structure determines the way the material(s) can be manipulated *e.g. when you cream the butter and sugar it helps with leavening because the sharp edges of the crystals cut air into the fat; if you cut a piece of wood with the grain, it will be easier because you are not going against the grain; however, because the way the yarns are arranged in my plain weave fabric, there was no room for stretch except for the bias*
- presented a report that displayed evidence of knowledge gained through their research that was clearly student voice, using sentence starters such as '*from the research above I have learnt that … because……*

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

- based their reports on their own experiences whilst developing their own project, through the use of trialling and testing of different materials and communication with experts in the chosen field
- compared and discussed in depth the composition, structure, and performance properties of different types of material that enabled their project to function as intended, as required by the performance specifications provided
- concentrated on two to three materials, allowing the opportunity to write a more in depth report.

Standard specific comments

Some candidates misinterpreted what constitutes a material. This was prevalent in the food contexts. Successful candidates focused on the individual ingredients, e.g. flour, eggs, sugar etc.

Manipulation of materials is a concept that was misunderstood by some candidates. Candidates need to provide evidence of practices and processes that are required as a result of a material’s property or properties.

Submitting a 10 page report did not guarantee a candidate would obtain a Merit or Excellence grade. Candidates often repeated their information two or three times instead of building on their initial comments with more in depth explanations of the interaction between their chosen materials, how the composition and structure determined how they could manipulate the material, and how this manipulation allowed the project to function.

Successful reports presented researched material that was relevant, accurate and had been integrated into the candidate’s own thinking.

91050: Demonstrate understanding of the role of subsystems in technological systems

Candidates who were awarded **Achievement** commonly:

- selected at least one technological system
- identified at least two subsystems within the technological system
- described the roles of at least two subsystems within a system
- described using accurate technical terms how these subsystems worked together to make the overall system function
- limited their report to simple descriptions of the purposes of the subsystems and did not give detailed or in-depth explanations of the subsystem or its specific function.

Candidates who were assessed as **Not Achieved** commonly:

- misunderstood what a subsystem is, referring to components as subsystems e.g. LEDs and resistors
- submitted lengthy explanations of how their own circuit worked at a component level but could not identify the subsystems within their system
- identified subsystems but did not describe the roles of the subsystems
- did not relate how the various subsystems they described worked together to achieve the objective of the system
- gave general, inaccurate or vague descriptions of subsystems within a system
- often used incorrect terminology about systems
- described non-technological systems such as biological, managerial or organisational systems.

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

- explained how specific control functions were performed between various subsystems in a technological system
- had a correct understanding of feedback and explained how control information was taken from an output subsystem back to an input subsystem to control, adjust or regulate the behaviour of the system
- explained at least two advantages and two disadvantages of at least one subsystem within the technological system
- included some explanations of design, development and maintenance but did not extend these with discussion points such as detailed comparisons, contrasting aspects and/or justifications to lift their grade to an excellence.

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

- discussed both advantages and disadvantages of at least one subsystem within a particular technological system, through comparisons or by evaluating specific decisions made by technologists
- discussed all three aspects of design, development, and maintenance decisions made by technologists regarding subsystems and their implications on a particular technological system.

Standard specific comments

Candidates were required to demonstrate their understandings of the role of subsystems in technological systems. Candidates chose from a number of alternatives and wrote reports that communicated their understanding often using diagrams or pictures to assist their explanations.

A significant number of candidates limited their report to only the achieved criteria and did not attempt to explain feedback or control within a technological system. This was particularly evident when students described their own project (e.g. a railway crossing barrier arm) which had no feedback but only control.

A number of candidates who used computer systems as their system, confused the concept of self-regulation with automation. For instance, when a microprocessor in a computer reads instructions this is not an example of self-regulation, it is simply an automatic process.

A number of candidates failed to gain merit or excellence grades as their explanations of feedback, and in some cases control, were incorrect. Feedback in technological systems does not include how the system gives information about its operation to users of the system; technological feedback is a self-regulating feature of technological systems and occurs without human interaction or intervention.

91053: Demonstrate understanding of design elements

Candidates who were awarded **Achievement** commonly:

- identified and described how design elements had been applied within their own, or other's practice and contexts
- identified and described both the subjective and objective considerations within a specified context
- described how the design elements contributed positively and/or negatively to the quality of the design.

Candidates who were assessed as **Not Achieved** commonly:

- interpreted design elements incorrectly showing limited understanding
- provided design element definitions without commenting on how they had been applied within a technological outcome
- identified the relevant design elements present within a product but did not describe the effect these elements had on the quality of the specified context
- submitted large quantities of ‘supplied and/or non-referenced information’ that the candidate had not processed/personalised or applied to the context
- did not provide images.

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

- identified, described, and explained how design elements had been applied to the technological outcome(s) chosen
- compared, contrasted, and evaluated the application of design elements, either within their own practice or the practices of others
- explained how specific elements had been applied to improve the aesthetics and/or function of a product
- reflected on the development of a product and how the application of design elements impacted on the product
- illustrated the application of design elements throughout the development of their outcome throughout their report.

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

- demonstrated independent research, design, and on-going and reflective analysis within their practice

- compared, contrasted and evaluated the application of design elements, either within their own practice and/or the technological outcomes and often discussed how the interaction of different design elements impacted on the quality of the design
- placed an emphasis on how the application of design elements impacted on their own practice and discussed how it impacted on design decisions.

Standard specific comments

This standard requires candidates to comment on where and how design elements have been utilised in a technological outcome(s). In addition, candidates are also required to consider how the application of these design elements has impacted on the quality of the design.

Candidates who aligned their report to their own technological practice were more likely to gain merit and excellence grades. They often provided greater levels of explanation that related to how the application of design elements impacted on their own design decisions during the development of a product and an analysis of the completed outcome.

Candidates who used different technological outcomes to describe each of the design elements prior to exploring a specific technological outcome were often limited to an achieved grade. Many of these candidates apportioned a significant amount of their report to this aspect, restricting their ability to gain higher grades due to page limits. It appears that many of the formats and templates used by candidates have not been updated to reflect changes in assessment specifications, in particular page limits.

Evidence for a grade of merit and excellence is often not produced until the impact of multiple design elements within the same outcome is explored, and how this impacts on the quality of the design e.g. a combination ofbright colours and repetition of line/pattern on the cycle helmet makes it stand out at distance and the pattern is popular with teenagers...

At the higher levels, candidates were more likely to place equal emphasis on both the subjective and objective considerations (or aesthetics and function). This enabled many candidates to comment on how the application of design elements was often a compromise. This also highlights the importance of selecting an outcome where both the subjective and objective considerations are relevant and obvious.

91070: Demonstrate understanding of basic concepts of information

Candidates who were awarded **Achievement** commonly:

- demonstrated a limited understanding of Operating Systems and Application Software but could describe two or three features
- described file management techniques and provided some screenshots of their structures
- described how they used file compression and how they managed threats to their own practices of information management
- described at least two ethical issues in relation to their own practices
- completed one section strongly but had other weak or incomplete sections.

Candidates who were assessed as **Not Achieved** commonly:

- relied on teacher provided templates or answered questions provided by the teacher without demonstrating their own understanding
- lacked student voice or made little reference to their own use of computers
- produced incomplete reports or very short reports
- listed the features of either the Operating system or Application Software without providing the relevant description on how it is used in practice

- provided detailed descriptions of hardware used in school or at home which is not related to this standard
- described different Operating Systems or different types of Operating Systems which is not required by this standard
- provided screenshots of their files/folder system without annotations or did not refer to them in their reports
- provided lists of features without attempting explanation
- copied and pasted material without demonstrating any understanding.

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

- showed an in-depth understanding of some of the concepts
- related their report to their own use of operating systems and information management throughout the year
- supported their answers with relevant annotated screenshots
- explained the drives/devices used to store and backup data in relation to their own practice.

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

- explained and referred to their own practices throughout their report year
- used detailed relevant annotated screenshots to expand/support their explanations
- explained how application software and operating system software interact to perform specific information management tasks
- fully understood and could justify the selection of the software by intended use
- provided evidence that they used a range of different file types in their practice and therefore could compare and contrast for different purposes.

Standard specific comments

Some candidates had a whole page referring to standards that they completed throughout the year. This is not required and impacted on the report size.

Some candidates remained within the page limit but text size was clearly a lot smaller and margins were adjusted. Any pages after 10 were not considered (marked).

Most candidates wrote their own reports which showed individuality, excellent supporting material and a comprehensive understanding of information management.

Some candidates used very structured templates this meant candidate reports looked very similar.

The best results seemed to have come from schools that worked directly with the most recent markers reports.

91074: Demonstrate understanding of basic concepts from computer science

Candidates who were awarded **Achievement** commonly:

- used their own words to describe the key concepts and acknowledged sources when appropriate
- described formal and informal language and the role each language plays in the operation of a computer.
- described the purpose and key features of an algorithm
- gave one example of the cost of an algorithm

- described the roll of higher and lower level languages and the role of a complier, using appropriate higher-level programming languages e.g python, java, C - not HTML or CSS
- described the role of both an interpreter and compiler in the development of software
- described the concept of HCI and gave an example of Human Computer Interaction with a given device.

Candidates who were assessed as **Not Achieved** commonly:

- did not attempt all three sections
- completed or partially completed teacher-created templates with short answers showing little or no understanding
- copied examples from the CS Field Guide with no evidence they understood the underlying concepts
- did not show understanding of the difference between a higher and lower level language
- used web languages such as html/css/php as examples of higher level programming languages
- did not describe the role of a compiler or interpreter
- discussed the usability of a given device without showing any understanding of HCI concepts
- used graphs and charts with no labels or annotations and had no understanding of what the graph and/or image was intended to convey
- included images that were not discussed or irrelevant
- did not determine the cost of an algorithm
- did not describe the role of a user interface.

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

- outlined the key features of an algorithm and explained their importance
- explained the cost of an algorithm
- compared the cost of two different algorithms for the same task
- used their own programmes for comparisons and provided images with explanation
- gave examples of and showed understanding of the role of higher level, lower level languages and the function of a compiler
- showed a clear understanding of HCI concepts and were able give examples of these using specific devices
- made comparisons of the usability functions between two devices and related these to HCI concepts
- covered all three topic areas with some depth and understanding.

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

- compared the cost of different algorithms for a set task and discussed the results in detail, with justifications of opinions presented
- answered all sections clearly, but links were also made between concepts which showed clear understanding and comprehension
- used clearly labeled and relevant graphs, charts and images
- discussed in some detail the differences between high and low-level languages giving examples of their own work as justification
- explained the role of a compiler and interpreter with appropriate examples and discussed the relative merits of each
- explained HCI concepts with examples and compared two different hardware or software interfaces discussing the relative merits of each in relation to concepts of heuristics
- provided images as evidence to support discussion and comparisons of user interfaces.

Standard specific comments

As in previous years, there are still candidates using very structured teacher provided templates to complete short-answer or closed questions. This gives candidates little opportunity to attain a mark greater than achieved as the answers are more descriptive than explanatory and they provide little or no opportunity for discussion. It is very difficult for candidates to provide evidence of deep

understanding when using one of these templates. Headings and sub-headings to support candidates with the organization of the candidate reports are sufficient.

Candidates who used their own voice were advantaged. Those who gave examples of an algorithm's cost from their own work showed greater understanding when making comparisons and drawing conclusions. Where students used examples from the CS Field Guide or teacher-provided examples their clear understanding of an algorithm and scalability were not always evident. Some students spent pages determining the costs of two different iterative algorithms but did not compare the different costs and what this could mean.

Evidence of comparison and discussion were key factors in students attaining Excellence rather than Merit in this section. Some candidates provided graphs and tables which clearly displayed the difference in cost between two algorithms. However, to attain Excellence these visuals needed to be supported with text containing comparisons and discussion on ideas such as why one algorithm is more efficient than another and scalability of an algorithm.

Candidates who gave examples of higher and lower level languages and could explain the differences and similarities between the two, and the purpose of each language, generally attained higher grades. Those who simply stated the purpose of each language could not achieve higher than Merit. Some compared two higher level languages, e.g Java and C. Some candidates used HTML and CSS as example of programming languages, which is incorrect.

The HCI was an area where some students let themselves down. In some cases candidates compared two different hardware and/or software interfaces without explaining the key concepts of HCI first. Sometimes, the evidence of understanding of HCI concepts was found within the comparison. Candidates who explained HCI concepts in depth, then compared two interfaces with reference to HCI concepts and wrote a short conclusion of this comparison were most likely to attain excellence.

Technology subject page

Previous years' reports
2016 (PDF, 0KB)