SACE Logo CoBrand Black grayscale

Design and Technology

2016 Chief Assessor’s Report

# Design and Technology

# 2016 Chief Assessor’s Report

## Overview

Chief Assessors’ reports give an overview of how students performed in their school and external assessments in relation to the learning requirements, assessment design criteria, and performance standards set out in the relevant subject outline. They provide information and advice regarding the assessment types, the application of the performance standards in school and external assessments, the quality of student performance, and any relevant statistical information.

This year has seen over 4000 students enrolled in Design and Technology. The moderation and marking panels noted general improvement in evidence and success against the learning requirements, assessment design criteria, and performance standards set out in the Design and Technology subject outline.

## School Assessment

Assessment Type 1: Skills and Applications Tasks

**The more successful responses**

* In the specialised skills applications, were provided with targeted skilling and scaffolding to support evidence against the specific features in the task design. For example, in the focus area of communication products, students completed six to eight CADD drawings, which included teaching the students sound CADD skills, orthogonal drawing protocol, how to produce a render, and how to present their work using a sound disc and file management protocol.
* Undertook a formative ‘mini’ product record before completing the specialised skills application, directing the student to provide evidence of planning and evaluation required in the task.
* In the materials application, used scientific testing processes to test materials in controlled conditions, enabling rigour and depth to their discussion about the outcome and in referencing against similar documented findings.
* In the materials applications, enabled students to demonstrate evidence by using a wide range of technology. For example, the use of interactive digital media, such as PowerPoint to construct their assignments, enabled a range of video and hyperlinked features to be added to illustrate testing procedures and provide definitions and further description of material properties.
* Occurred when there was a link between the specialised skills application and the materials application. For example, in the focus area of systems and control products, the specialised skills applications were often associated with circuit realisation or coding, while the materials applications often featured circuit component testing and analysis. In the focus area of material products, the specialised skills applications typically featured joining and assembly systems, while material or adhesive testing was evident in the materials applications.

**The less successful responses**

* In materials applications, did not fully use the available limits on words or time, or exceeded the limits.

**General information**

* All of the four assessment design criteria must be covered across this assessment type, but not all of the specific features need to be. In 2016, typical responses addressed the specific features Pr1, Pr2, and Pr3 (of the producing assessment design criterion) for the specialised skills applications, and the specific features E3 (evaluating), Pl3 (planning), I1, and I4 (investigating) for the materials applications.

Assessment Type 2: Product

**The more successful responses**

* Featured related major and minor products.
* Provided product records containing evidence against the realisation process, and not the design process.
* Provided clear evidence against the performance standards in their product records, targeting procedural evidence, planning, and evaluative comment.
* Demonstrated evidence in relation to specific features Pr1 and Pr2 by using annotated images, screen dumps, annotated strings of code, video footage, and voice-over screen captures.
* Demonstrated evidence against the planning and evaluating assessment design criteria through concise written comments or a recorded student interview. Presentation modes tailored to the individual or context allowed for greater depth of evidence to be obtained. For example, in the focus area of material products, students who used a video response as part of their product record were able to discuss and demonstrate evidence against all performance standards, while moving around their practical work.
* Showed clear evidence of completion, and student involvement in the product. For example, in the focus area of communication products, students who were game-making or developing apps, showed evidence through ‘walk-through’ videos. A similar method was used in the focus area of systems and control products to demonstrate electronic circuit design using Arduinos, coding, and mechatronic and robotic control work.
* Produced product records that were clearly set out and structured to provide clear evidence against the assessment design criteria. An example noted in the focus area of material products (foods) was where images were annotated with comments like ‘Required 30 minutes of cooling time before the food could be used for the taste test’ to show evidence of planning and producing.
* Were tasks designed to target performance standards specific to the realisation of the product. Exceptional student responses were as a result of inclusive, challenge-based task designs. In the focus area of communication products, outstanding CADD/CAM work, featuring the use of 3D printers as prototyping tools to test, modify, and ultimately realise their work, was produced. Examples included operational submarines, a candy-dispensing machine, operational quadcopters, and a detailed R2-D2 CADD/3D printed model. Another example featured the design of the new Darwin Museum, using sophisticated CADD software.
* Occurred when the students had ‘buy in’ for their projects. The more open the task which was presented to the students, the more varied, sophisticated, and successful the responses were.
* Occurred when the range of topics and ideas covered was broad, and inclusive. One successful course in the focus area of material products (foods) required the design and preparation of a range of meals over an extended and varied time frame, in a catering mode. Clear evidence against both major and minor products was provided by annotated images of food preparation of the various dishes from the menu.

**The less successful responses**

* Required more targeted evidence to demonstrate the candidate’s ability to independently problem-solve technical issues arising from the realisation process, in order to address specific feature Pr3.
* Occurred when students were provided with a limited range of response options.

**General information**

* In all three focus areas (communication products, material products, and systems and control products), the major and minor products were typically assessed against specific features Pr1, Pr2, Pr3, Pl3, and E2.

## External Assessment

Assessment Type 3: Folio

The discussion is arranged under the specific features used for assessment.

Investigating

*I1 Identification of a need, problem, or challenge*

**The more successful responses**

* Demonstrated individual ideas and ability to define the need with clarity and detail.
* Had a clear design brief with a strong focus on investigating relevant information addressing all aspects of the brief and the related design requirements.

**The less successful responses**

* Tended to identify the same specific outcomes for the whole class to meet.
* Often included a checklist of production techniques or similar constraints that applied to the whole class.
* Were more likely to be a single brief that whole classes tried to address or occurred when students did not investigate their own choice of product.

*I2 Creation and validation of an initial design brief based on needs analysis and task identification*

**The more successful responses**

* Provided a clear statement of individual needs.
* Were able to describe individual situations or specific personal environments that would shape the development of the product
* Tended to not be overly constrained by the structure or specific demands of the initial task design.

**The less successful responses**

* Occurred when design briefs were poorly addressed or not completed when tasks were too directed by teachers.
* Frequently tended to include statements such as ‘this task requires me to make a …’.

*I3 Investigation and critical analysis of the characteristics of existing products, processes, systems, and/or production techniques*

**The more successful responses**

* Presented a more critical review of features and effectively linked these to the design brief and proposed product.
* Occurred where students were given the opportunity to choose their own item to design, be motivated, and show genuine design processes.

**The less successful responses**

* Occurred when design opportunities were not investigated, considered, or evaluated adequately because a restrictive whole-class task was used.
* Often listed a rudimentary exploration of likes and dislikes that did not provide any direction or connection to planning the product.

*I4 Investigation of product material options and analysis for product use*

**The more successful responses**

* Used information gained from materials applications to lead to purposeful planning and reasoned decision-making for a well-researched, successful design.

**The less successful responses**

* Were evident when product material options and analysis for use were not investigated, designed, and evaluated adequately.

*I5 Investigation into the impact of products or systems on individuals, society, and/or the environment*

**The more successful responses**

* Had impact studies based on well-researched information that demonstrated more in-depth understanding of the topic and considered personal opinion.

**The less successful responses**

* Had impact studies that were superficial, lacked researched information, or selected a narrow topic.
* Came from individual students or the whole classes that did not attempt to address the I5 specific feature.

Planning

*Pl1 Analysis of information to develop solutions to an identified design brief*

**The more successful responses**

* Provided annotated diagrams or images as part of the planning process.
* Provided an analysis of the testing process and linked findings to the planning process.

**The less successful responses**

* Demonstrated a very limited range of ideas, with some only having a single concept.
* Failed to link the investigating and planning components. Some evidence jumped directly to a final drawing rather than developing a range of possible options after investigating existing products.

*Pl2 Communication of product design ideas, using relevant technical language*

**The more successful responses**

* Consistently included correct use of technical language and a range of techniques or processes that applied to the product.
* Included manual drawings and sketches purposefully annotated showing the development of the design process, thus enabling the marker to follow the thinking process.

**The less successful responses**

* Provided very few or no concept sketches.
* Lacked drawings that provided evidence of planning. For example, the folio went from design brief direct to final product, with no evidence of how the initial idea was developed.
* Provided design solutions that were often severely limited due to the lack of technical language and quantitative investigations.

*Pl3 Testing, modification, and validation of ideas or procedures*

**The more successful responses**

* Used appropriate tests that were relevant to the materials being considered.

**The less successful responses**

* Did not undertake any testing, modification, and /or validation of ideas and procedures.

Evaluating

*E1 Evaluation of product success against design brief requirements*

**The more successful responses**

* Were able to effectively link their realised product to their initial design brief.
* Effectively articulated their product success against their design brief.
* Included clear photos and images of the product indicating success of design brief requirements.

**The less successful responses**

* Often did not relate the product back to the initial need or design brief.
* Were vague. For example, the student as the designer was happy with the outcome, but this was not supported by evidence, connections, or reasoning.

*E2 Evaluation of the effectiveness of the product or system realisation process*

**The more successful responses**

* Included a critical comparison of the realisation product or system with the requirements of the initial design brief and needs analysis.
* Provided an explanation and justification for changes made during the realisation process or suggested improvements that could be made, based on the experience gained during construction of the product or prototype.

**The less successful responses**

* Included ‘product record’ documentation not required in the folio. As such, the evidence in relation to investigating, planning, or evaluating was limited within the folio word-count.
* Had a photo of the finished product with limited evaluation and few drawings to clarify what was being designed.
* Had not finished the production stage of the product or system realisation process, and so they were unable to test and evaluate sufficiently.

*E3 Reflection on materials, ideas, or procedures, with recommendations*

**The more successful responses**

* Presented a connected exploration of material options and related this to their design and product.
* Were able to make recommendations on improving their product.

**The less successful responses**

* Did not include a photo of the final product and/or concept sketches or design drawings, thus any reflections, ideas, procedures, and recommendations were not clearly evident.
* Had folio evidence that jumbled the order of the design process.

*E4 Analysis of the impact of the product or system on individuals, society, and/or the environment*

**The more successful responses**

* Included references or evidence that was based on research.
* Recognised their sources of information in a bibliography.
* Clearly identified the impact of the product or system on individuals, society, and/or the environment.

**The less successful responses**

* Appeared to be based more on opinions gathered from other people and misconceptions, rather than on topic research and recognised informed sources.
* Did not address specific feature E4 within the folio.

**General information for Assessment Type 3: Folio**

* The majority of students used the revised folio cover sheet which indicated the word-count if written.
* Folios should include good-quality photographs of the completed or partially constructed product and clear images of concept drawings that show detailed line work. Product records are not a requirement for the folio and must be included with moderation materials for school assessment .
* The design brief, as part of the folio, should include a statement of intent, functional outcomes, aesthetic considerations, and constraints. This can be presented in dot-point form.

## Operational Advice

School assessment tasks are set and marked by teachers. Teachers’ assessment decisions are reviewed by moderators. Teacher grades/marks should be evident on all student school assessment work.

Design and Technology

Chief Assessor