2019 Design and Technology Subject Assessment Advice

# Subjects: Communication Products

Material Products

Systems and Control Products

Overview

Subject assessment advice, based on the previous year’s assessment cycle, gives 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, and the quality of student performance.

Teachers should refer to the subject outline for specifications on content and learning requirements, and to the subject operational information for operational matters and key dates.

2019 was the last year of teaching Design and Technology. The renewed Design, Technology and Engineering will be taught from 2020.

School Assessment

Assessment Type 1: Skills and Applications Task

Skills and applications tasks consist of specialised skills applications and materials applications. Students demonstrate skills and understanding of the materials and components, techniques, and equipment that they consider for use in Assessment Type 2.

For this assessment type, students provide evidence of their learning in relation to the following assessment design criteria:

* Investigating
* Planning
* Producing
* Evaluating

Specialised Skills Applications

The more successful responses commonly:

* demonstrated appropriate skill levels, for the course context
* used multimodal responses, including images and videos that highlighted successful and less successful components of the tasks focussing on Pr 1 and Pr 2
* used one task as a default skilling exercise, followed by a more targeted, differentiated task, used to prepare students for success in AT2. This means that students had the opportunity to partially design their own challenges, with teacher input to protect the not negotiable elements associated with this assessment. This methodology invariably resulted in successful outcomes
* included a detailed task sheet incorporating the relevant assessment design criteria and specific features, assessment conditions and timelines required.

The less successful responses commonly:

* were superficial or not related to the assessment design criterion: Producing
* ineffectively communicated, by diagram, image or other evidence against assessment design criterion: Planning
* did not see a logical relationship between work to be completed in AT2.

In the new 2020 Design, Technology and Engineering subject outline, Assessment Type 1 for all four new codes requires students to undertake and complete two specialised skills tasks. The assessment design criteria for this assessment type will be Production and Evaluation. Tasks need to be designed with this focus.

Material Applications

The more successful responses commonly:

* described each material/component in detail e.g. botanical, physical, or chemical properties, common uses and characteristics focussing on I3 and I4
* included reference to sustainability issues, e.g. carbon foot print and recyclability
* used qualitative and quantitative testing to provide depth and rigour
* targeted materials or components that related directly to proposed AT2 outcomes with a focus on Planning
* used multimodal responses to present clear and obvious evidence of testing through images, screen captures, animations and videos focusing on Producing and Planning
* clearly described the testing regime and reasons for those tests
* incorporated quantitative test data using graphics, images and/or graphing
* included a summary of the results, and importantly tied those conclusions to possible relevance in AT2
* referenced their work and were compliant with word count requirements.

The less successful responses commonly:

* provided few details of material or component characteristics
* did not clearly reference the selection of materials for possible use in AT2
* did not describe the testing regime in any depth, or identify the relevance of that testing to their AT2 outcome
* were unable to analyse the test results or provide those results in an ordered and clear manner
* provided testing that lacked depth and rigour
* provided minimal evaluation evidence or suitable summary/conclusion.

In the new 2020 Design, Technology and Engineering subject outline, the materials application task will form part of the external assessment AT3: Resource Study; to be known as the Resource investigation. The specific features to be addressed are I1 and D2. Tasks must be designed using the new performance standards and the specific features identified.

Assessment Type 2: Product

For a 10-credit subject, students create one product that allows them to demonstrate an appropriate range of skills, techniques, knowledge, and ideas. The product is supported by a product record that documents the process, including modifications, planning, and production.

For a 20-credit subject, students create one minor product and one major product that allow them to demonstrate an appropriate range of skills, techniques, knowledge, and ideas. The products are each supported by a product record that documents the process, including modifications, planning, and production. The minor product may be a component of, or designed to complement, the major product. Only the major product requires a product record.

For this assessment type, students provide evidence of their learning primarily in relation to the following assessment design criteria:

* Planning
* Producing
* Evaluating

The more successful responses commonly:

* provided appropriate depth and rigour against the nominated assessment design criteria, especially Producing
* included a comprehensive but concise, well-structured product record
* featured a range of multimodal responses, appropriate to the context e.g. screen captures, interviews with the student, simulations (CFD, FEA), video voice overs, clear images
* included a product record that had relevant analysis and comments related to the realisation process, including referencing to the nominated design intentions
* included evidence of completion of the product(s), clearly delineating the major and minor products.

The less successful responses commonly:

* provided few details in their product record against all the nominated assessment design criteria
* did not provide evidence against P1 and E1 in communication of the realisation process
* did not approach the sophistication or compliance against the required Stage 2 assessment design criteria

In the new 2020 Design, Technology and Engineering subject outline, Assessment Type 2: Design Process and Solution will require students to undertake only one product that shows evidence of the design process using the Design and Realisation Process framework. Tasks must be designed using the new performance standards addressing all specific features.

External Assessment

Assessment Type 3: Folio

This year was the first year that markers used the online format for the external component.

One noticeable difference between online and paper-based folios is the accuracy and clarity of images and photographs. Characteristics such as blurriness, out of focus edges, and faint or indistinguishable line work in drawings seem far more evident on screen than when presented on paper.

The folio consists of documentation and analysis of the product design process and product evaluation.

The investigation section of the design process includes an analysis of the impact of the product or system, and/or technologies related to it, on the individual, society, and/or the environment.

This assessment type is designed to enable students to further develop and refine their use of the design process. They investigate technical skills, analyse possible applications of these skills, and evaluate ways in which their own skills have developed and improved.

For this assessment type, students provide evidence of their learning for all specific features in the following assessment design criteria:

* Investigating
* Planning
* Evaluating.

Investigation

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

* identified the same specific outcomes for the whole class to meet
* included a checklist of production techniques or similar constraints that applied to the whole class.

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
* described individual situations or specific personal environments that would shape the development of the product
* were not 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 when tasks were too directed by teachers
* include statements such as “this task requires me to make a ‘XXX’.”

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

The more successful responses

* occurred where students were given the opportunity to choose their own item to design
* presented a more critical review of features and effectively linked these to the design brief and proposed product.

The less successful responses

* occurred when design opportunities were a restrictive whole class task
* listed ‘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 material applications task
* undertook purposeful planning of a well-researched design
* made reasoned decisions in the planning process.

The less successful responses

* gave material options that were not analysed, not investigated or not evaluated adequately.

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

The more successful responses

* were based on well researched information that demonstrated in-depth understanding of the topic and considered personal opinion
* explained impacts of their product or system using different perspectives
* were able to investigate their impact succinctly using sophisticated language.

The less successful responses

* were superficial and research was limited
* did not address this specific feature.

Planning

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

The more successful responses

* provided concept sketches, annotated diagrams, photos 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
* jumped directly to a final drawing rather than developing a range of possible ideas 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
* identifieda range of techniques or processes that could be used in the product
* included manual drawings and sketches
* provided purposeful and annotated concepts showing the development of the design process allowing the reader to follow the students thinking process.

The less successful responses

* provided basic or limited concept sketches of ideas
* lacked drawings that provided evidence of planning e.g. folio went from design brief direct to final product with no evidence of how the initial idea was developed
* lacked use of technical language
* were unable to describe the projects shape and size effectively.

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
* did not identify modifications
* did not validate ideas or procedures.

Evaluating

E1 Evaluation of product success against design brief requirements

The more successful responses

* effectively linked 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

* did not relate the product back to the initial design brief
* were vague and superficial
* were not supported by any evidence or reasoning about the product success.

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

The more successful responses

* included a comparison of the product or system with the requirements of the design brief
* provided an explanation and reason for changes made during construction
* suggested improvements that could be made after making the product.

The less successful responses

* included ‘product record’ or documentation not required in the external assessment component
* did not have a photo of the finished product
* demonstrated limited evaluation.

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

The more successful responses

* provided a connected exploration of materials and related this to the product
* were able to make recommendations on improving their product.

The less successful responses

* did not reflect on the ideas or procedures
* did not reflect on the materials they chose to use in the construction of their product
* did not include any reflections, ideas, procedures and recommendations.
* provided some evidence of the design process, but not sequential, making it difficult to follow.

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
* acknowledged sources of information in the 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 from other people and misconceptions rather than topic research from recognised or informed sources
* did not address this specific feature within the folio.

In the new 2020 Design, Technology and Engineering subject outline, the external assessment AT3: Resource Study has two components – resource investigation and issues exploration. The specific features to be addressed are I1 and D2 for resources investigation and I1 and E1 for issues exploration. Tasks must be designed using the new performance standards and the specific features identified.

General information

The word count needs to be accurately identified by the student and checked by the teacher before submission.

Include good quality photographs of the completed or partially constructed product.

Photographs of student drawings need to be in focus, clear and easy to read.

The design brief should include a statement of functional outcomes, aesthetic considerations, and constraints. This can be presented in dot point form.

In 2020, refer to the new Design, Technology and Engineering subject outline for all assessment types, task details, new assessment design criteria and performance standards. Information presented in the 2019 Design and Technology Subject assessment advice can be used to inform teaching strategies where the components are similar to those stated in the new subject outline.