# Government of South Australia LogoSACE Board Logo2024 Design, Technology and Engineering Subject Assessment Advice

Overview

This subject assessment advice, based on the 2024 assessment cycle, provides 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 *Design, Technology and Engineering* subject outline. It includes information and advice regarding the assessment types, the application of the performance standards in school and external assessments, and the quality of student performance.

The Subject Renewal program has introduced changes for many subjects in 2025, these changes are detailed in the change log at the front of each subject outline. When reviewing the 2024 subject assessment advice, it is important to consider any updates to this subject to ensure the feedback in this document remains accurate.

# School Assessment

Teachers can improve the moderation and online process by:

* thoroughly checking that all grades entered in school online are correct, and ensuring all relevant documentation is uploaded
* ensuring all student work is legible
* ensuring all pages are oriented the same way, and facing up
* ensuring all blank pages, student notes and formula pages are removed
* ensuring all content is downloaded and presented as-is, moderators and markers will not be following links to access content
* ensuring uploaded responses have pages the same size and in colour so teacher marking, and comments are clear.

Assessment Type 1: Specialised Skills Task

Students complete two specialised skills tasks. They demonstrate knowledge and skills that will be required for the realisation of their solution. They apply skills, processes, and techniques in the chosen context. This informs the design development for a solution in Assessment Type 2. Students evaluate the development of their own skills in this assessment task. They review how these processes and techniques may influence the design of their solution.

In the context of Digital Communication Solutions:

Teachers can elicit more successful responses by fostering creativity, providing clear examples and guidance, and encouraging multimodal documentation, while successful responses clearly link skill development to outcomes and demonstrate technical proficiency and critical analysis.

In the context of Industry and Entrepreneurial Solutions:

Successful responses often involved students justifying relevant skills, providing photographic evidence, making the connection to their product in AT2.

It is important to make industry or entrepreneurial links. This could include quoting industry standards for the product being created, evidence of conversations with industry experts, analysis of market data or research, entrepreneurial research with surveys or conversations with people in the industry.

Less successful responses typically featured uniform projects, teacher-provided plans, limited reflection, and a lack of industry or entrepreneurial connections.

In the context of Material Solutions:

To elicit more successful responses in material solutions, teachers should use AT1 for early skills development and avoid uniform tasks. Successful responses include clear photographic evidence of the construction process and finished product, problem identification with specific solutions, reflective analysis, relevant terminology, comprehensive reflections, high-order evaluation, and clear documentation.

Less successful responses show limited evidence of skill development, use simplistic terminology, lack evaluative comments, provide minimal photos, fail to document problems and solutions, and rely on excessive teacher scaffolding.

In the context of Robotic and Electronic Solutions:

Successful responses demonstrated a high understanding and practical application of technical skills, supported by well-documented evidence and analysis.

Less successful responses lacked depth, understanding, and practical evidence of learning.

*For all Design and Technology contexts:*

Teachers can elicit more successful responses by:

* using AT1 as an opportunity for knowledge and skills development early in the course, which gives students the opportunity to demonstrate a range of processes and techniques that they may harness within AT2
* understanding that while the AT1: Specialised Skills Task provides the opportunity for knowledge and skills development early in a course it needs to be recognised that it is a summative assessment process and should not dominate time allocation at the expense of other course requirements
* avoiding tasks that provide limited opportunity for differentiation in the assessment of individual student learning and skills e.g. following a step-by-step skills tutorial which resulted in a common outcome for all students
* ensuring task design allows students to reach the A and B bands
* using exemplar tasks to demonstrate the quality and depth required for particular grade bands
* ensuring that students have had formative experience and guidance in documenting the process and writing an insightful evaluation
* allowing the students to document their process using a multi modal method such as video.

*The more successful responses commonly:*

* demonstrated a logical sequence of skill development using clear photographic evidence, as well as identifying the purpose of the skill development
* featured learning that was clearly documented and sequenced through a range of skills tasks
* had two skills tasks that had an appropriate level of depth and rigor
* demonstrated advanced technical proficiency, showcasing a deep exploration of skills and critical analysis appropriate to the course context
* used relevant technical language most relevant to the materials, specific data features and skills
* provided analysis and evaluation throughout the task, rather than relying on a formal evaluation at the end
* provided evidence that clearly illustrated the sophistication of the skill through well-considered and clear images, screenshots, or short videos
* used multiple photos/videos of the product and components being constructed as well as multiple photos of the finished product
* used large resolution photos in which the relevant visual details (such as the product, construction methods etc) are easily identified
* demonstrated clear evidence of problem solving, if P2 is being assessed
* identified problems and highlighted the best ‘solution’ for their situation, rather than generic outcome statements
* clearly reflected on the results of their skill development. For example, rather than simply describing what was done in the skills task, the student explained why and how the result affects their decision making, and made recommendations on how the skills used in AT1 would be used for their solution in AT2
* included relevant and appropriate reflective comments that were both comprehensive, insightful, and inclusive of the depth and rigour needed at this level
* demonstrated high-order personal critiquing and evaluation of the skills developed, then reflected on its application in the final product outcome
* was able to convey a high understanding of the skills and application of their newly developed knowledge
* identified the importance and relevance of the chosen specialised skills to the successful completion of their AT2: Design Process and Solution.

*The less successful responses commonly:*

* showed limited proficiency in the use of tools, equipment, processes, and techniques
* showed limited, incomplete, irrelevant and/or overly procedural evidence of production and skills development
* showed limited evaluation of skill development (if E1 is being assessed)
* featured skill task design that was too structured or simplistic and did not provide the student with the opportunity to demonstrate highly sophisticated use of skills as would be expected at a Stage 2 level
* had no clear link or evidence of skills tasks to AT2. This was because either their demonstrated skills were not linked by the student to their product, or did not demonstrate highly sophisticated use of skills
* used simplistic technical terminology and/or did not use specific and relevant technical terminology in their annotations
* provided no annotation of skills and process learning, or only provided a production record
* did not document the problems that occurred, and how they were solved, throughout the production process
* had an evaluation that was either missing or too simplistic and descriptive (such as a simple recount of the processes undertaken) rather than analytical and reflective of the skills relevant to the manufacturing of the AT2: Design Process and Solution
* had limited reflection and evaluation of what was learnt, changes that could be made, and how the learnings will be applied to their final product
* had poorly presented evidence, with a lack of images or videos to demonstrate skills or processes undertaken
* provided poor quality visuals or too many small, unnecessary images
* featured a project which was completed by every student in the class
* were based on a teacher-provided template/plan of what needed to be made for the task - the student did not design their own
* exceeded word count limitations.

Assessment Type 2: Design Process and Solution

Students produce one task in the design process and solution assessment type that provides evidence of the stages of the design and realisation process. The task must showcase and evaluate the solution or product.

In the context of Digital Communication Solutions:

Teachers can elicit more successful responses by ensuring well-structured, diverse, and thoroughly documented student folios with clear design briefs, high-quality visuals, and detailed evaluations.

Less successful responses lacked clear process clarity, detailed planning, and sophisticated skill development.

In the context of Industry and Entrepreneurial Solutions:

Successful responses often detailed clear, research-backed product targeting which chose a specific target market/consumer (e.g. teenage vegans) rather than broad (e.g. all adults in Australia). For Industrial products successful responses included regular references to industry standards or links to comments made from industry experts, specifically where it is an interaction between student and expert.

Less successful responses lacked explanatory annotations and were overly guided by teacher prompts.

In the context of Material Solutions:

Successful responses often utilise a clear design process, identify a need statement, design brief, and constraints, and link design and planning with product development. They also include comprehensive analysis, design images, examine multiple design solutions, and document the production process using photographs.

Less successful responses lack structure, depth, and a comprehensive understanding of materials and techniques, and often fail to link the need to other sections of the design process.

In the context of Robotic and Electronic Solutions:

The most successful responses typically demonstrated a high level of technical knowledge, structured evaluation, and multimodal presentations, including detailed investigations of multiple aspects according to design briefs, effective design development, and thorough documentation.

Less successful ones lacked understanding, analysis, justification, visual documentation, and appropriate technical language.

For all Design and Technology contexts:

Teachers can elicit more successful responses by:

* facilitating students to progressively maintain notes and records that address all the performance standards in detail
* guiding students to ensure their folio is well structured, and submitted as a single document with assessment criteria signposting
* encourage students to include supporting multimodal evidence to better communicate the design process undertaken, and required assessment evidence
* encourage students to include multimodal evidence, for example, video or photos to capture the progressive evidence of the learning and production
* guiding students to ensure the inclusion of high-quality photographs and clear, focused images
* recognising the significance of student learning and use of the design and realisation process
* avoiding heavily scaffolded projects for students and avoid the use of a common task: classes who completed the same product made it difficult to determine student agency and grade differentiation
* ensuring students adhere to the maximum word count (3000 words).

*The more successful responses commonly:*

* identified a clear need, design brief, and constraints with pictures of how or where the solution would be used
* created solutions which met authentic real-world needs
* followed the design process as described in the subject outline, and clearly labelling and planning the folio to match this format
* included excellent evidence of design development and planning which incorporated mind maps, GANTT charts along with other relevant technical information describing concepts and possible procedures and technical settings
* included detailed annotated sketches in the design development and planning phase that effectively communicated a conceptual idea or process
* featured design development and planning which examined more than one design solution (through brainstorming and ideation strategies), refined and problem-solved to develop a final design concept
* used annotated screen captures and visual representations to support their need/design brief in design development and planning
* had clear design development and planning, which resulted in a considered design and corresponding confidence in the production process
* used multimodal responses to present their journey through the design process, to provide well-organised evidence of product development
* demonstrated an in-depth analysis of existing products or processes using correct technical language and succinctly discussed relevance of specific features to their intended design
* conducted their primary research to gather their own data e.g. surveys
* had the investigation and analysis looking at parts, components, and techniques the student intended to use which linked to their findings from their research in AT3
* had a strong investigation of more than one product, process, material, component, system and analysed these according to the design brief and constraints in an in-depth and comprehensive way
* clearly linked the design and planning with product development and the outcome
* referenced the outcome to the need, design brief and constraints, which resulted in a considered design and confidence in the production process
* applied thoughtful testing and assessment of materials, components or procedures that influenced product features
* demonstrated excellent evidence of problem-solving
* tested design ideas and the outcome with users, recorded throughout the development process and responded with appropriate design modifications or recommendations
* showcased a clearly sequenced product record, detailing decisions made, including decisions that did not link with the student’s investigation and design development, and the reasons for this
* considered design and production options throughout the manufacturing process and provided reasons and justification for changes
* explained how their product was refined/adapted through the creation process
* demonstrated innovation and highly proficient/sophisticated skills in the production of the solution
* had well-organised Design Folios that were characterised by easy-to-follow structure, explicitly covering all four elements of the design process, and included performance standard signposting
* had a presentation of the process and final product demonstration that was sophisticated, utilising multiple clear, large, and good quality images or video (with audio commentary) demonstrations to convey functionality of the product outcomes or features
* had clear documentation demonstrating the critical moments of development or product outcomes or features that incorporated supporting photographs/images and or video along with concise annotations and use of correct technical terms
* had a reflective evaluation discussing the successes or challenges in the realisation of the product brief outcomes
* featured an evaluation which discusses the processes undertaken, along with modifications and identified areas for improvement and which discussed each stage of the design process in a critical and comprehensive way
* had an evaluation which comprehensively analysed and compared the initial need or design process with the solution
* identified success criteria for the outcome that provided a source of comparative information for the evaluation
* had an evaluation which included explanations regarding the student’s decision-making processes as well as any refinements or modifications made to the solution
* used relevant technical language to convey a high understanding of the skills and application of their knowledge. Evaluation was completed in chronological order, providing a context for their evaluation of the features or a response to issues
* did not exceed the 3000 maximum word count.

*The less successful responses commonly:*

* did not include an initial design brief or detailed investigation
* produced a design brief that did not establish a need for their solution, was too vague or too broad and lacked specific outcomes or product features
* featured a templated design brief, with the whole class producing the same or similar product that restricted sophistication and creativity
* showed little evidence of the use of a design process
* included limited evidence of planning, concept development, project management, and testing of specific outcomes or product features which links AT3 to AT2
* lacked an understanding of materials and techniques, which are explored in AT1 and AT3
* did not demonstrate a depth and sophistication of skill development and processes undertaken
* had minimal sketches, annotations, or concepts, using plans already made or downloaded from the internet
* lacked visual representations and annotation to demonstrate development and planning of their ideas
* had minimal evidence of a solution being constructed for the production, and/or photos were too small to show sufficient detail
* included limited or superficial analysis of existing products, for example, indicating a preference or choice without justification
* featured little analysis of information researched, with no justification of decisions
* included limited technical language and did not highlight the relevance of specific elements of design ideas
* featured a descriptive account of production processes with little or no evidence of problem solving and testing
* described the production process in an ongoing journal rather than as well-documented concise, critical moments in the production process
* did not address the problems that occurred during the realisation process and did not take steps to resolve these
* included images of the application of skills without annotation and reflection
* included an evaluation which provided an account of processes, but lacked discussion and analysis of the realisation of the design brief, outcomes, or production processes
* lacked user testing or recommendations for product improvements
* lacked depth of analysis in the evaluation and was more descriptive
* focussed the evaluation on personal performance, instead of providing a reflective evaluation
* lacked connection to the need or design brief in the evaluation and whether the outcome had met these
* lacked justification for their final design in the evaluation, did not discuss any key features/elements, and lacked technical language
* failed to showcase development stages with supporting visual evidence
* featured incomplete outcomes
* produced work out of scope with course/assessment requirements
* had skills and processes showcased through the outcome which were limited and did not meet the expected standard.

# External Assessment

Assessment Type 3: Resource Study

Students undertake one resource study comprising two parts.

Part One: Resource Investigation

Students investigate and analyse the functional characteristics and properties of two or more materials or components that they are considering for use in the creation of their solution. They report on how their research into and testing of the functional characteristics and properties of these materials or components will affect the student selection for use in the realisation of their solution.

Part Two: Issue Exploration

Students investigate and analyse ethical, legal, economic, and/or sustainability issues related to their solution.

Resources Study Part One: Resource Investigation

In the context of Digital Communication Solutions:

Successful responses to the report effectively combined clear introductions, relevant contextualization, well-formulated hypotheses, and comprehensive testing with both qualitative and quantitative analysis

Less successful responses lacked context, depth, and rigorous evaluation of testing outcomes.

In the context of Industry and Entrepreneurial Solutions:

Successful responses were clearly focused, well-researched, and directly linked to the product design with detailed testing and coherent summaries, including Industry or Entrepreneurial links made appropriately.

Less successful responses lacked clear purpose, failed to connect research to the product, and demonstrated a limited understanding of the investigation's goals which may include Industry or Entrepreneurial links.

In the context of Material Solutions:

Successful responses clearly identified the materials or components to be investigated, provided concise research, and linked the investigation to the solution in AT2. The response was structured as a formal report, included photographic evidence, and included relevant tests that generated both qualitative and quantitative data.

Less successful responses lacked context, over-researched material options, and provided inadequate testing and evidence.

In the context of Robotic and Electronic Solutions:

The more successful responses often featured thorough resource research linked with solution exploration, justified decisions, clear photographic evidence, and proper referencing

Less successful responses lacked an evaluation of the impact, photographic proof, and meaningful testing or data, relying instead on basic comparisons from data sheets.

For all Design and Technology contexts:

The more successful responses commonly:

* began with a brief and clear introduction to the report identifying the rationale and application of the testing in planning for product realisation (the AT2)
* clearly contextualised the relevance of the investigation to the student’s AT2 and provided very purposeful, relevant, and well-targeted testing
* linked the investigation to the product being designed in AT2, which often included images of the product accompanied by clear descriptions
* clearly identified which aspect of AT3: Resource Study was being addressed (Resources/Issues) by providing clear titles and headings or separate files
* formulated a valid hypothesis for testing and subsequently substantiated the results through thorough the analysis of research
* structured the response as a formal report, providing a hypothesis/aim and an outline of the purpose and procedure of what was being tested and why
* clearly explained the aim and method of the test(s)
* demonstrated depth of research into the materials/components to be tested
* clearly identified two or more materials or components that were going to be tested
* included a comprehensive testing plan, featuring several different tests of the same material or component
* demonstrated a scientific approach to testing with clear hypothesis development, defined testing apparatus and methodology, provided comprehensive results tables and featured critical analysis of testing outcomes
* gathered their own qualitative and/or quantitative data to add insight to their evaluations, rather than just using data sourced online
* thoughtfully selected tests that incorporated both qualitative and quantitative data. Data was analysed and represented using charts, diagrams, and/or images
* provided visual evidence that supported the testing and findings of the research
* included clear sequential evidence through annotated photographic images, screen capture and/or video demonstrating testing procedures and the equipment used
* presented an analysis which demonstrated depth of thought and relevance of the data to the materials that were tested
* had detailed analysis specific to innovative testing that was individualised to their needs and products
* analysed the research and the results from testing to formulate the student’s own conclusions
* compared the results of experiments to the aim and purpose of the testing, resulting in evaluative judgments supporting product realization for AT2
* discussed the validity of results obtained, including limitations, trends, and outliers in the data obtained
* highlighted the key characteristics of materials, processes, or products
* utilised data sets, graphing, and reflection of data to discuss the impact of choices
* clearly linked the testing to the functional requirements of their product and made concise recommendations
* linked the investigation directly to the requirements of their product in terms of specific materials, processes or testing results
* reached conclusions that not only summarised results, but also informed modifications and improvements to the design of components and choice of production process for the student’s solution in the AT2
* included an in-depth analysis, supported by examples and credible references
* effectively used in-text referencing and bibliography.

*The less successful responses commonly:*

* lacked the context of why the investigation was chosen resulting in a generic investigation or one not relevant to the student’s AT2
* used a generic test, sometimes completed by all class members, limiting the connection and relevance to the students’ own product
* lacked connection between the research and the product
* included tests where the links to AT2 were not easily identifiable
* were ‘whole class derived’; the investigation provided the same information as other students in the class, generated through a templated or heavily scaffolded approach by the teacher
* was a templated task for students, featuring a series of instructions and questions that students answered, limiting student agency and effective contextualisation to the students AT2
* lacked sufficient evidence of testing, such as results or photographs, to substantiate that the investigation did occur
* provided little or no data sets or evidence of testing
* provided no, or very little, photographic evidence to showcase experiments
* lacked adequate testing of the components and qualitative results that included data represented in charts, leading to vague and uncertain results and conclusions
* focused on too many components to test with any rigour or depth
* limited details on what the student learned through the testing and how they would apply this to AT2
* provided a recount of the testing process without engaging in a thorough analysis of the results
* lacked analysis of results to draw conclusions or make predictions to inform decisions for their product
* lacked conclusions or the evaluation of the results of testing
* lacked a clear purpose for testing
* had an evaluation/conclusion which made minimal reference to the impact on the final outcome and decisions made
* lacked references/sources/bibliography
* was very descriptive and process-driven, which would have been better served as a skills task (AT1)
* described processes rather than testing processes, materials, or components
* over-researched material options, reducing word availability for testing and part two
* made unsubstantiated statements that were unverified, false, and misleading.

Resource Study Part Two: Issues Exploration

*In the context of Digital Communication Solutions:*

Successful responses effectively communicated the issue, its relevance, and included in-depth investigation with examples, charts, and statistics, supported by a variety of research and references, while focusing on a single issue and incorporating visuals.

Less successful responses were overly similar, lacked depth, and failed to adequately link their topic to AT2 or provide substantial evidence and references.

*In the context of Industry and Entrepreneurial Solutions:*

Successful responses clearly identified the topic and purpose, summarized key findings with accurate references, and demonstrated in-depth, student-led research with clear procedures.

Less successful responses failed to connect information to their product or demonstrate an understanding of their investigation's purpose.

*In the context of Material Solutions:*

Successful responses clearly define the issue, analyse relevant local and emerging issues in detail, and include well-referenced sources to develop convincing arguments. They present personal opinions, discuss ethical, legal, economic, or sustainability issues, and validate opinions with research.

Less successful responses often failed to define the issue, relied on unsubstantiated opinions, covered too many topics superficially, and lacked clear links to the design process, using limited resources and providing brief, irrelevant discussions.

*In the context of Robotic and Electronic Solutions:*

Successful responses often delve into current and relevant topics across various scales, offering detailed personal insights and thoroughly linking resources to solutions and their rationales.

Less effective responses lack citations, arguments, focus, and bibliographies, resulting in superficial coverage.

*For all Design and Technology contexts:*

*The more successful responses commonly:*

* selected a specific and innovative topic or topic question for the investigation
* clearly identified the individual issue and the specific purpose of the investigation
* clearly stated the issue that was going to be discussed and its relevance to their AT2
* substantiated their topic exploration using a variety of reliable sources
* demonstrated depth to the investigation with supporting examples that may include local and national perspectives, including charts and or statistics
* referenced sources of information about the identified issue, with the best examples using a combination of primary and secondary sources gained from businesses, suppliers, individuals, or organisations
* strengthened the validity of research using in-text referencing or annotation, supported by a bibliography, with correctly formatted references when citing facts, studies, and statistics
* discussed and provided detailed analysis of relevant local, global, and emerging issues related to the design solution in AT2. This could be in the design, manufacture, use or disposal phases
* developed a convincing argument which considers more than one perspective, rather than just giving information
* presented well-articulated personal opinions and analysis
* explored current and relevant (local, national, and international) topics. Gave detailed personal opinions and analysis of new findings
* considered more than one perspective or opinion on issues
* validated opinions against research and evidence
* focused on in-depth discussion of only one of the following issues: legal, ethical, economic, or sustainable, rather than attempting to addressing all of them
* considered the environment the product will be used in, not just environmental impacts of the materials used or responsible recycling of materials, for a physical product
* discussed ethical, legal, economic or sustainability issues that were directly relevant to the project being undertaken. The student was able to comment on the effect these considerations might have on the choices they made regarding the design or development of AT2
* included a clear conclusion that summarised the analysis of the research with links to their AT2
* included a clear evaluation of the issue that had been researched and a conclusion that articulated a research-backed student response
* linked the resource investigation and issues exploration with the outcome, justifying decisions made
* supported the discussion using graphical representations.

*The less successful responses commonly:*

* had insufficient depth of research through multiple sources
* lacked in-depth research and discussion
* used a limited range of resources, and was limited to statements of fact or procedure rather than a critical evaluation of the information
* relied on unsubstantiated personal views and opinions rather than constructing a sound point of view based on the data or information discovered
* provided no context as to why the investigation was chosen, or the investigation was generic or irrelevant to the student-negotiated AT2
* selected a topic/issue with no clear links to AT2
* included discussion that was irrelevant to the topic
* discussed issues, rather than analysed issues, stating opinions rather than providing an in-depth research-based analysis
* attempted to address too many issues (sustainable, legal, economic, ethical), limiting the opportunity for depth
* discussed multiple themes or topics which did not allow for depth of discussion
* did not clearly define an issue but rather explained a production process
* was highly templated and scaffolded, and often undertaken by the whole class, producing similar investigations which limited student agency and effective contextualisation for AT2.