Design subject report

2021 cohort

February 2022

Queensland Government
QCAA Queensland Curriculum & Assessment Authority
For all Queensland schools
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Introduction

Despite the challenges brought about by the COVID-19 pandemic, Queensland's education community can look back on 2021 with satisfaction at having implemented the first full assessment cycle in the new Queensland Certificate of Education (QCE) system. That meant delivering three internal assessments and one external assessment in each General subject.

This report analyses that cycle — from endorsing summative internal assessment instruments to confirming internal assessment marks, and designing and marking external assessment. It also gives readers information about:

- applying syllabus objectives in the design and marking of internal and external assessments
- patterns of student achievement.

The report promotes continuous improvement by:

- identifying effective practices in the design and marking of valid, accessible and reliable assessments
- recommending where and how to enhance the design and marking of valid, accessible and reliable assessment instruments
- providing examples of best practice where relevant, possible and appropriate.

Audience and use

This report should be read by school leaders, subject leaders and teachers to:

- inform teaching and learning and assessment preparation
- assist in assessment design practice
- assist in making assessment decisions
- help prepare students for external assessment.

The report is publicly available to promote transparency and accountability. Students, parents, community members and other education stakeholders can learn about the assessment practices and outcomes for General subjects (including alternative sequences (AS) and Senior External Examination (SEE) subjects, where relevant) and General (Extension) subjects.

Report preparation

The report includes analyses of data and other information from endorsement, confirmation and external assessment processes. It also includes advice from the chief confirmer, chief endorser and chief marker, developed in consultation with and support from QCAA subject matter experts.

Subject data summary

Subject completion

The following data includes students who completed the General subject or AS.

For the purposes of this report, while the 2021 summative units for the AS are AS units 1 and 2, this information will be included with the General summative Units 3 and 4.

Note: All data is correct as at 17 December 2021. Where percentages are provided, these are rounded to two decimal places and, therefore, may not add up to 100%.

Number of schools that offered the subject: 249.

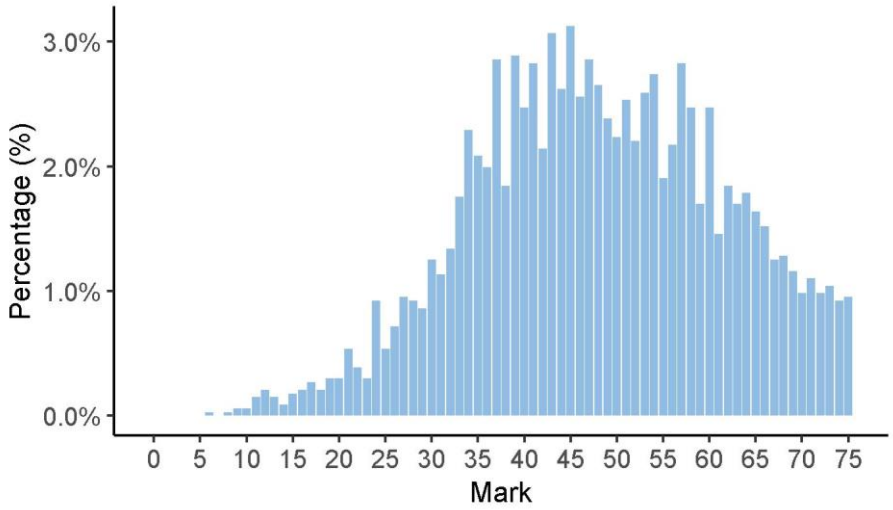
Completion of units	Unit 1	Unit 2	Units 3 and 4
Number of students completed	3981	3837	3326

Units 1 and 2 results

Number of students	Satisfactory	Unsatisfactory
Unit 1	3581	400
Unit 2	3499	338

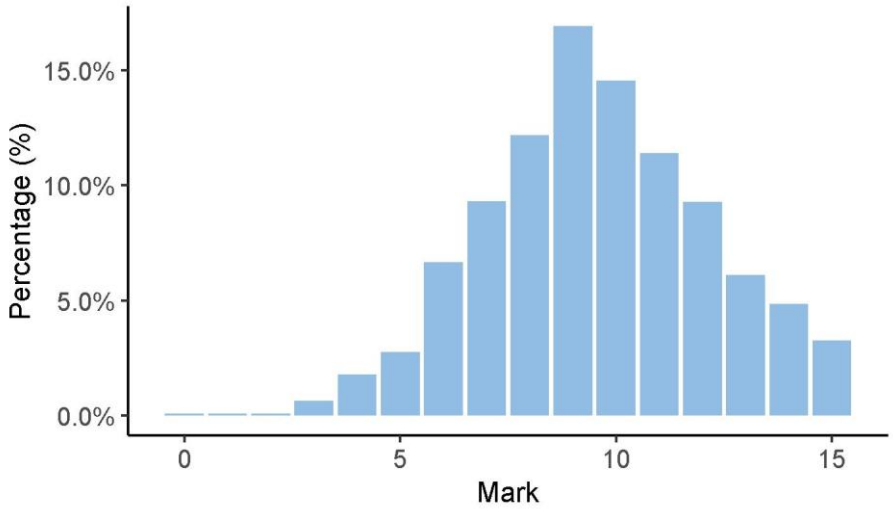
Units 3 and 4 internal assessment (IA) results

Total marks for IA

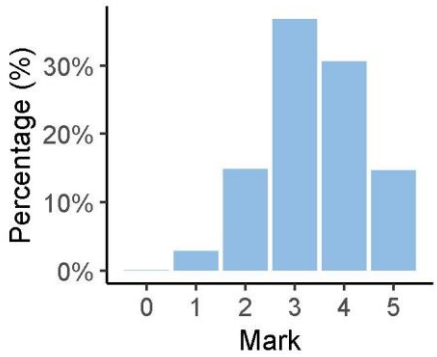


IA1 marks

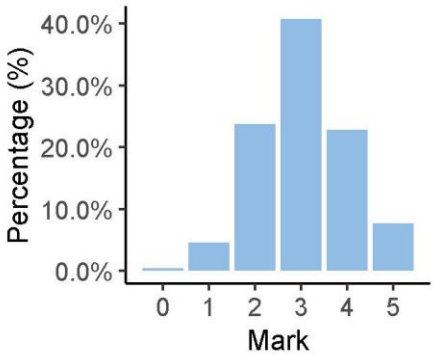
IA1 total



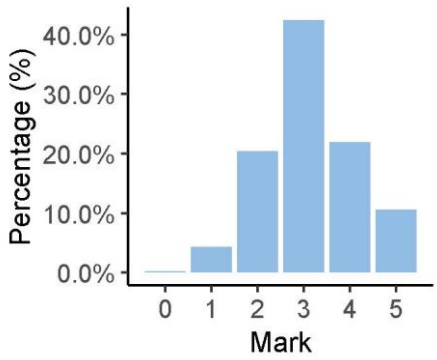
IA1 Criterion: Devising



IA1 Criterion: Synthesising and evaluating

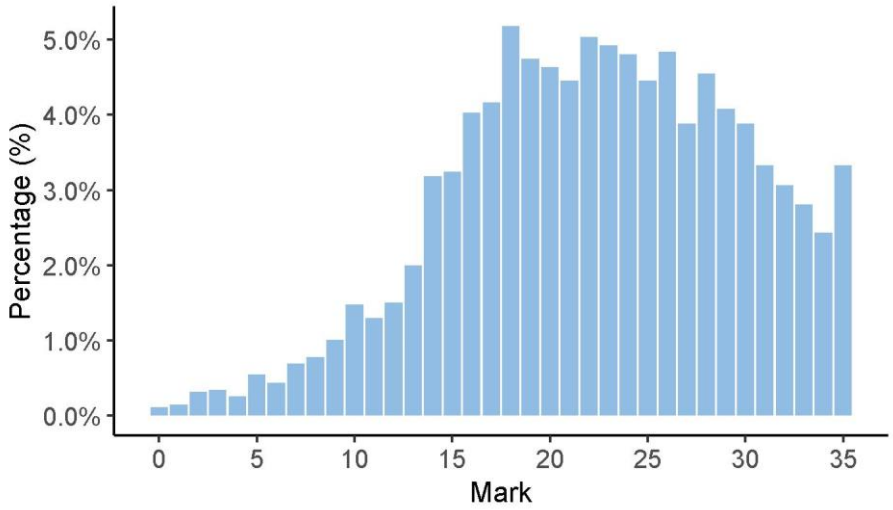


IA1 Criterion: Representing and communicating

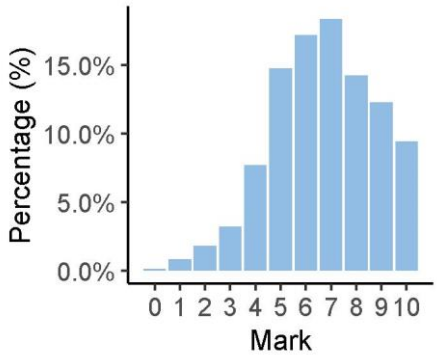


IA2 marks

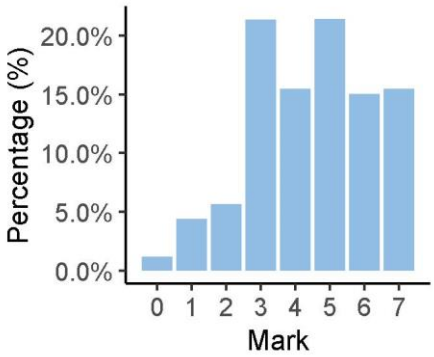
IA2 total



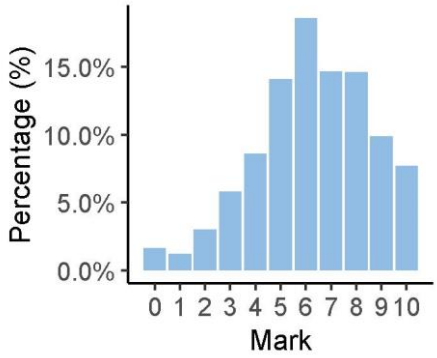
IA2 Criterion: Exploring



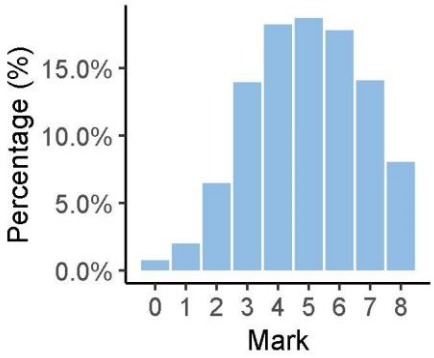
IA2 Criterion: Devising



IA2 Criterion: Synthesising and evaluating

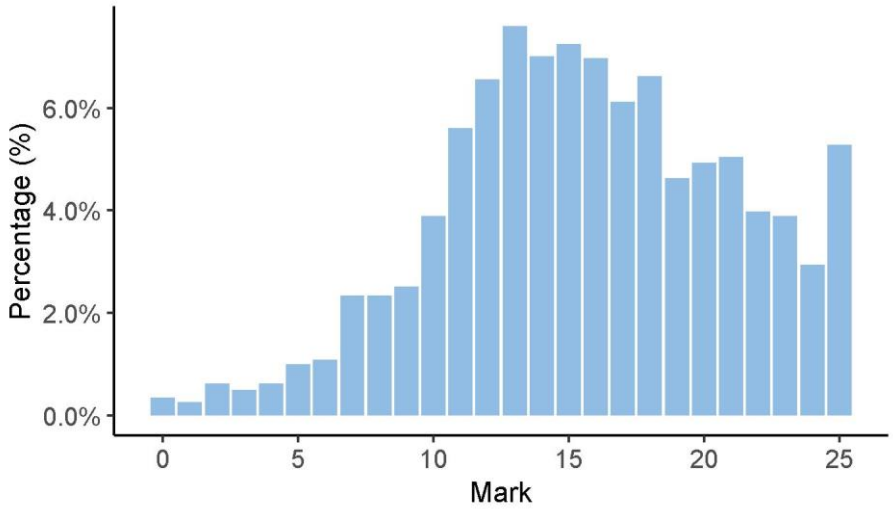


IA2 Criterion: Representing and communicating

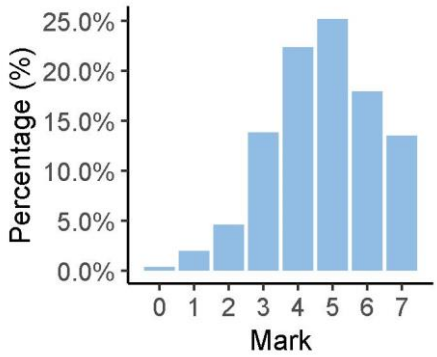


IA3 marks

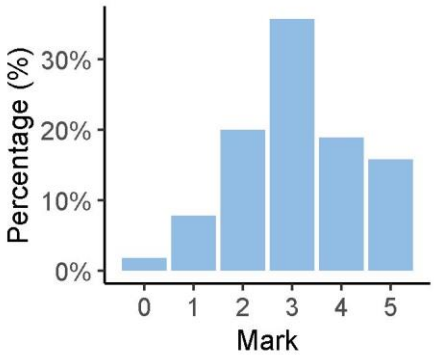
IA3 total



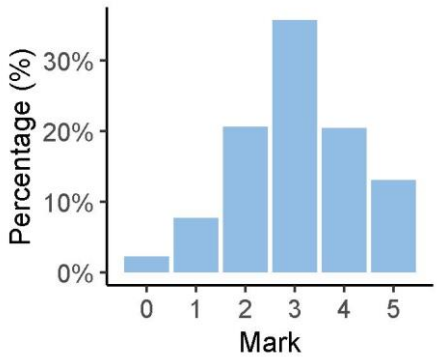
IA3 Criterion: Exploring



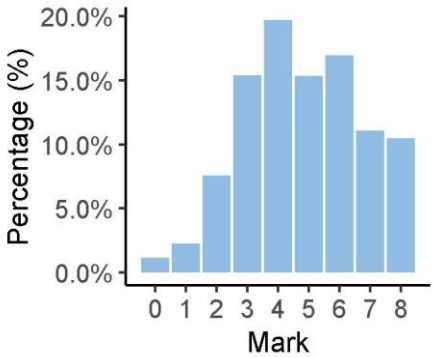
IA3 Criterion: Devising



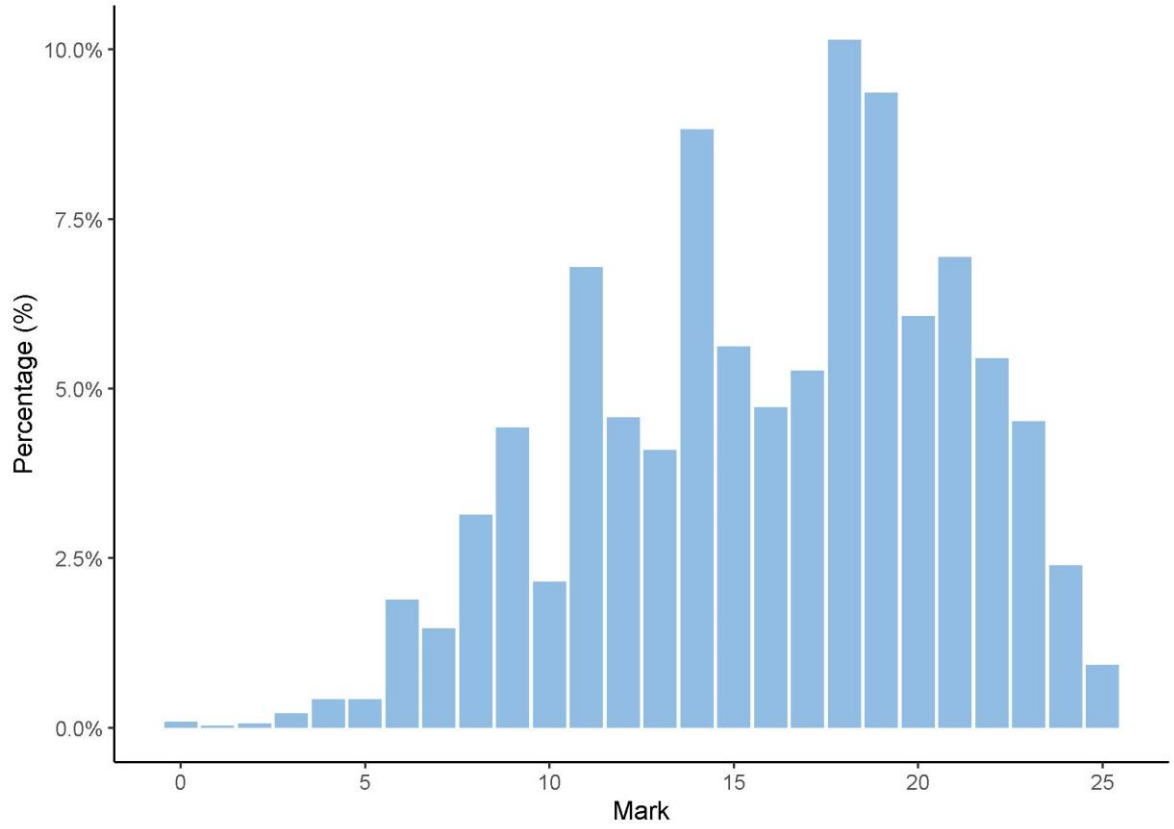
IA3 Criterion: Synthesising and evaluating



IA3 Criterion: Representing and communicating

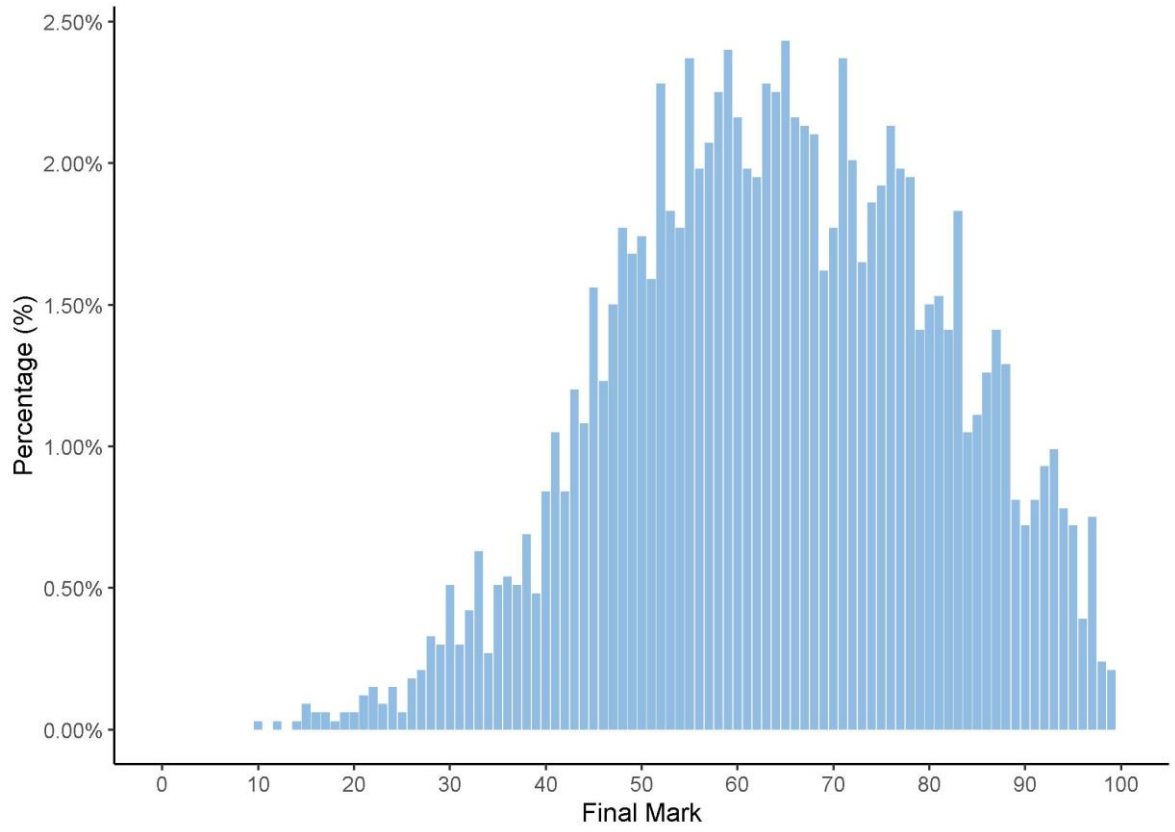


External assessment (EA) marks



Final subject results

Final marks for IA and EA



Grade boundaries

The grade boundaries are determined using a process to compare results on a numeric scale to the reporting standards.

Standard	A	B	C	D	E
Marks achieved	100–83	82–63	62–44	43–17	16–0

Distribution of standards

The number of students who achieved each standard across the state is as follows.

Standard	A	B	C	D	E
Number of students	513	1282	1171	352	8

Internal assessment

The following information and advice pertain to the assessment design and assessment decisions for each IA in Units 3 and 4. These instruments have undergone quality assurance processes informed by the attributes of quality assessment (validity, accessibility and reliability).

Endorsement

Endorsement is the quality assurance process based on the attributes of validity and accessibility. These attributes are categorised further as priorities for assessment, and each priority can be further broken down into assessment practices.

Data presented in the Assessment design section identifies the reasons why IA instruments were not endorsed at Application 1, by the priority for assessments. An IA may have been identified more than once for a priority for assessment, e.g. it may have demonstrated a misalignment to both the subject matter and the assessment objective/s.

Refer to the quality assurance tools for detailed information about the assessment practices for each assessment instrument.

Percentage of instruments endorsed in Application 1

Number of instruments submitted	IA1	IA2	IA3
Total number of instruments	251	251	250
Percentage endorsed in Application 1	24%	65%	79%

Confirmation

Confirmation is the quality assurance process based on the attribute of reliability. The QCAA uses provisional criterion marks determined by teachers to identify the samples of student responses that schools are required to submit for confirmation.

Confirmation samples are representative of the school's decisions about the quality of student work in relation to the ISMG and are used to make decisions about the cohort's results. If further information is required about the school's application of the ISMG to finalise a confirmation decision, the QCAA requests additional samples.

Schools may request a review where an individual student's confirmed result is different from the school's provisional mark in one or more criteria and the school considers this result to be an anomaly or exception.

The following table includes the percentage agreement between the provisional marks and confirmed marks by assessment instrument. The Assessment decisions section of this report for each assessment instrument identifies the agreement trends between provisional and confirmed marks by criterion.

Number of samples reviewed and percentage agreement

IA	Number of schools	Number of samples requested	Number of additional samples requested	Percentage agreement with provisional marks
1	245	1557	527	48.98%
2	244	1447	656	47.95%
3	244	1442	421	66.39%

Internal assessment 1 (IA1)

Examination — design challenge (15%)

The IA1 Examination assessment is a supervised test that assesses the application of a range of cognitions to a provided design problem.

Student responses must be completed individually, under supervised conditions, and in a set timeframe. Stimulus is seen prior to the examination.

Assessment design

Validity

Validity in assessment design considers the extent to which an assessment item accurately measures what it is intended to measure and that the evidence of student learning collected from an assessment can be legitimately used for the purpose specified in the syllabus.

Reasons for non-endorsement by priority of assessment

Validity priority	Number of times priority was identified in decisions*
Alignment	120
Authentication	0
Authenticity	13
Item construction	46
Scope and scale	186

*Each priority might contain up to four assessment practices.

Total number of submissions: 251.

Effective practices

Validity priorities were effectively demonstrated in assessment instruments that:

- aligned to the Unit 3 subject matter by
  - providing an opportunity for students to demonstrate a human-centred design approach
  - identifying a stakeholder/s that enabled students to demonstrate designing with empathy techniques
- provided stimulus that included the exploration of the stakeholder's/stakeholders' needs and wants related to their attitudes, expectations, motivations, and experiences. This allowed students to commence devising ideas for the stakeholder in the develop phase
- described a stakeholder or specific group of stakeholders.

Practices to strengthen

It is recommended that assessment instruments:

- provide a question of suitable scale, specifying what product, service, or environment students are to design
- provide visual stimulus that
  - does not provide students with possible solutions
  - does not provide statements or images that compromise the unseen information in the written stimulus
- provide a design brief that describes what must be designed for the stakeholder
- provide a succinct number of design criteria that
  - integrate the stakeholder's/stakeholders' requirements and good design principles
  - allow students to demonstrate critical evaluation to make discerning refinements that improve their ideas.

Accessibility

Accessibility in assessment design ensures that no student or group of students is disadvantaged in their capacity to access an assessment.

Reasons for non-endorsement by priority of assessment

Accessibility priority	Number of times priority was identified in decisions*
Bias avoidance	6
Language	7
Layout	2
Transparency	9

*Each priority might contain up to four assessment practices.

Total number of submissions: 251.

Effective practices

Accessibility priorities were effectively demonstrated in assessment instruments that:

- provided a clear and easy-to-read stimulus
- were proofread for errors in spelling, punctuation, and grammar.

Practices to strengthen

It is recommended that assessment instruments:

- do not run over two pages. (Teachers can use the Endorsement application preview function to check page breaks.)

Assessment decisions

Reliability

Reliability is a judgment about the measurements of assessment. It refers to the extent to which the results of assessments are consistent, replicable and free from error.

Agreement trends between provisional and confirmed marks

Criterion number	Criterion name	Percentage agreement with provisional	Percentage less than provisional	Percentage greater than provisional	Percentage both less and greater than provisional
1	Devising	64.49%	31.43%	2.04%	2.04%
2	Synthesising and evaluating	58.37%	38.37%	1.22%	2.04%
3	Representing and communicating	66.12%	28.98%	3.27%	1.63%

Effective practices

Accuracy and consistency of the application of the ISMG for this IA was most effective when:

- marks for the Devising criterion were awarded in consideration of the quality of ideas as described in the characteristics rather than simply focusing on the quantity of ideas
- responses were awarded marks in the highest performance level for the Devising criterion when the ideas demonstrated clear relevance to the stimulus information and discerning understanding of the problem and criteria. These responses demonstrated perceptive understanding of the stakeholder's/stakeholders' needs and wants
- responses were awarded the highest marks in the Representing and communicating criterion performance level when ideation and schematic sketching demonstrated a high degree of skill and complexity in their detail.

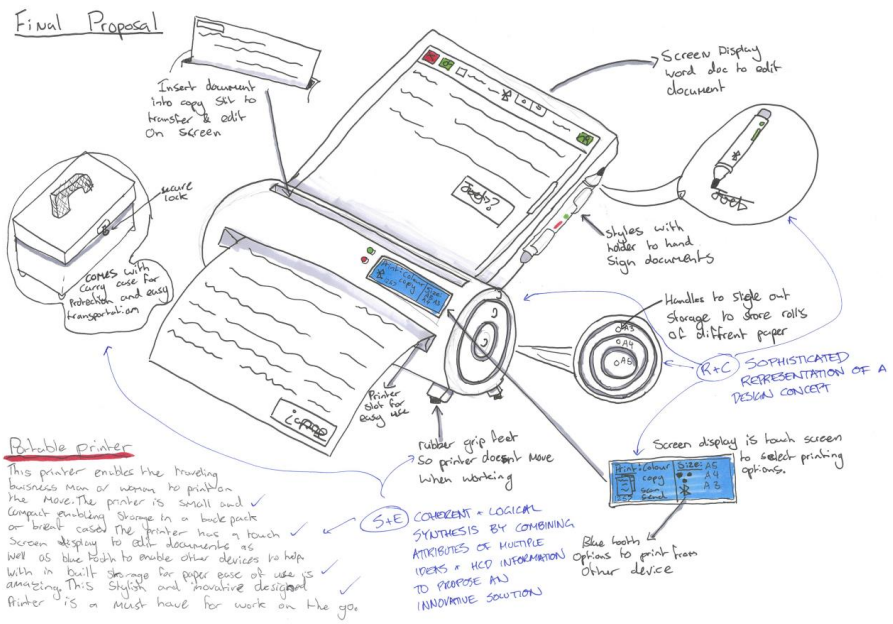
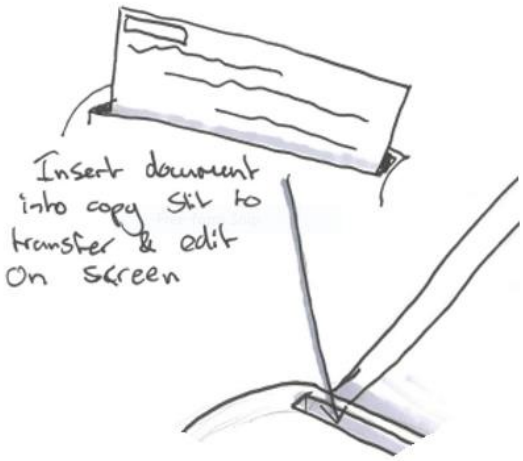
Samples of effective practices

The following are excerpts from a response that illustrates the characteristics for the criterion at the performance level indicated. The excerpts may provide evidence of more than one criterion. The characteristics identified may not be the only time the characteristics have occurred throughout a response.

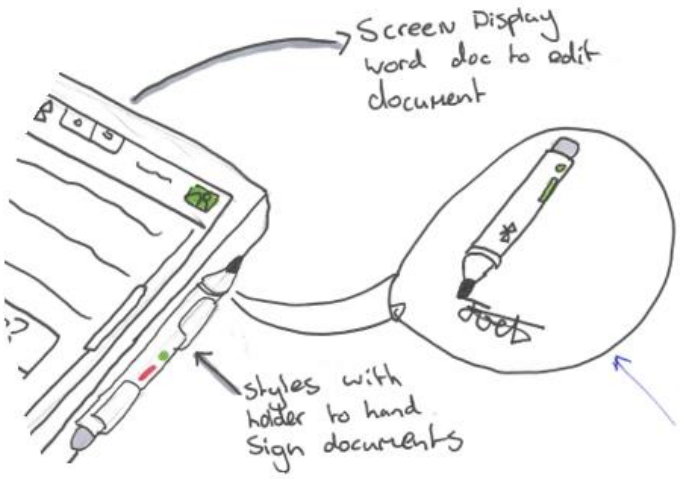
These student response excerpts have been included:

- to demonstrate evidence of coherent and logical synthesis through the well-structured combination of attributes of multiple ideas and human-centred design (HCD) information. The attributes of other ideas that have been combined to form this concept fit well together
- to demonstrate logical synthesis using representations with supporting annotations
- to demonstrate innovating thinking by proposing a HCD concept with a unique combination of functions, coupled with portability
- to demonstrate evidence of the Representing and communicating criterion at the 4–5 mark level. The design concept shows intellectual complexity and a high degree of skill. The

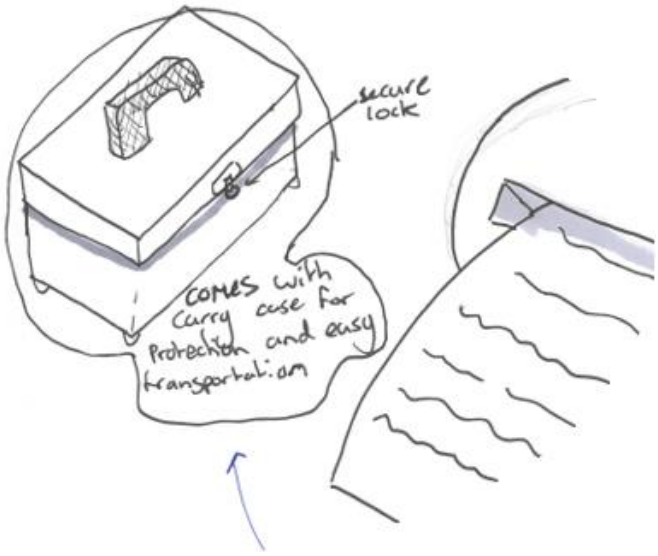
response uses multiple views, proportion, scale, shading, colour, variation of line and descriptive labels to represent different aspects of its function in greater detail.

Synthesising (4–5 marks) • coherent and logical synthesis by combining attributes of multiple ideas and HCD information to propose an innovative HCD concept in the develop phase	**Excerpt 1**  **Excerpt 2** 

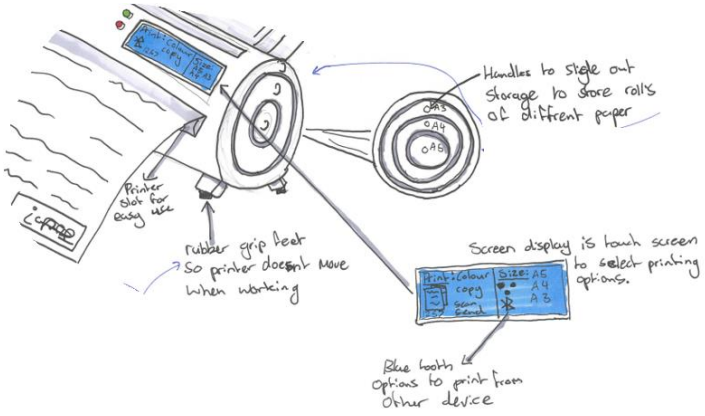
Excerpt 3

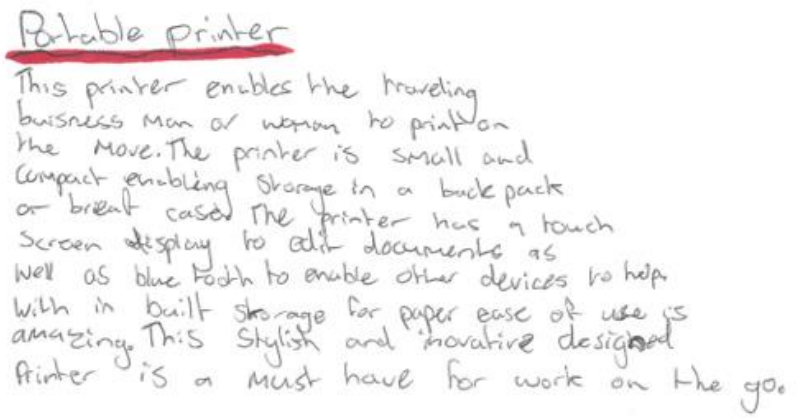


Excerpt 4



Excerpt 5



	Excerpt 6 

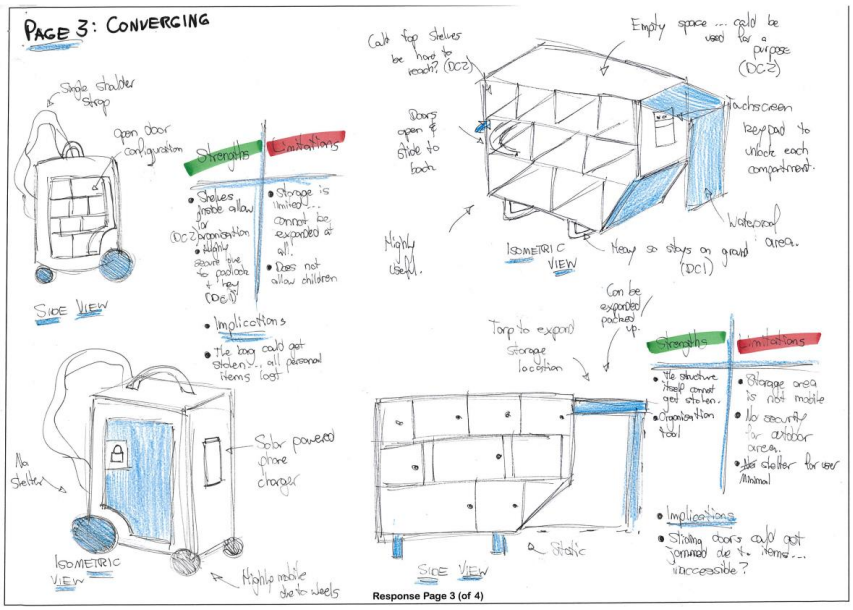
These student response excerpts have been included:

- to demonstrate evidence of critical evaluation of the strengths, limitations, and implications of ideas against design criteria
- to show critical attributes of this response in the table of strengths, limitations, and implications (seen on the bottom right of the image) and through the evaluative statements and questions that are documented around the sketches. These statements demonstrate skilful judgment as to the relevance and importance of attributes of the designs
- to demonstrate exercising judgments, by weighing up how well these attributes meet the stakeholders' requirements. Excerpts 9–12 show the response in greater detail
- to demonstrate that ideas have been refined to address the limitations and implications identified during evaluation (seen in Excerpts 9–12). The detail of the refinement is evidenced graphically, supported by annotations rather than annotations supported by icons or thumbnail sketches
- to demonstrate discerning attributes of refinement through appropriate ideation sketching using visual elements and principles of design to represent the thoughtful decision-making in terms of improving the ideas.

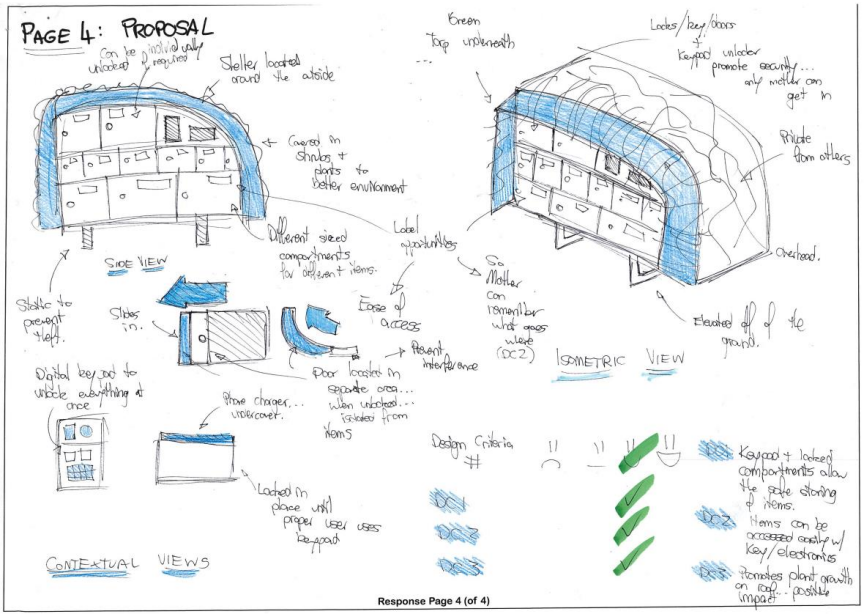
Evaluating (4–5 marks)

- critical evaluation of the strengths, limitations and implications of ideas against design criteria to make discerning refinements that improve ideas

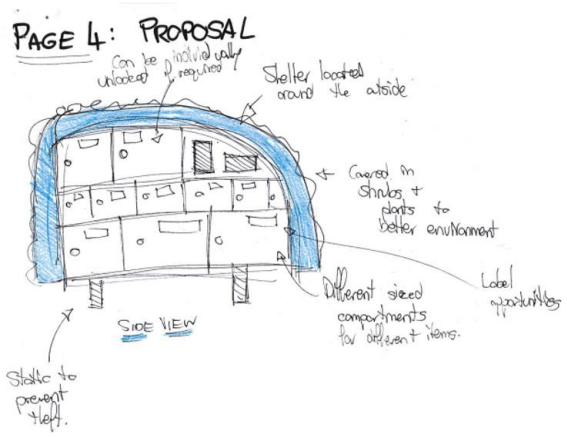
Excerpt 1



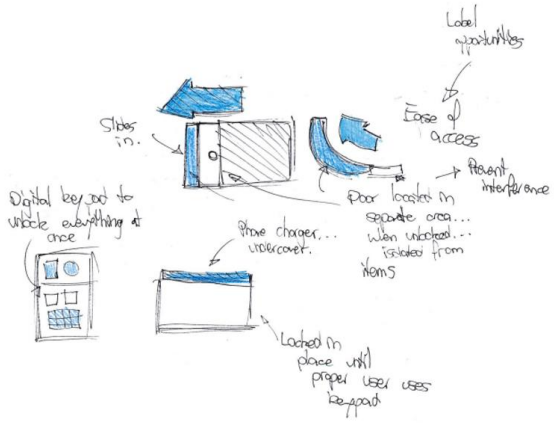
Excerpt 2



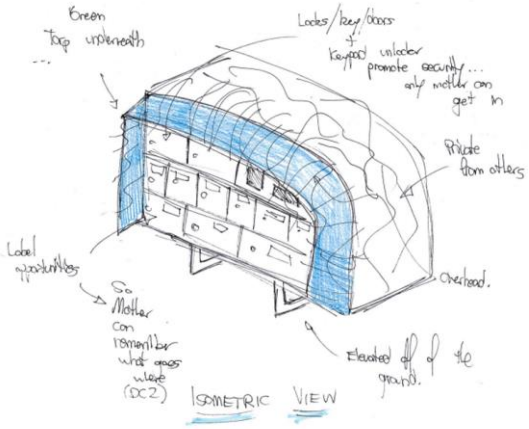
Excerpt 3



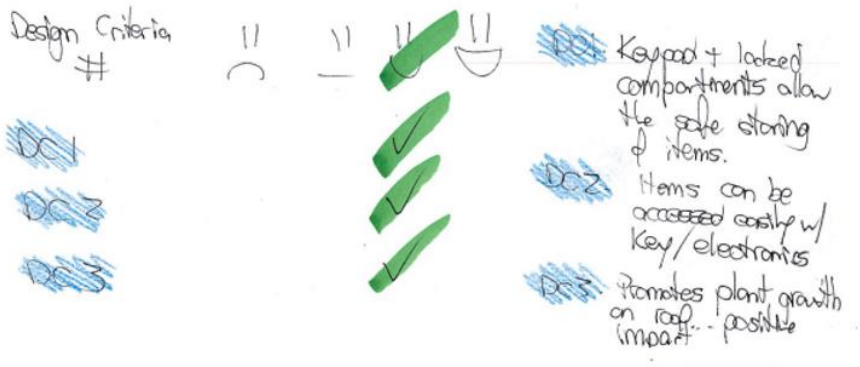
Excerpt 4



Excerpt 5



Excerpt 6



Practices to strengthen

To further ensure accuracy and consistency of the application of the ISMG for this IA, it is recommended that:

- responses avoid focusing on the refinement of one central idea as students will be unable to combine attributes of multiple ideas to effectively demonstrate synthesis
- the design concept should not be a reproduction of an existing design in common use, or something copied from the stimulus that has remained largely unchanged

- responses demonstrate application of Unit 3 subject matter and stimulus information through the ideas and HCD concept. (In Design Alternative Sequence responses, teachers should check for demonstrated application of Unit 1 subject matter.)
- responses demonstrate that the design criteria have been carefully considered when weighing up ideas' strengths, limitations, and implications
- responses demonstrate that the limitations of initial ideas identified through evaluation have been addressed in sketches of refined ideas.

Additional advice

- Check that the correct documents have been uploaded to the Confirmation application before submitting to the approver.
- Indicate judgments clearly on the ISMG by highlighting the characteristics of each performance level that are evidenced in the responses. There may be some characteristics in a performance level that are not highlighted as there is no supporting evidence in the response. Annotate this gap in the response on the ISMG.
- Remember that responses that do not demonstrate evidence of designing with empathy through the consideration of the supplied stakeholder's/stakeholders' needs and wants, as indicated in the stimulus, cannot be awarded marks in the top performance level for devising perceptive ideas in response to a HCD problem.

Internal assessment 2 (IA2)

Project (35%)

The IA2 Project assessment focuses on a design process that requires the application of a range of cognitive, technical and creative skills and theoretical understandings. Students document the iterative process undertaken to explore and develop a response to a stakeholder's needs or wants.

The response is a coherent work that may include drawings, low-fidelity prototypes, written paragraphs, notes, photographs, video and spoken presentations.

This assessment occurs over an extended and defined period of time. Students may use class time and their own time to develop a response.

Assessment design

Validity

Validity in assessment design considers the extent to which an assessment item accurately measures what it is intended to measure and that the evidence of student learning collected from an assessment can be legitimately used for the purpose specified in the syllabus.

Reasons for non-endorsement by priority of assessment

Validity priority	Number of times priority was identified in decisions*
Alignment	75
Authentication	9
Authenticity	22
Item construction	18
Scope and scale	8

*Each priority might contain up to four assessment practices.

Total number of submissions: 251.

Effective practices

Validity priorities were effectively demonstrated in assessment instruments that:

- provided the opportunity for students to apply Unit 3 subject matter
- directed students to identify an accessible stakeholder and then respond to the stakeholder's needs and wants as a higher priority than other influences throughout the design process
- provided a context of suitable scale to enable students to design a product, service, or environment in response to the stakeholder's needs and wants

- provided one close-to-final draft submission for each part in the order of written design brief and criteria, design proposal, and visual documentation of the design process, ensuring that work in each part was only submitted once for feedback.

Practices to strengthen

It is recommended that assessment instruments:

- direct students to select a stakeholder from a different demographic, cultural or social group to themselves— giving students an opportunity to authentically demonstrate designing with empathy
- avoid directing students to a particular organisation that may prevent each student being able to engage with a unique stakeholder throughout the design process
- support students' ability to demonstrate the full range of performance levels and characteristics in the Representing and communicating criterion, including low-fidelity prototyping. A computer assisted drafted (CAD) representation is not a low-fidelity prototype
- avoid the use of guiding questions that relate to a particular problem.. Students identify problems based on their interaction with the stakeholder
- clearly communicate the syllabus specifications for Parts A, B and C.

Accessibility

Accessibility in assessment design ensures that no student or group of students is disadvantaged in their capacity to access an assessment.

Reasons for non-endorsement by priority of assessment

Accessibility priority	Number of times priority was identified in decisions*
Bias avoidance	1
Language	2
Layout	1
Transparency	2

*Each priority might contain up to four assessment practices.

Total number of submissions: 251.

Effective practices

Accessibility priorities were effectively demonstrated in assessment instruments that:

- were proofread and well formatted to allow ease of reading and comprehension
- provided an image of the syllabus design process in the scaffolding.

Practices to strengthen

It is recommended that assessment instruments:

- do not run over two pages. (Teachers can use the Endorsement application preview function to check page breaks.)

Assessment decisions

Reliability

Reliability is a judgment about the measurements of assessment. It refers to the extent to which the results of assessments are consistent, replicable and free from error.

Agreement trends between provisional and confirmed marks

Criterion number	Criterion name	Percentage agreement with provisional	Percentage less than provisional	Percentage greater than provisional	Percentage both less and greater than provisional
1	Exploring	58.2%	18.44%	3.28%	20.08%
2	Devising	70.9%	27.05%	1.23%	0.82%
3	Synthesising and evaluating	59.84%	22.13%	4.51%	13.52%
4	Representing and communicating	66.8%	31.56%	0.82%	0.82%

Effective practices

Accuracy and consistency of the application of the ISMG for this IA was most effective when:

- responses demonstrated ideas graphically, supported by written annotations
- responses demonstrated ideas from different points of view rather than exploring one central idea or way of approaching the problem
- ideas incorporated unique attributes, e.g. functioning differently from common use and/or using a material with particular properties that would normally not be considered
- ideas responded to stakeholders' needs and wants, as identified during the explore phase, rather than the student's own opinions
- stakeholders were consulted throughout the process, with the response showing obvious consideration of HCD information. (In Design Alternative Sequence, responses should have considered information about the design style.)
- responses incorporated low-fidelity prototyping to devise, test and refine ideas
- the design proposal featured a spoken pitch that evaluated the design concept, with the proposed concept featured prominently in graphic or physical form.

Samples of effective practices

The following are excerpts from a response that illustrates the characteristics for the criteria at the performance level indicated. The excerpts may provide evidence of more than one criterion. The characteristics identified may not be the only time the characteristics have occurred throughout a response.

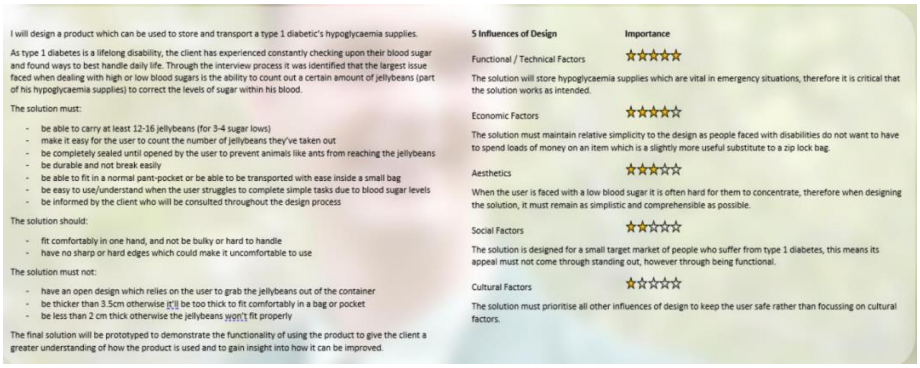
These student response excerpts have been included:

- to demonstrate a discerning description of the features that define a HCD problem as it is clearly focused on the identified stakeholder and is not generic in nature. In Excerpt 1, information has been selected from the analysis for its value or relevance. The student has identified the criteria that are essential to achieve a solution based on their stakeholder's requirements
- to demonstrate an insightful analysis of the stakeholders' needs and wants using relevant primary data about the stakeholder, obtained through authentic stakeholder engagement. In Excerpt 2, the student demonstrates designing with empathy techniques, e.g. through interviews and observations. Insightful analysis is evidenced through the application of HCD information such as the four-pleasure framework to the design problem context. Significantly, the HCD information has not been stated or defined. It has been used to analyse the problem
- to illustrate an insightful analysis of existing designed solutions. In Excerpt 3, the student identifies attributes to include or avoid when devising solutions to the problem to suit the stakeholders' needs and wants. The student demonstrates insightfulness by articulating the relationship between the features of design and the stakeholders' needs.

Exploring (9–10 marks)

- discerning description of the features that define a HCD problem and essential design criteria based on stakeholders' requirements and principles of good design
- insightful analysis of needs and wants using relevant primary data about stakeholders and secondary data about existing designs and HCD information to identify the significant features, constraints and the relationships between them

Excerpt 1



I will design a product which can be used to store and transport a type 1 diabetic's hypoglycaemia supplies.

As type 1 diabetes is a lifelong disability, the client has experienced constantly checking upon their blood sugar and found ways to best handle daily life. Through the interview process it was identified that the largest issue faced when dealing with high or low blood sugars is the ability to count out a certain amount of jellybeans (part of his hypoglycaemia supplies) to correct the levels of sugar within his blood.

The solution must:

- be able to carry at least 12-16 jellybeans (for 3-4 sugar lows)
- make it easy for the user to count the number of jellybeans they've taken out
- be completely sealed until opened by the user to prevent animals like ants from reaching the jellybeans
- be durable and not break easily
- be able to fit in a normal pant-pocket or be able to be transported with ease inside a small bag
- be easy to use/understand when the user struggles to complete simple tasks due to blood sugar levels
- be informed by the client who will be consulted throughout the design process

The solution should:

- fit comfortably in one hand, and not be bulky or hard to handle
- have no sharp or hard edges which could make it uncomfortable to use

The solution must not:

- have an open design which relies on the user to grab the jellybeans out of the container
- be thicker than 3.5cm otherwise it'll be too thick to fit comfortably in a bag or pocket
- be less than 2 cm thick otherwise the jellybeans won't fit properly

The final solution will be prototyped to demonstrate the functionality of using the product to give the client a greater understanding of how the product is used and to gain insight into how it can be improved.

5 Influences of Design — **Importance**

Functional / Technical Factors ★★★★★

The solution will store hypoglycaemia supplies which are vital in emergency situations, therefore it is critical that the solution works as intended.

Economic Factors ★★★★★

The solution must maintain relative simplicity to the design as people faced with disabilities do not want to have to spend loads of money on an item which is a slightly more useful substitute to a zip lock bag.

Aesthetics ★★★★★

When the user is faced with a low blood sugar it is often hard for them to concentrate, therefore when designing the solution, it must remain as simplistic and comprehensible as possible.

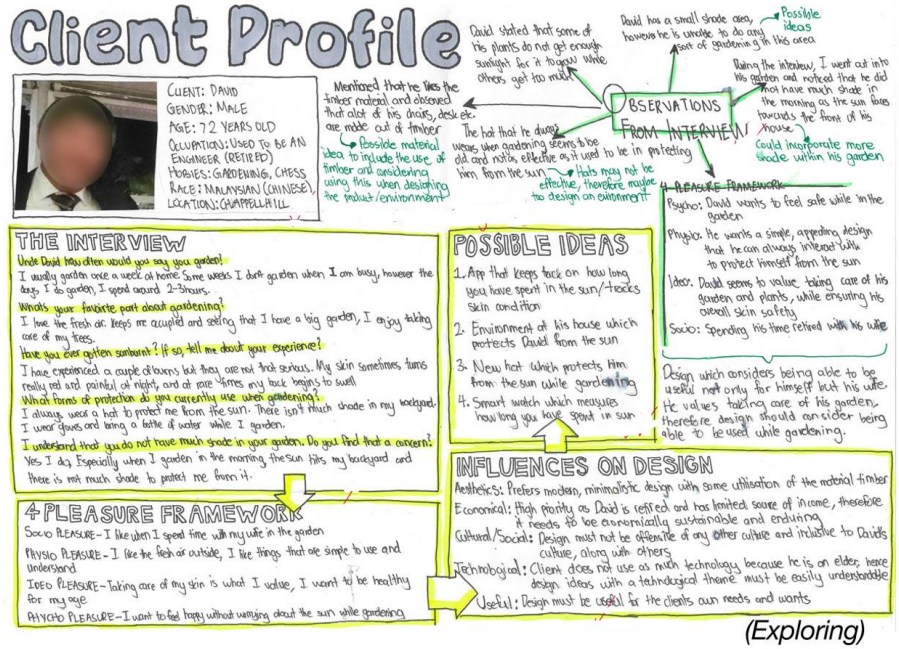
Social Factors ★★★★★

The solution is designed for a small target market of people who suffer from type 1 diabetes, this means its appeal must not come through standing out, however through being functional.

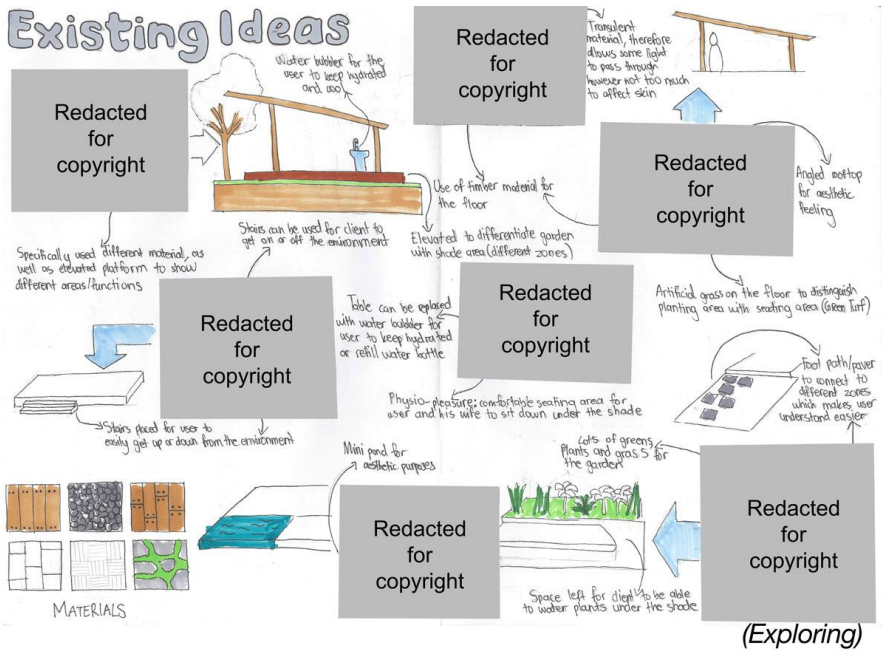
Cultural Factors ★★★★★

The solution must prioritise all other influences of design to keep the user safe rather than focussing on cultural factors.

Excerpt 2



Excerpt 3



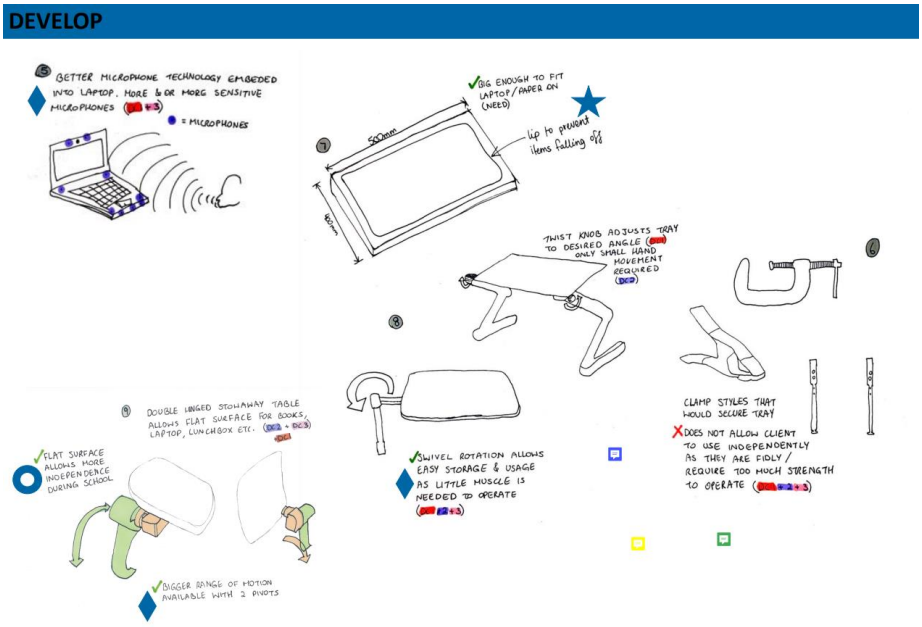
These student response excerpts have been included:

- to demonstrate coherent and logical synthesis. In Excerpts 1 and 2, the student combined the obvious and sensible attributes of multiple ideas to propose an innovative concept
- to demonstrate critical evaluation of the strengths, limitations, and implications of ideas and a HCD concept. In Excerpt 3, there is evidence skilful judgment has been applied against design criteria to make discerning refinements. Importantly, the evaluation informs the refinements. The evaluation is evident not only in the table with the headings strengths, limitations, and implications, but is also evident in the evaluative statements surrounding the sketches.

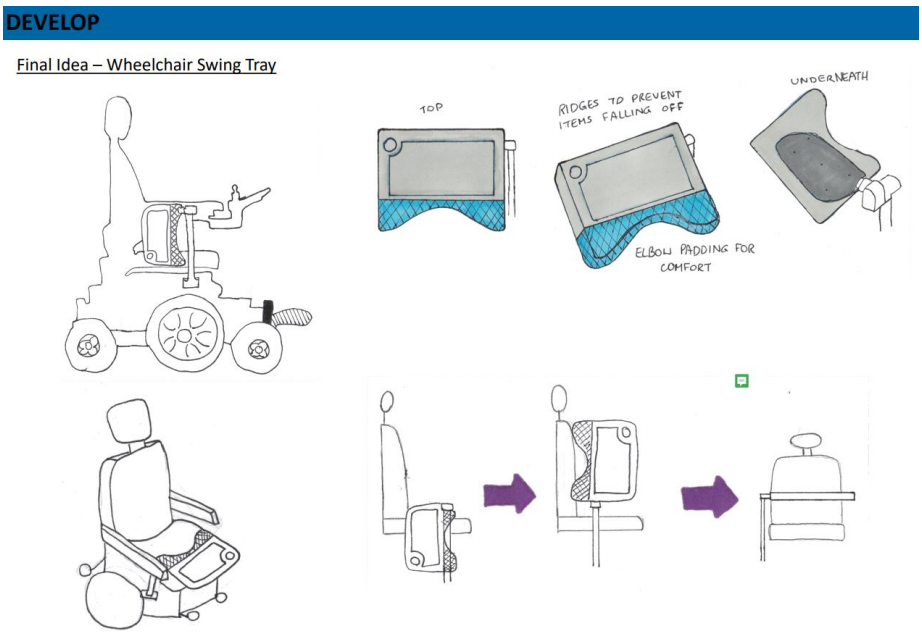
Synthesising and evaluating (9–10 marks)

- coherent and logical synthesis by combining attributes of multiple ideas and HCD information to propose an innovative HCD concept in the develop phase
- critical evaluation of the strengths, limitations and implications of ideas and a HCD concept against design criteria to make discerning refinements

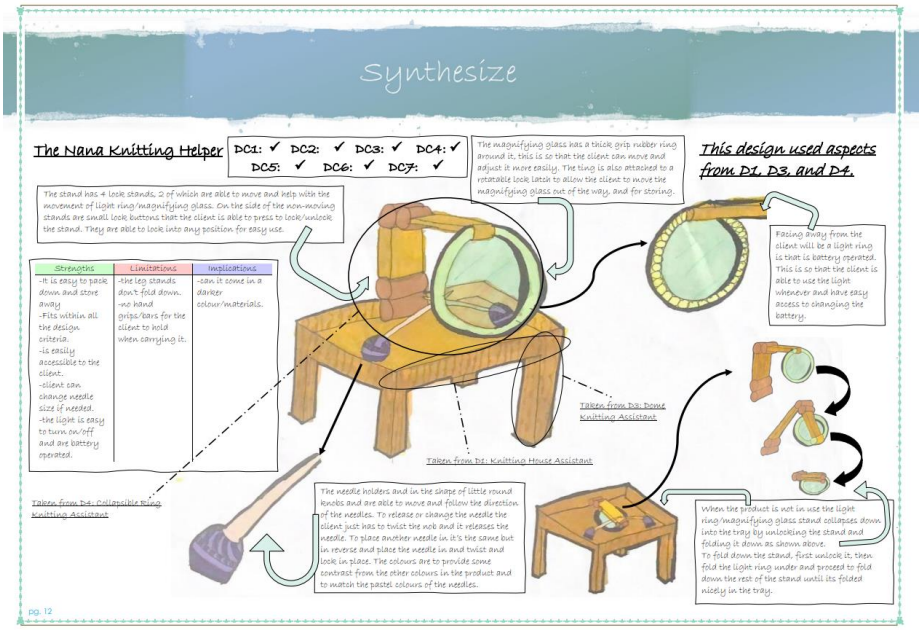
Excerpt 1



Excerpt 2



Excerpt 3



These student response excerpts have been included:

- to demonstrate sophisticated representation of ideas using fluent sequences of ideation sketching.
  - Excerpt 1 shows the progression of the student's understanding in the develop phase through use of 2D and 3D sketches using form and texture. The ideas are also presented in use, which is indicating the student's understanding of suitability of the idea
- to demonstrate sophisticated representation of ideas using low-fidelity prototyping to progress understanding of ideas in the develop phase.

- Excerpt 2 shows a detailed prototype that facilitates the testing of the idea for ergonomics and functionality to inform discerning refinements
- Excerpt 3 shows a low-fidelity digital prototype used to test the functionality of the idea and its suitability for the stakeholder's requirements. The prototype facilitates insightful stakeholder feedback to inform discerning refinements.

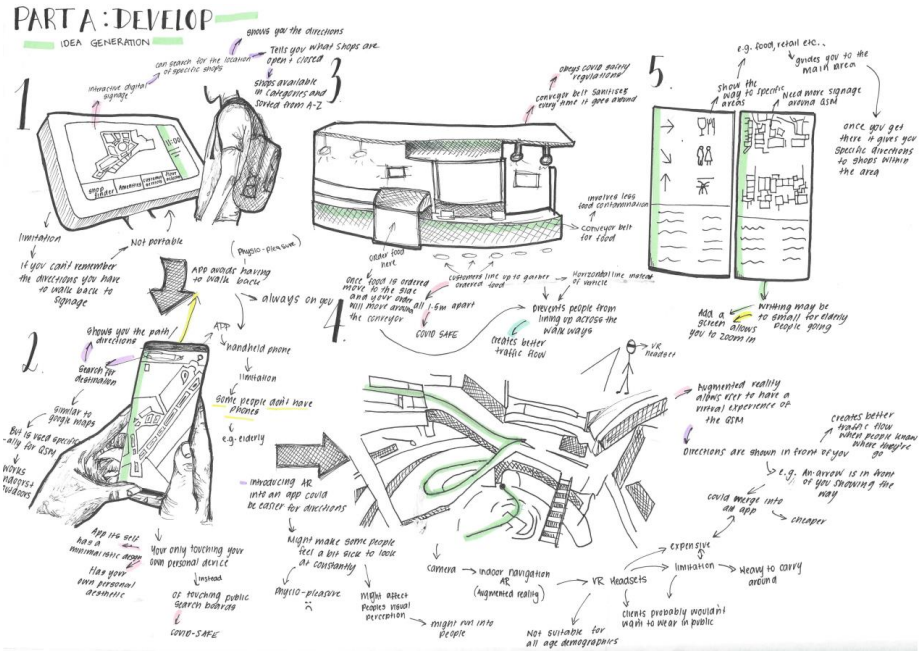
Representing & Communicating (7–8 marks)

- sophisticated representation of ideas, a design concept and HCD information using fluent sequences of ideation sketching, schematic sketching and low-fidelity prototyping to progress understanding in the explore and develop phases
- discerning decision-making about, and fluent use of,

  - spoken features, design-specific vocabulary and visual elements and principles to present a design proposal for a live or virtual stakeholder audience

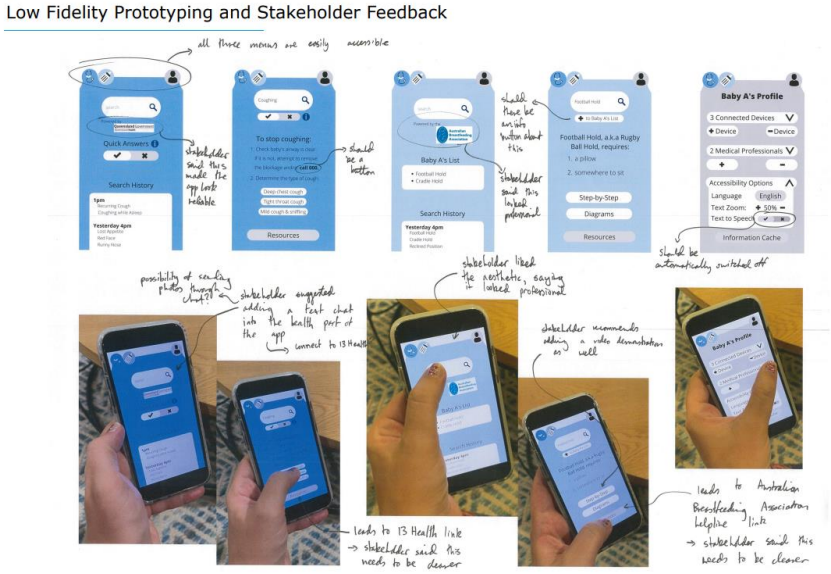
  - written conventions, features and design-specific language to present a design brief for stakeholders.

Excerpt 1



Excerpt 2

Excerpt 3



Practices to strengthen

To further ensure accuracy and consistency of the application of the ISMG for this IA, it is recommended that:

- judgments are clearly highlighted on the ISMG to indicate which characteristics of the performance level are evident in the response
- teacher annotations on the responses are clear and unobtrusive. Avoid covering sections of the response or creating confusion by adding annotations that could be confused for being the student's. Annotations can also be added to the ISMG to articulate how judgments were made, e.g. where a characteristic is absent in the response

Additional advice

- Authentic stakeholder engagement is essential to success in this assessment item. For students to demonstrate designing with empathy to a high level, it is important they identify a stakeholder that is not themselves. Students must be designing to suit the needs and wants of someone preferably demographically different to themselves.
- Stakeholder engagement should occur throughout the project. The use of low-fidelity prototypes facilitates the important opportunity to obtain authentic stakeholder feedback on an idea to inform discerning refinements.
- Ensure that the focus of responses align to Unit 3 subject matter and respond to the syllabus requirement that students identify a stakeholder and apply the HCD process in response to the stakeholder's needs and wants. (Design Alternative Sequence responses must integrate Unit 1 subject matter.)
- In Part B, written design brief and criteria must describe an HCD problem based on authentic stakeholder requirements. This includes describing the human needs and wants associated with aesthetic, cultural, economic, social and technical features.
- The highest mark in the Exploring criterion for insightful analysis cannot be awarded when the response does not demonstrate authentic stakeholder engagement and designing with empathy strategies beyond an initial stakeholder interview. Fundamental to HCD is the

principle that a designer considers human needs and wants as a higher priority than other influences throughout the design process. ‘Insightful’ is defined as understanding relationships in complex situations informed by observation and deduction.

- HCD information (e.g. ergonomic information, four pleasure framework, ACT framework, empathy techniques to understand attitudes, expectations, motivations and experiences) need to be demonstrated through the process of analysing and describing stakeholder needs and wants. The recall of subject matter does not provide evidence to match the characteristics in the Exploring criterion and limits the response space available for authentic analysis.
- In Part C, the design proposal should be a pitch for stakeholders that provides evidence of the synthesis of the proposed design concept, an evaluation of its strengths, limitations and implications, and the student’s ability to make decisions to communicate using visual and spoken features. It is not an oral narrative describing the design process undertaken during the project.
- After Parts B and C are concluded, students are required to provide assessable evidence of the design process undertaken as per the syllabus specifications for Part A. This involves students selecting a maximum of 12 A3 pages from the authentic design work undertaken. When compiling scanned pages of sketches and notes, ensure that the resolution is high enough so the images remains clear and the text is large enough to be legible.
- It is not necessary for students to reformat their design work, submitted in Part A, into high-quality formal presentation drawing with typed text. Part A is not assessed against the Communication objective, and reformatting their design work may result in decisions to omit important authentic evidence of their design process.

Internal assessment 3 (IA3)

Project (25%)

The IA3 Project assessment focuses on a design process that requires the application of a range of cognitive, technical and creative skills and theoretical understandings. Students document the iterative process undertaken to explore and develop a response to a design opportunity.

The response is a coherent work that may include drawings, low-fidelity prototypes, written paragraphs, notes, photographs, video and spoken presentations.

This assessment occurs over an extended and defined period of time. Students may use class time and their own time.

Assessment design

Validity

Validity in assessment design considers the extent to which an assessment item accurately measures what it is intended to measure and that the evidence of student learning collected from an assessment can be legitimately used for the purpose specified in the syllabus.

Reasons for non-endorsement by priority of assessment

Validity priority	Number of times priority was identified in decisions*
Alignment	36
Authentication	8
Authenticity	30
Item construction	7
Scope and scale	7

*Each priority might contain up to four assessment practices.

Total number of submissions: 250.

Effective practices

Validity priorities were effectively demonstrated in assessment instruments that:

- featured open-ended contexts that allowed students to identify their own redesign opportunity
- addressed Unit 4 subject matter of using circular design methods to improve sustainability.

Practices to strengthen

It is recommended that assessment instruments:

- provide draft feedback opportunities for the different parts of the Project, with each feedback opportunity looking at each part of student work only once

- provide opportunities for students to make decisions to use the most appropriate form of representation of their ideas and design concept The task should not specify that students must use particular technology such as CAD modelling software
- follow the requirements of Part C, as defined in the syllabus, of a ‘visual presentation of the design concept’. A spoken pitch is not required.

Accessibility

Accessibility in assessment design ensures that no student or group of students is disadvantaged in their capacity to access an assessment.

Reasons for non-endorsement by priority of assessment

Accessibility priority	Number of times priority was identified in decisions*
Bias avoidance	0
Language	0
Layout	0
Transparency	0

*Each priority might contain up to four assessment practices.

Total number of submissions: 250.

Effective practices

Accessibility priorities were effectively demonstrated in assessment instruments that:

- used bold and formatting appropriately
- provided visual images in the stimulus to support the context
- provided an image of the syllabus design process in the scaffolding.

Practices to strengthen

It is recommended that assessment instruments:

- use print preview to view and format the document, including page breaks where necessary.

Assessment decisions

Reliability

Reliability is a judgment about the measurements of assessment. It refers to the extent to which the results of assessments are consistent, replicable and free from error.

Agreement trends between provisional and confirmed marks

Criterion number	Criterion name	Percentage agreement with provisional	Percentage less than provisional	Percentage greater than provisional	Percentage both less and greater than provisional
1	Exploring	77.87%	18.03%	3.28%	0.82%
2	Devising	79.92%	17.21%	2.05%	0.82%
3	Synthesising and evaluating	80.74%	16.39%	1.64%	1.23%
4	Representing and communicating	72.95%	23.77%	2.46%	0.82%

Effective practices

Accuracy and consistency of the application of the ISMG for this IA was most effective when:

- a variety of circular design methods were used to develop responses. In Design Alternative Sequence responses demonstrated the application of collaborative design techniques
- the detail, credibility and uniqueness of devised ideas was represented visually as a designed response rather than using text-based responses to describe possible ideas that could be devised
- the design proposal was used to provide evidence of the synthesised design concept
- refinements of ideas were based on evidence from the evaluation of earlier ideas against criteria.

Samples of effective practices

The following are excerpts from responses that illustrate the characteristics for the criteria at the performance level indicated. The excerpts may provide evidence of more than one criterion. The characteristics identified may not be the only time the characteristics have occurred throughout a response.

These student response excerpts have been included:

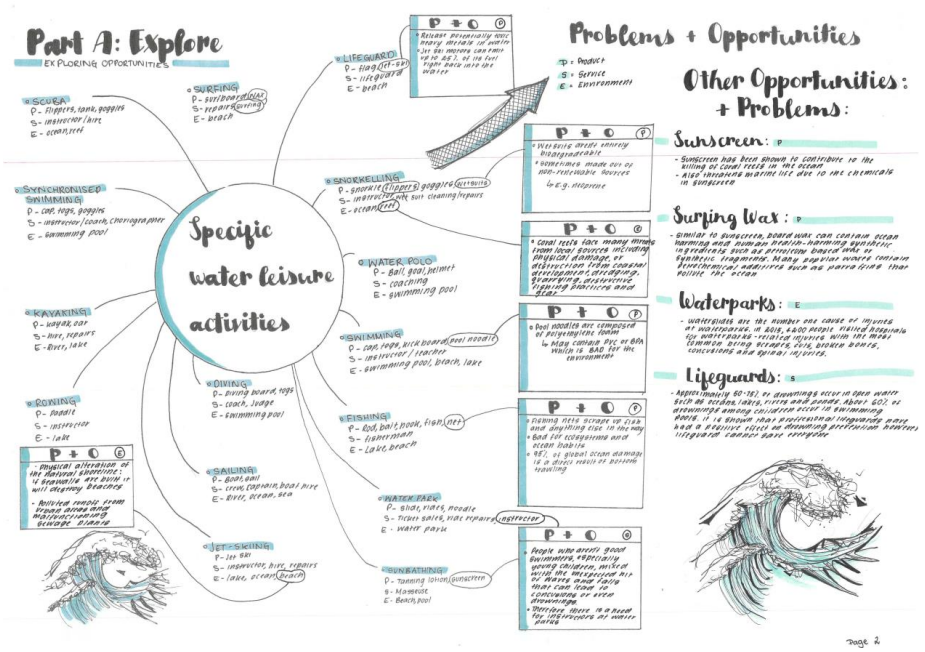
- to demonstrate insightful analysis of the problem. In Excerpt 1, the response shows the identification of a redesign opportunity (product, service, or environment) by breaking down the problem, using a schematic diagram, to identify essential features. The response demonstrates engagement with Unit 4 subject matter

- to demonstrate discerning description of the problem. In Excerpt 2, the response begins the design brief with a definition of sustainability, and focuses on the specifics of the redesign opportunity that has been identified. It describes the features and sustainable requirements of the problem and the design criteria are clearly based on the requirements of the problem and the principles of good design.

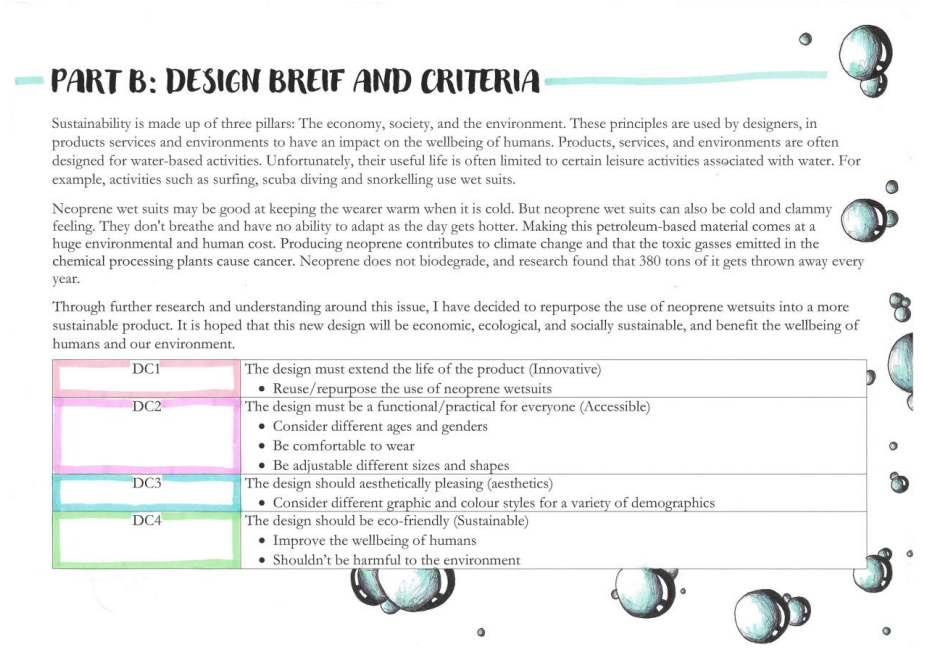
Exploring (6–7 marks)

- discerning description of features and sustainable requirements that define a redesign problem and essential design criteria based on the requirements of the opportunity and the principles of good design
- insightful analysis of redesign opportunities using relevant data about existing designed solutions and sustainability to identify the significant features, constraints and the relationships between them

Excerpt 1



Excerpt 2



PART B: DESIGN BREIF AND CRITERIA

Sustainability is made up of three pillars: The economy, society, and the environment. These principles are used by designers, in products services and environments to have an impact on the wellbeing of humans. Products, services, and environments are often designed for water-based activities. Unfortunately, their useful life is often limited to certain leisure activities associated with water. For example, activities such as surfing, scuba diving and snorkelling use wet suits.

Neoprene wet suits may be good at keeping the wearer warm when it is cold. But neoprene wet suits can also be cold and clammy feeling. They don't breathe and have no ability to adapt as the day gets hotter. Making this petroleum-based material comes at a huge environmental and human cost. Producing neoprene contributes to climate change and that the toxic gasses emitted in the chemical processing plants cause cancer. Neoprene does not biodegrade, and research found that 380 tons of it gets thrown away every year.

Through further research and understanding around this issue, I have decided to repurpose the use of neoprene wetsuits into a more sustainable product. It is hoped that this new design will be economic, ecological, and socially sustainable, and benefit the wellbeing of humans and our environment.

DC1	The design must extend the life of the product (Innovative) • Reuse/repurpose the use of neoprene wetsuits
DC2	The design must be a functional/practical for everyone (Accessible) • Consider different ages and genders • Be comfortable to wear • Be adjustable different sizes and shapes
DC3	The design should aesthetically pleasing (aesthetics) • Consider different graphic and colour styles for a variety of demographics
DC4	The design should be eco-friendly (Sustainable) • Improve the wellbeing of humans • Shouldn't be harmful to the environment

These student response excerpts have been included:

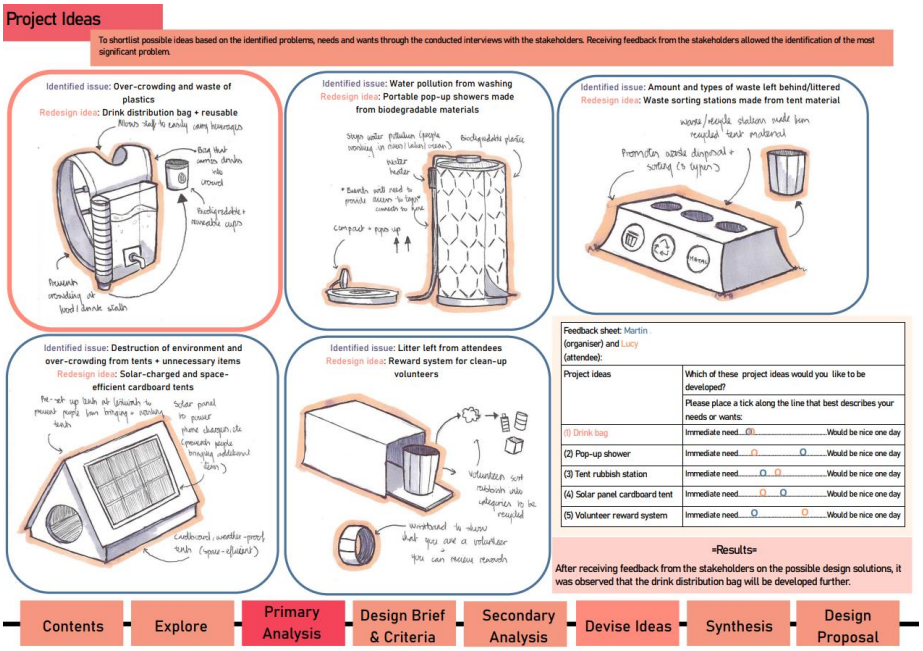
- to demonstrate sophisticated ideation sketching. In Excerpt 1, a range of diverse ideas have been represented using form, texture, function, and assembly details. The simple shading and monochrome palette are effective and do not detract from the finer details of the sketches. Minimal written annotations are required to support the sketches

- to demonstrate sophisticated use of illustrations and low-fidelity prototyping to communicate the design proposal. In Excerpt 2, the Part C response focuses on promoting the design concept to stakeholders rather than documenting the design process.

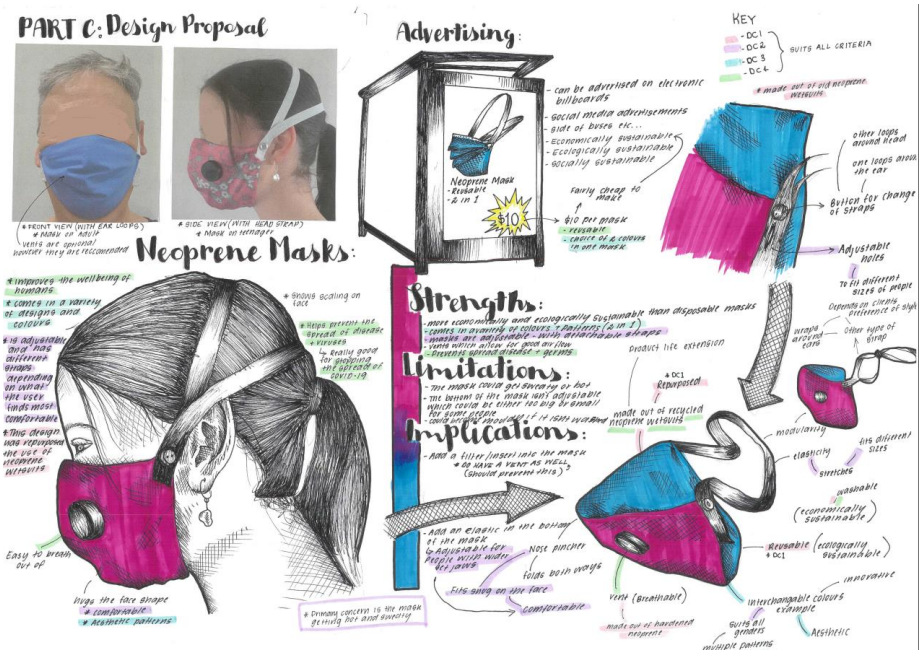
Representing and communicating (7–8 marks)

- sophisticated representation of ideas, a sustainable design concept and sustainability information using fluent sequences of schematic sketching and ideation sketching and/or
- low-fidelity prototyping to progress understanding in the explore and develop phases
- discerning decision-making about, and fluent use of,
- illustrations and/or low-fidelity prototypes to promote a design opportunity with sustainable attributes for relevant stakeholders
- written and/or spoken conventions, features and design-specific language to present a design brief for a specified audience

Excerpt 1



Excerpt 2



Practices to strengthen

To further ensure accuracy and consistency of the application of the ISMG for this IA, it is recommended that:

- sustainability information (or, in Design Alternative Sequence, commercial design information) presented in the explore phase is within the context of the task and not generic information or

definitions of subject matter. Recall of definitions does not demonstrate a student's ability to analyse

- responses demonstrate the appropriate unit subject matter. Responses that focus on Unit 3 subject matter in the explore phase are not able to be matched to the higher performance levels
- design briefs describe, the technical, social, cultural, aesthetic and economic features of the problem, making thoughtful choices as to the value and relevance of features to the problem
- evidence of objective 2, Represent ideas, is provided as the primary way in which students progress their designs rather than responding with written descriptions of what could be designed. Written communication is assessed in the design brief and criteria, using design-specific language.

Additional advice

- When preparing submissions for confirmation, teachers should indicate their judgments clearly on the ISMG by highlighting the characteristics demonstrated at the performance level for each criterion evidenced in the student responses, not simply the number to be awarded.
- To prepare students for the sketching and low-fidelity prototyping requirements of the assessment, sufficient opportunities to practice and develop sketching and low-fidelity prototyping skills should be provided as part of the teaching and learning of the unit content.

External assessment

External assessment (EA) is developed and marked by the QCAA. The external assessment for a subject is common to all schools and administered under the same conditions, at the same time, on the same day.

Examination — design challenge (25%)

Assessment design

The assessment instrument was designed using the specifications, conditions and assessment objectives described in the summative external assessment section of the syllabus. The examination consisted of one paper:

- Paper 1, Section 1 consisted of a single question (36 marks).

The examination assessed subject matter from Unit 4. The question was derived from the context of sustainable design.

The assessment required students to use the develop phase of the design process to respond to a provided design brief and stimulus.

The stimulus was a single A3 page of visual and written information. The stimulus included a short, written description of the problem, design criteria and visual and written information, which provided contextual information about the problem and provided links to Unit 4 subject matter.

The AS assessment instrument was designed using the specifications, conditions and assessment objectives described in the summative external assessment section of the AS. The AS examination consisted of one paper:

- Paper 1, Section 1 consisted of a single question (36 marks).

The AS examination assessed subject matter from AS unit 2. The question was derived from the context of commercial design.

The AS assessment required students to use the develop phase of the design process to respond to a provided design brief and stimulus.

The AS stimulus was a single A3 page of visual and written information. The stimulus included a short, written description of the problem, design criteria and visual and written information, which provided contextual information about the problem and provided links to Unit 2 subject matter.

Assessment decisions

Assessment decisions are made by markers by matching student responses to the external assessment marking guide (EAMG). The external assessment papers and the EAMG are published in the year after they are administered.

Effective practices

Overall, students responded well to:

- using strategies to think out ideas in response to the problem that showed different ways of solving the problem

- evaluating the strengths and limitations of ideas against at least one criterion. Across the range of responses, students demonstrated the ability to write a feasible critique of their ideas despite many of these responses showing superficially devised ideas in response to the problem
- proposing a simple, credible design concept in response to the redesign of the library space and in Design Alternative Sequence a design for the front of the Local Council Library
- demonstrating knowledge of the develop phase of the design process across the four pages of the response booklet

The following excerpts have been selected to illustrate effective student responses in one or more of the syllabus assessment objectives. The characteristics identified may not be the only time the characteristics have occurred throughout a response.

Samples of effective practices

Extended response

Criterion 1: Devising (attributes)

This question required students to redesign a library interior in response to a stimulus.

Effective student responses:

- enabled a broad range of uses of the building to suit the needs and wants of a range of identified stakeholders
- improved the aesthetic of the interior space to suit the stakeholders
- discouraged obsolescence to maintain the sustainability of the existing structure
- demonstrated unique, credible, and detailed attributes that responded to the problem.

This student response excerpt has been included:

- to demonstrate use of circular design methods as it provides evidence of repurposing existing library features (e.g. bookcases) to meet the needs and wants of adult community members who do not currently us the library
- to demonstrate improving the aesthetic of the interior space to suit the needs of the stakeholders as it provides evidence of introducing more natural light by adding skylights while simultaneously discouraging obsolescence as they do not affect the sustainability of the existing building structure
- to demonstrate enabling a broader range of uses of the building as it provides evidence of consideration of the needs and wants of the adult community members who do not currently use the library.

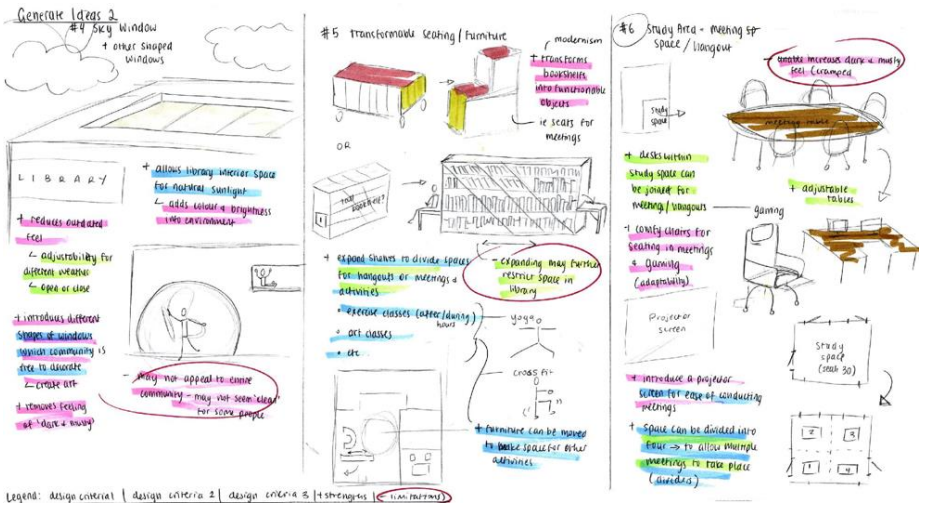
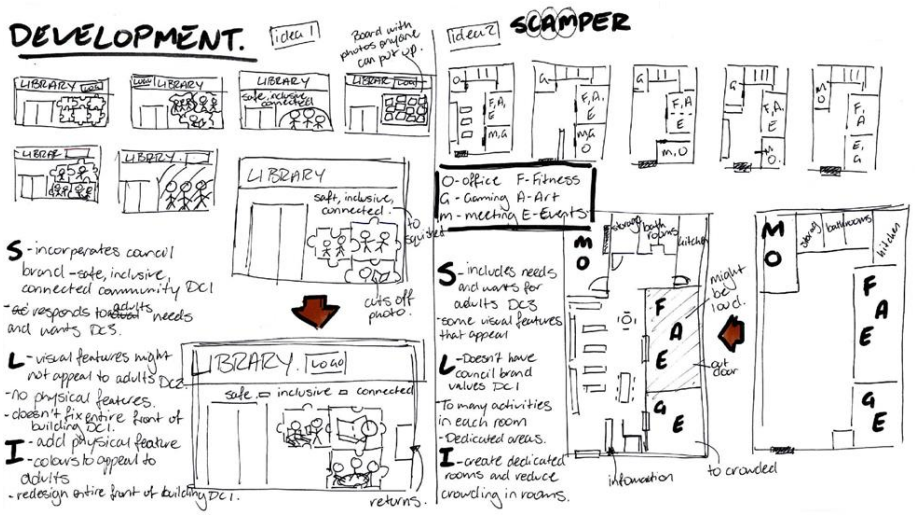
In Design Alternative Sequence, this question required students to design the front of the library in response to a stimulus.

Effective student responses:

- ensured the front of the building incorporates the council brand
- included visual features to appeal to the adult community members
- included physical features that respond to the needs and wants of the adult community members
- demonstrated unique, credible, and detailed attributes that responded to the problem.

This student response excerpt has been included:

- to demonstrate use of divergent thinking as it provides evidence of a range of detailed ideas showing different ways of solving the problem. Each idea is credible in response to at least one of the criteria.

Devising (attributes) (5 marks)	**Excerpt 1: Design**  **Excerpt 2: Design AS** 

Criterion 2: Evaluating and refining (refinement)

Effective student responses:

- demonstrated discerning refinement of ideas by making visual changes to sketches, supported by annotations
- did not evaluate the design concept but focused on evaluating ideas and refined ideas across the first three pages of their response.

This student response excerpt has been included:

- to demonstrate discerning refinement of ideas as it provides evidence of considered and relevant changes to sketches based on judgments about the strengths, limitations, and implications of ideas against the criteria.

Evaluating and refining (refinement) (5 marks)	**Excerpt 1** 

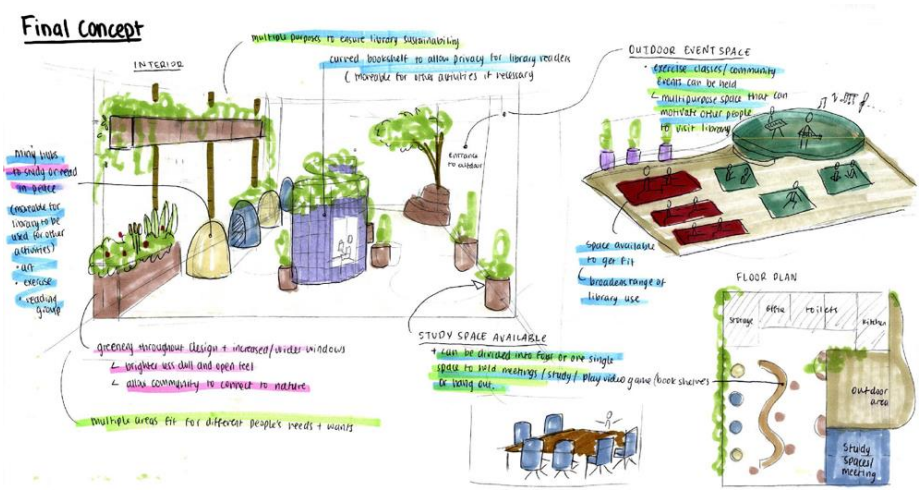
Criterion 3: Synthesising a design concept

Effective student responses:

- demonstrated a natural, harmonious, and logical combination of attributes of multiple ideas and relevant stimulus information
- satisfied all design criteria
- were evidenced by a sketch with related labels.

This student response excerpt has been included:

- to demonstrate a unique attribute as it provides evidence of repurposing existing library features (e.g. bookcases) to meet the needs and wants of adult community members to extend the use of the building by enabling multiple uses of the space
- to demonstrate meeting all design criteria as it provides evidence of improving the aesthetic of the interior space to suit the needs of the stakeholders by introducing greenery and more natural light by increasing the size of the existing windows while simultaneously discouraging obsolescence as they do not affect the sustainability of the existing building structure
- to demonstrate using sketching with related labels to show the combination of attributes of multiple ideas
- to demonstrate the design concept is evidenced by a sketch with related labels. An evaluation of the design concept is not required.

Synthesising a design concept (7 marks)	**Excerpt 1** 

Practices to strengthen

It is recommended that when preparing students for external assessment, teachers consider:

- advising students to use two pages of the response for divergent thinking and two pages for convergent thinking. This provides the opportunity to respond with appropriate depth. The planning page rather than page 1 of the response should be used to unpack the problem and make notes about how they propose to respond to the problem
- instructing students to devise ideas in response to the problem that show credible and detailed attributes in the representations of the ideas. It is crucial that students are designing a response and not simply describing thoughts about how they might respond to the problem. Responses that included written descriptions accompanied by a simplistic thumbnail sketch were less effective
- encouraging students to avoid evaluating the design concept and focus on providing a labelled representation that shows a coherent and logical combination of ideas and stimulus information and satisfies all design criteria
- enabling students to understand and apply Unit 4 subject matter (or AS unit 2 subject matter). A successful response required the ability to understand the relationship between the problem and circular design methods (Unit 4). For example, responses that included significant structural changes to the building were less effective as they demonstrated limited understanding of circular design methods
- developing strategies to assist students to understand design problems and the relationship between the problem statement and design criteria and the relevant visual and written contextual information and Unit 4 (or AS unit 2) subject matter
- instructing students to answer the question as stated in the Question and Response booklet and refer to the relevant stimulus material.