Design subject report

2022 cohort

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Introduction

Throughout 2022, schools and the QCAA worked together to further consolidate the new Queensland Certificate of Education (QCE) system. The familiar challenges of flood disruption and pandemic restrictions were managed, and the system continued to mature regardless.
We have now accumulated three years of assessment information, and our growing experience of the new system is helping us to deliver more authentic learning experiences for students. An independent evaluation will commence in 2023 so that we can better understand how well the system is achieving its goals and, as required, make strategic improvements. The subject reports are a good example of what is available for the evaluators to use in their research.

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

- how schools have applied syllabus objectives in the design and marking of internal assessments
- how syllabus objectives have been applied in the marking of 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, including those that demonstrate best practice.

Schools are encouraged to reflect on the effective practices identified for each assessment, consider the recommendations to strengthen assessment design and explore the authentic student work samples provided.

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 use it to 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.

Note: All data is correct as at 31 January 2023. 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: 242.

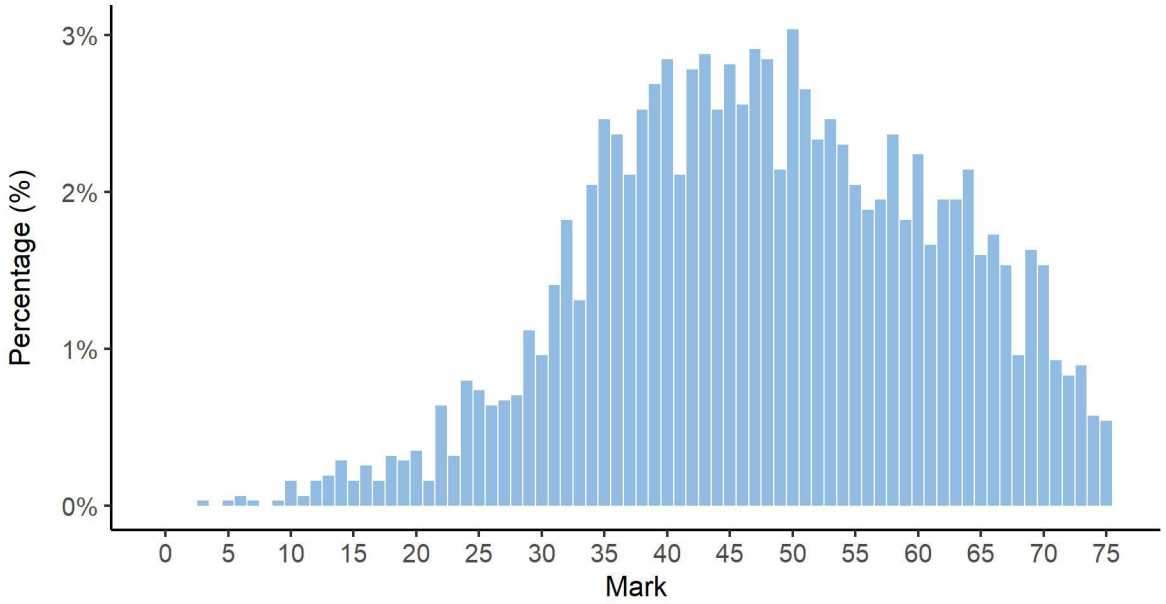
Completion of units	Unit 1	Unit 2	Units 3 and 4
Number of students completed	3948	3701	3086

Units 1 and 2 results

Number of students	Satisfactory	Unsatisfactory
Unit 1	3529	419
Unit 2	3384	317

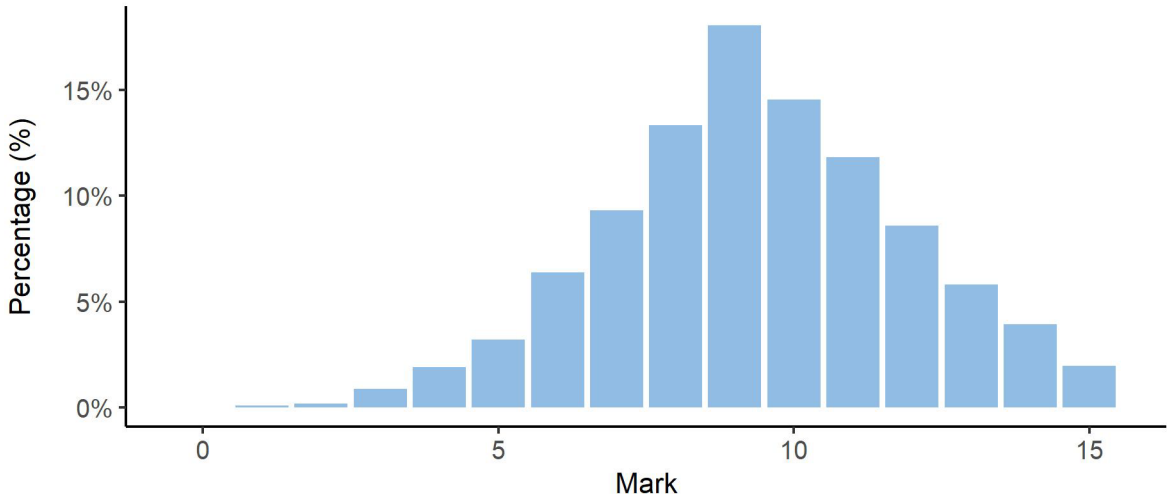
Units 3 and 4 internal assessment (IA) results

Total marks for IA

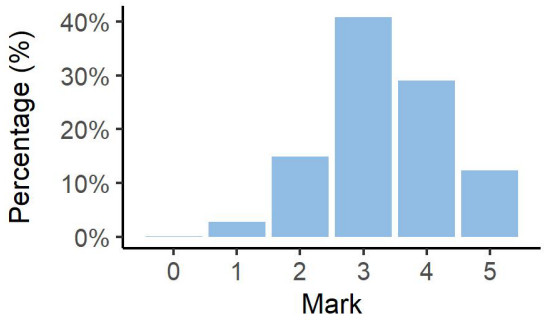


IA1 marks

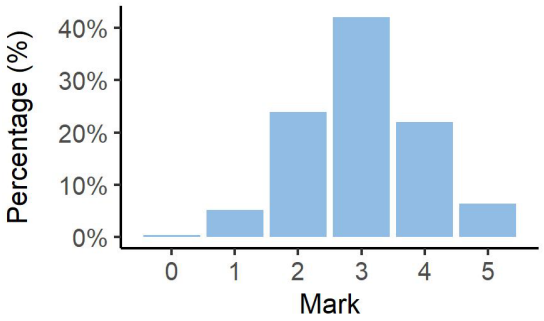
IA1 total



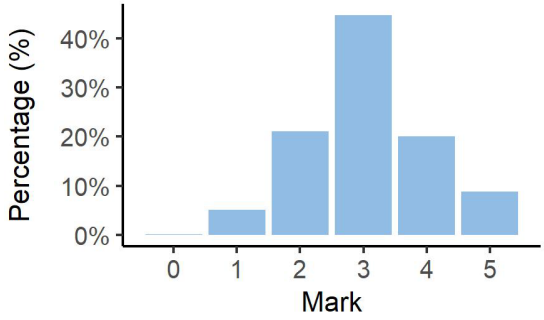
IA1 Criterion: Devising



IA1 Criterion: Synthesising and evaluating

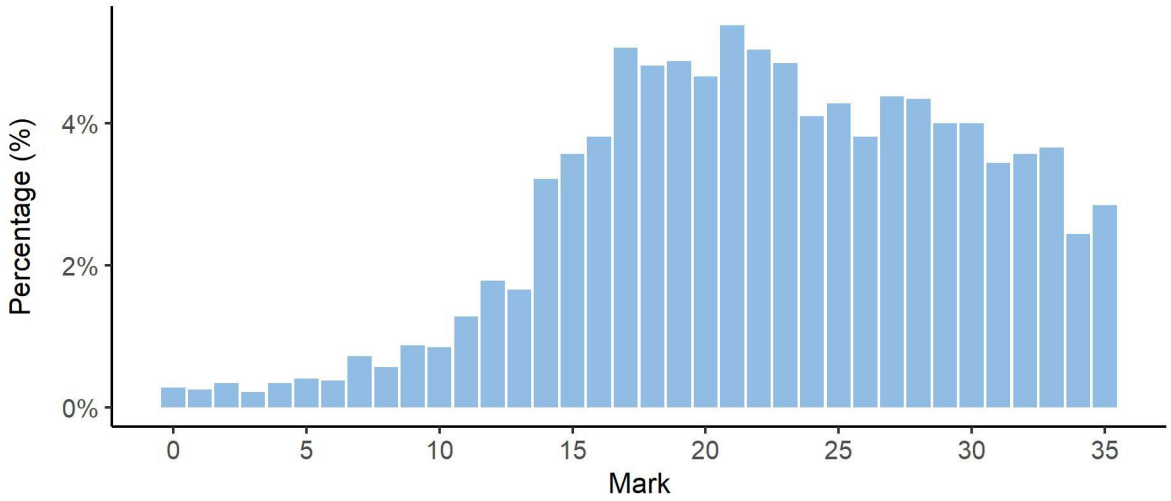


IA1 Criterion: Representing and communicating

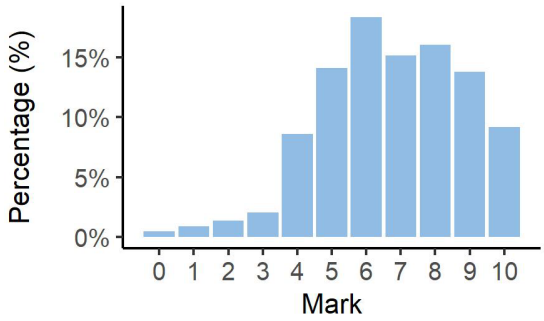


IA2 marks

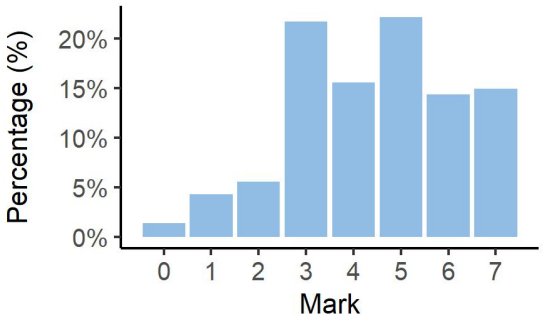
IA2 total



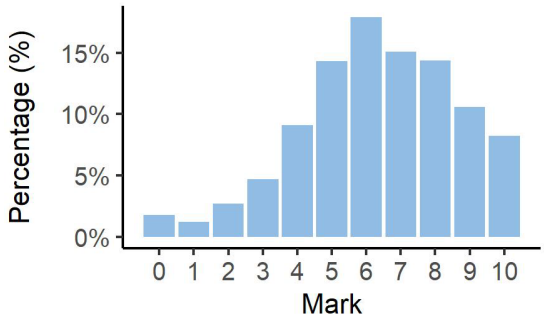
IA2 Criterion: Exploring



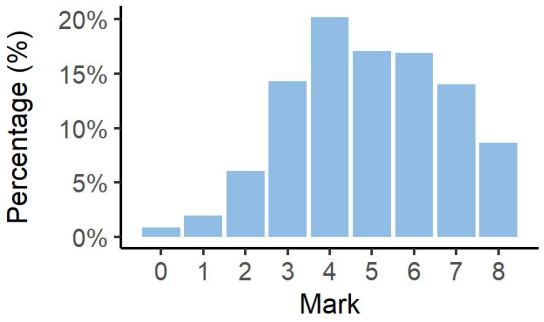
IA2 Criterion: Devising



IA2 Criterion: Synthesising and evaluating

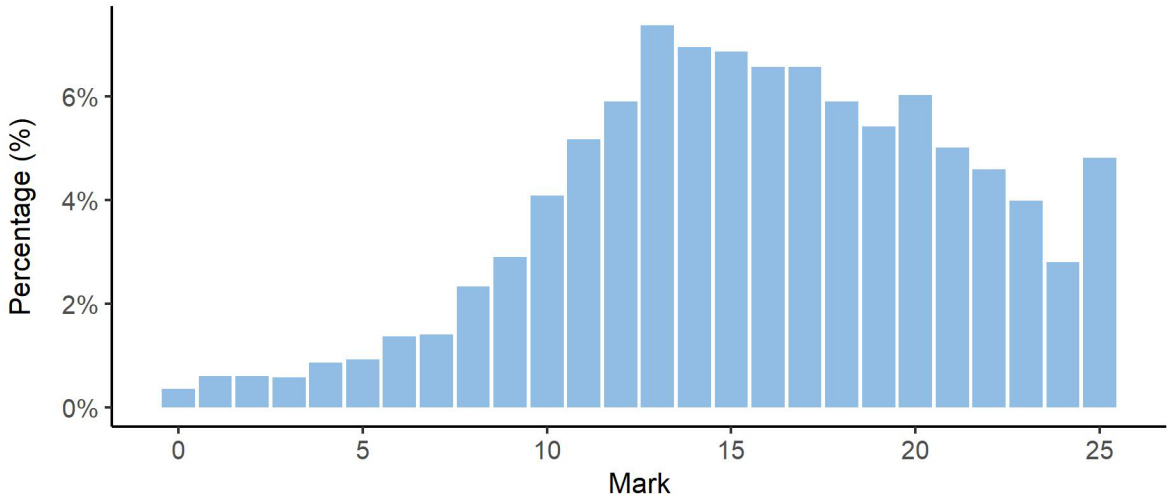


IA2 Criterion: Representing and communicating

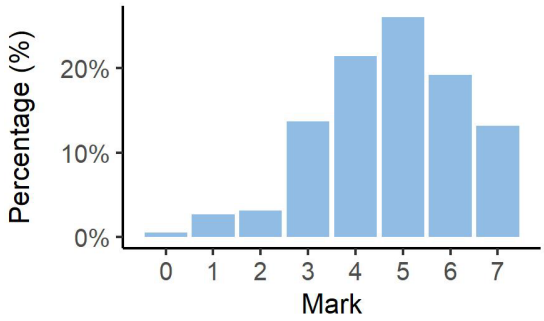


IA3 marks

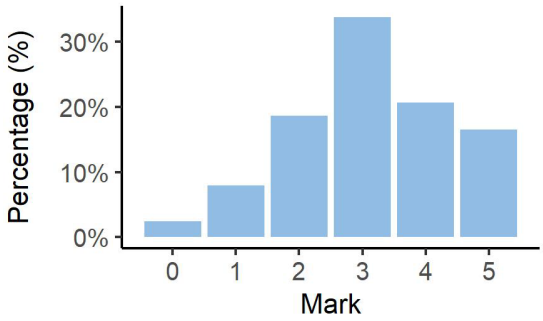
IA3 total



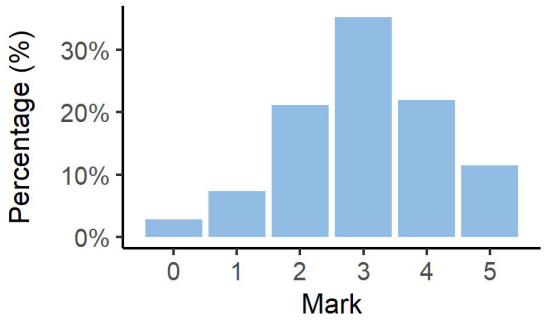
IA3 Criterion: Exploring



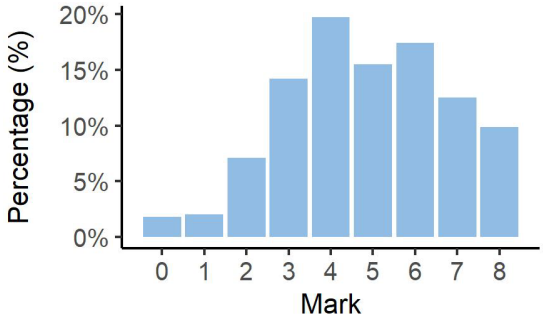
IA3 Criterion: Devising



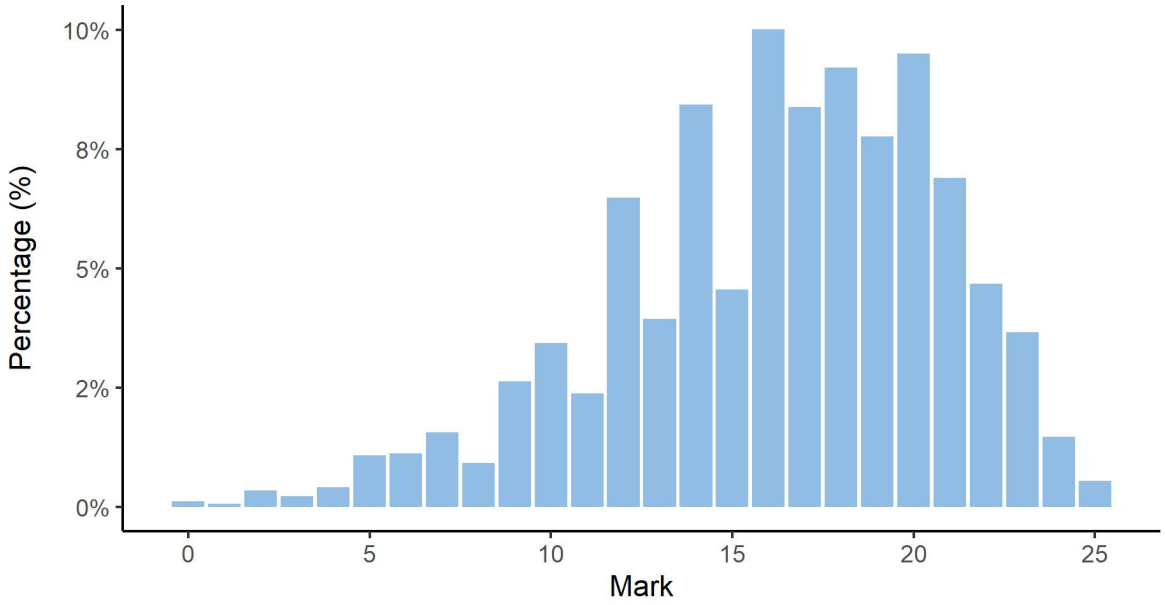
IA3 Criterion: Synthesising and evaluating



IA3 Criterion: Representing and communicating

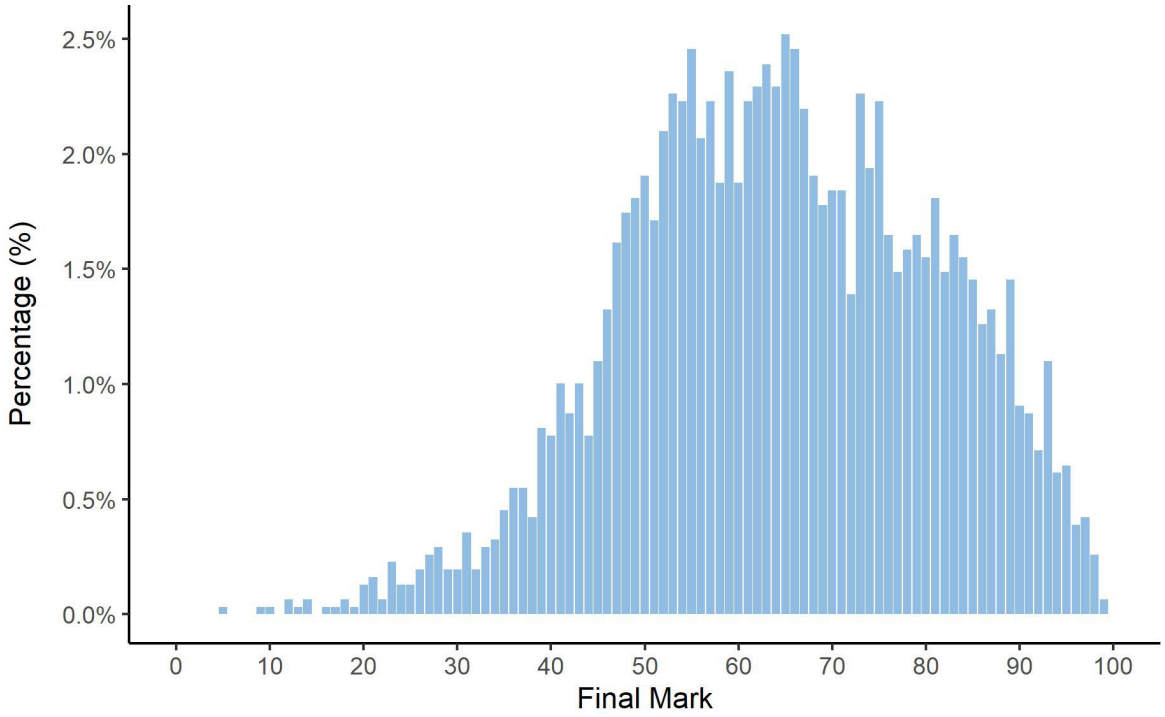


External assessment (EA) marks



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	82–64	63–44	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	490	1105	1182	300	9

Internal assessment

The following information and advice relate 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 *QCE and QCIA policy and procedures handbook v4.0*, Section 9.5.

Percentage of instruments endorsed in Application 1

Number of instruments submitted	IA1	IA2	IA3
Total number of instruments	242	242	241
Percentage endorsed in Application 1	21%	50%	36%

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 instrument-specific marking guide (ISMG), and are used to make decisions about the cohort's results.

Refer to *QCE and QCIA policy and procedures handbook v4.0*, Section 9.6.

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	237	1448	190	51.9%
2	236	1388	190	50%
3	235	1390	32	68.94%

Internal assessment 1 (IA1)

Examination — design challenge (15%)

The IA1 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	118
Authentication	0
Authenticity	15
Item construction	48
Scope and scale	109

*Each priority might contain up to four assessment practices.

Total number of submissions: 242.

Effective practices

Validity priorities were effectively demonstrated in assessment instruments that:

- provided seen stimulus information about an authentic stakeholder that was clearly aligned to an identifiable person, e.g. a grandparent
- included visual information in the unseen stimulus to support the design brief and criteria, e.g. a floor plan or a photograph which, if included in the seen stimulus, would compromise the unseen design brief
- allowed students to identify a stakeholder who was demographically different to a senior school student.

Practices to strengthen

It is recommended that assessment instruments:

- use task instructions that align to syllabus terminology of the develop phase of the design process, e.g. propose a design concept

- include a design brief that clearly describes what must be designed in response to the human-centred design (HCD) problem, e.g. use the develop phase to propose a design concept for a tool that can assist a grandparent to maintain their interest in gardening
- describe a design problem that enables students to respond using Unit 3 subject matter of designing with empathy
- have design criteria based on relevant features (aesthetic, cultural, economic, social, technical) of the HCD problem. Principles of good design are integrated into the criteria, rather than listed as separate additional criteria. The design criteria must be succinct, with one clear requirement per criterion
- include a number of design criteria appropriate to the scale of the task and time available to devise and evaluate ideas. For example, evidence indicates that tasks with three succinct design criteria are sufficient to allow students to demonstrate a high level response
- provide seen stimulus that shows
  - a stakeholder and information about their attitudes, expectations, motivations and experiences. It is important that the seen stimulus does not provide examples of possible solutions to the design problem
  - evidence of the explore phase of the design process. The teacher has completed the explore phase prior to writing the design brief and criteria. The seen stimulus provides a summary of this phase, which allows students to learn about the stakeholder prior to the examination. This enables students to then demonstrate designing with empathy through the develop phase of the design process under examination conditions.

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	2
Language	6
Layout	3
Transparency	3

*Each priority might contain up to four assessment practices.

Total number of submissions: 242.

Effective practices

Accessibility priorities were effectively demonstrated in assessment instruments that:

- used the elements and principles of visual communication to ensure the layout of the stimulus was clear and legible
- featured high-resolution images in the visual stimulus of stakeholders and their circumstances in a manner that was respectful to the demographic group being represented and accessible for students.

Practices to strengthen

There were no significant issues identified for improvement.

Additional advice

- The seen stimulus should include information derived from designing with empathy techniques such as observations, interviews and experiences. An empathy map may be included. The focus of the seen stimulus is to allow the student to know their stakeholder's attitudes, expectations, motivations and experiences in relation to their needs and wants before entering the examination.
- Teachers could improve the quality of examinations by asking a colleague to preview the seen stimulus to ensure that the design problem cannot be determined in advance. It is important that the unseen design brief and criteria are not compromised by the images and text on the stimulus. Students should not be able to guess what they will be designing for the stakeholder.
- Teachers could improve the quality of examinations by working the question to ensure that students can complete the task in the timeframe. They could also ask a professional colleague to complete the examination paper.
- A clean copy of the seen stimulus should be provided with the unseen design brief and criteria, and the examination must be completed individually in the supervised time. The seen stimulus cannot be brought into the examination, as it may contain work such as notes or sketches generated in the 24 hours prior to the supervised period.

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	67.09%	32.07%	0.42%	0.42%
2	Synthesising and evaluating	63.29%	35.86%	0.42%	0.42%
3	Representing and communicating	70.46%	28.27%	0%	1.27%

Effective practices

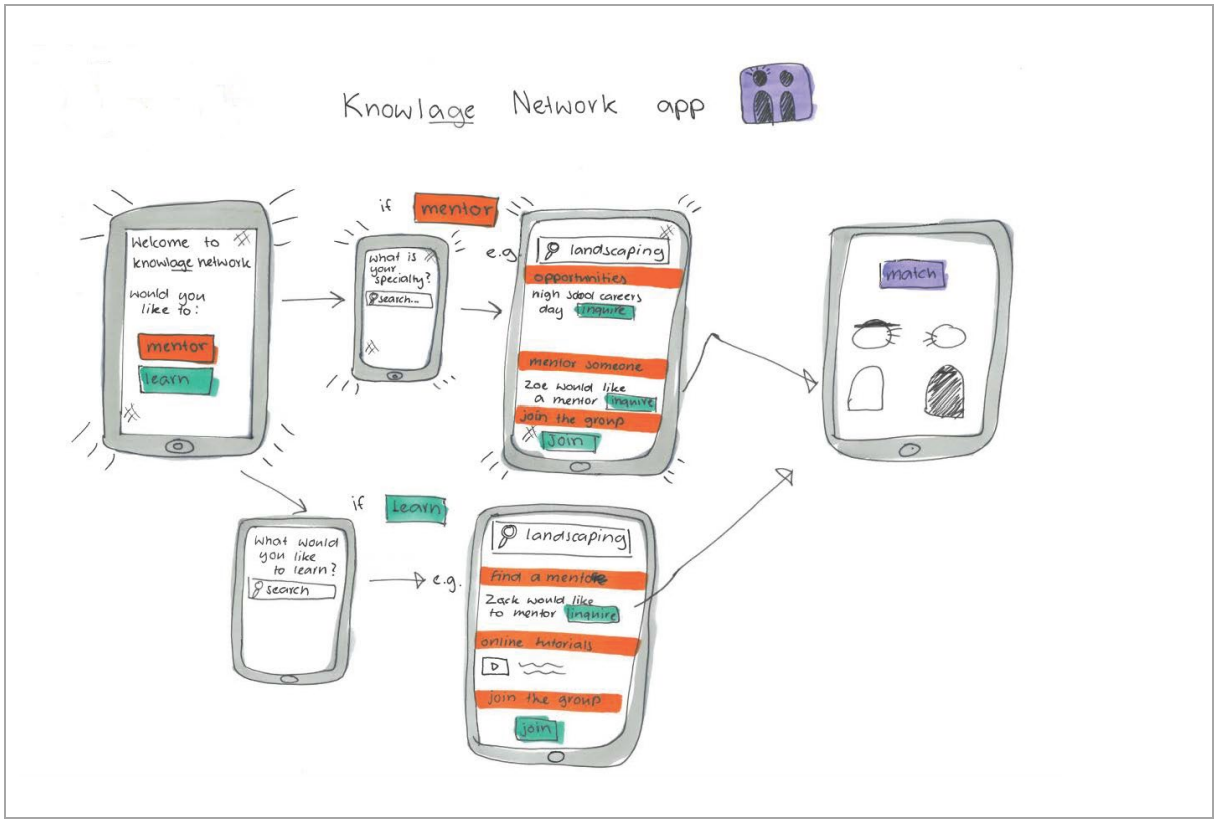
Accuracy and consistency of the application of the ISMG for this IA was most effective when:

- for the Representing and communicating criterion
  - responses at the middle performance level identified appropriate representations that were fit for purpose, such as the use of three-dimensional representations to represent three-dimensional objects. Progression of understanding was evident in visual changes and modifications to ideas across the pages of the response
  - responses at the lower performance level identified cursory representations that were formed with little attention to detail or responses relied on text-based descriptions of the ideas.

Samples of effective practices

The following excerpt has been included to demonstrate representation of a design concept using sketches with detail and complexity. There is an emphasis on visual thinking where schematic sketches use shapes, lines, arrows and colour, together with written notes, to provide detail about the components of the service. Images are presented in two dimensions as appropriate for the item being represented.

Note: The characteristic/s identified may not be the only time the characteristic/s has occurred throughout a response.



Practices to strengthen

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

- in the Devising criterion
  - responses at the upper performance level demonstrate perceptive ideas that show insight and understanding of the HCD problem. This is seen through the application of relevant

Unit 3 subject matter, consideration of the stakeholder's attitudes, expectations, motivations and experiences as presented in the seen stimulus, and through evidence that across the range of ideas, all the design criteria have been addressed. Responses should demonstrate fluency and flexibility of thought in the divergent phase, with as many ideas as possible represented across the first two pages of the response

- in the Synthesising and evaluating criterion
  - responses at the upper performance level demonstrate the student's decision about a design concept that best meets the design criteria. This is usually on page 4 or the last page of the response. This proposed design concept should show an integration of the best characteristics of multiple ideas together with information drawn from the stimulus about the stakeholders and relevant HCD subject matter. An example of relevant subject matter could be the intentional application of texture to improve physio-pleasure for a user
  - responses at the middle performance level demonstrate the student's decision about a design concept, which is typically an elaboration of a single idea selected as the best idea from the devised set of ideas or the basic integration of two ideas. Responses based on simplistic scaffolded approaches using SCAMPER strategies to combine, adapt, modify etc. ideas should be matched to the descriptors in this performance level. The seven SCAMPER strategies are identified in the syllabus as examples of divergent thinking strategies to support the devising of ideas, not the convergent phase. The proposed design concept should show an integration of some information drawn from the stimulus about the stakeholders and relevant HCD subject matter.

Additional advice

- Teachers should encourage students to use planning time to unpack the question and plan how to respond, noting the links between stimulus information and subject matter. This information should be on planning paper and not on page 1 of the response. The first page of the response should be the start of the devising process, showing representations of ideas with supporting notes.
- Teachers should encourage students to use the four pages available for the response. Students could use the first two pages for the divergent phase and the second two pages for the convergent phase. This would mean two pages of devised ideas, a page of refinement and a final page with the design concept. Evaluation should be evident across the first three pages as notes beside the representations.
- Synthesis is the process by which students propose a design concept. When looking for evidence of synthesis, it is useful to know what ideas have come before in the response, but the decision is based on the coherence and quality of the final proposed design concept on page 4.
- Evidence of refinement is often misrepresented — and labelled incorrectly in responses — as synthesis. Refinements are the changes and modifications that a student makes to design ideas as a direct result of judgments based on their evaluation. Evidence of refinements is most easily seen from pages 2 to 3, but it also occurs from pages 3 to 4 as ideas are evaluated and decisions are made to represent the final design concept, with improvements based on identified limitations.

Internal assessment 2 (IA2)

Project (35%)

The IA2 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 need or want.

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	79
Authentication	29
Authenticity	46
Item construction	13
Scope and scale	45

*Each priority might contain up to four assessment practices.

Total number of submissions: 241.

Effective practices

Validity priorities were effectively demonstrated in assessment instruments that:

- provided an authentic context related to HCD subject matter from Unit 3 and provided a clear overview that supported students working with a single stakeholder
- included the correct syllabus specifications for Parts A, B and C in the task instructions
- used teacher-facilitated direct stimulus, such as stakeholder information or a case study about a particular demographic group of people, in the context. These instruments therefore did not require a guiding question to be included
- included specific drafting points, e.g. Part B, Part A and Part C (in that order), to clearly show that each part would only have one close-to-final draft submitted for feedback.

Practices to strengthen

It is recommended that assessment instruments:

- assist students to commence the explore phase of the process. If using a guiding question, ensure the question does not describe a problem. The question must support the analysis of stakeholder needs and wants using designing with empathy techniques. An example of an appropriate question is ‘How can you engage with an older person to understand and respond to their needs or wants?’
- include task instructions that align with the syllabus specifications. The students must describe their own design problem and criteria based on their analysis of the stakeholder’s requirements in the explore phase
- direct students to work with a single stakeholder that is from a different demographic, cultural or social group to the student cohort to promote an authentic application of Unit 3 designing with empathy subject matter.

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	2
Layout	0
Transparency	3

*Each priority might contain up to four assessment practices.

Total number of submissions: 241.

Effective practices

Accessibility priorities were effectively demonstrated in assessment instruments that:

- appropriately described a social or cultural stakeholder group that was accessible to all students in the cohort
- used a simple layout
- included a succinctly expressed context statement about HCD and task instruction drawn from the syllabus clearly stating that students were to identify a stakeholder and apply the HCD process in response to their needs and wants.

Practices to strengthen

There were no significant issues identified for improvement.

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	63.14%	20.76%	2.97%	13.14%
2	Devising	70.76%	26.69%	2.12%	0.42%
3	Synthesising and evaluating	67.8%	18.64%	3.39%	10.17%
4	Representing and communicating	69.92%	26.69%	2.12%	1.27%

Effective practices

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

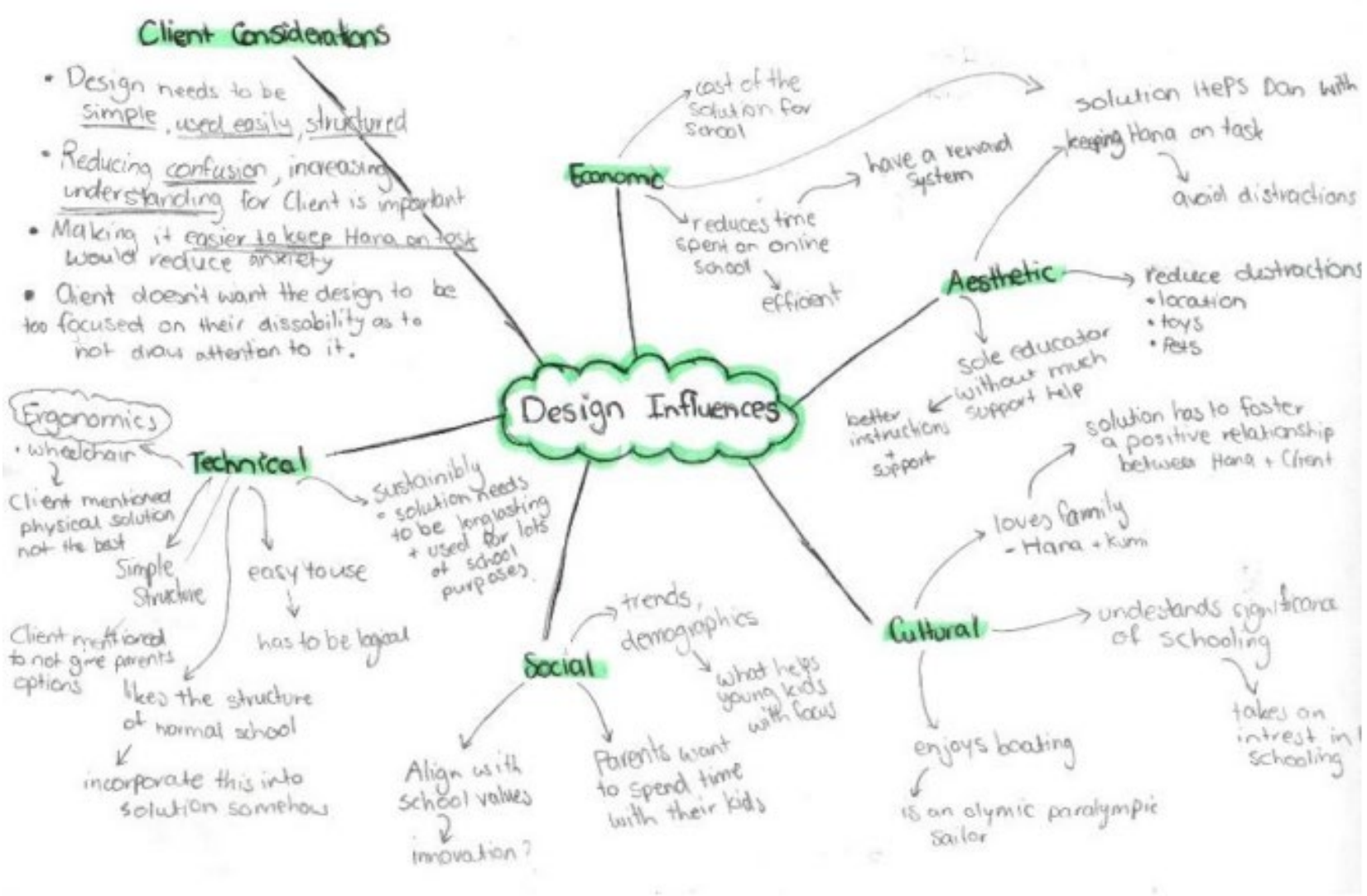
- in the Devising criterion
  - responses demonstrated fluency of thought in the divergent phase, with as many ideas as possible represented across at least three pages of the 12-page response. Across the range of ideas, the response showed flexibility of thought, with evidence of different ways of approaching the problem. Ideas were not variations of one central theme or thought
  - ideas were devised, not described. Devised ideas were thought out and invented, using ideation and schematic sketching and low-fidelity prototyping.
- in the Representing and communicating criterion
  - sequences of sketches showed changes and modifications to ideas across the pages of the response through to the final design concept sketch. This work demonstrated quick ideation sketches together with low-fidelity prototypes that progressed through to more detailed sketches as ideas were developed
  - ideation sketches demonstrated a high degree of skill, detail and complexity throughout the response. Images used line, colour, tone and texture to show form and important characteristics of ideas. Arrows were used to show movement, cut aways to show internal details and scale to show additional detail. Text was limited to labels on the visual representations
  - a series of low-fidelity prototypes was used through the develop phase to provide mock-ups of the ideas for stakeholder feedback
  - responses demonstrated communication using discerning decision-making and fluent use of a spoken pitch, including verbal and nonverbal features for a live audience

Samples of effective practices

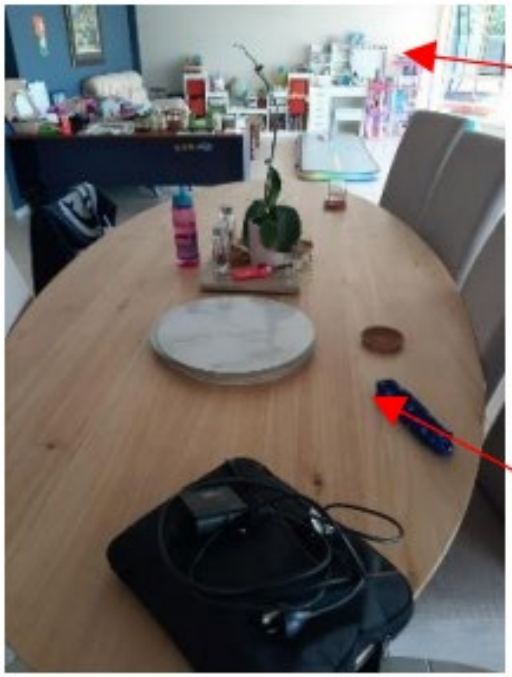
The following excerpts have been included to demonstrate insightful analysis informed by observation and deduction using primary data and an understanding of Unit 3 subject matter to build empathy with the stakeholder.

Note: The characteristic/s identified may not be the only time the characteristic/s has occurred throughout a response.

Excerpt 1


Client Considerations
• Design needs to be simple, used easily, structured
• Reducing confusion, increasing understanding for Client is important
• Making it easier to keep Hana on task would reduce anxiety
• Client doesn't want the design to be too focused on their dissability as to not draw attention to it.
Design Influences
Economic
cost of the solution for school
have a reward system
reduces time spent on online school
efficient
solution helps Dan with keeping Hana on task
avoid distractions
Aesthetic
reduce distractions
• location
• toys
• pets
sole educator without much support help
better instructions + support
Technical
Ergonomics
• wheelchair
Client mentioned physical solution not the best
Simple Structure
easy to use
has to be logical
Sustainibly
• solution needs to be longlasting + used for lots of school purposes
Client motivated to not give parents options
likes the structure of normal school
incorporate this into solution somehow
Social
trends, demographics
what helps young kids with focus
Align with school values
innovation?
Parents want to spend time with their kids
Cultural
loves family
- Hana + Kim
solution has to foster a positive relationship between Hana + Client
understands significance of schooling
takes an intrest in schooling
enjoys boating
is an olymic paralympic Sailor

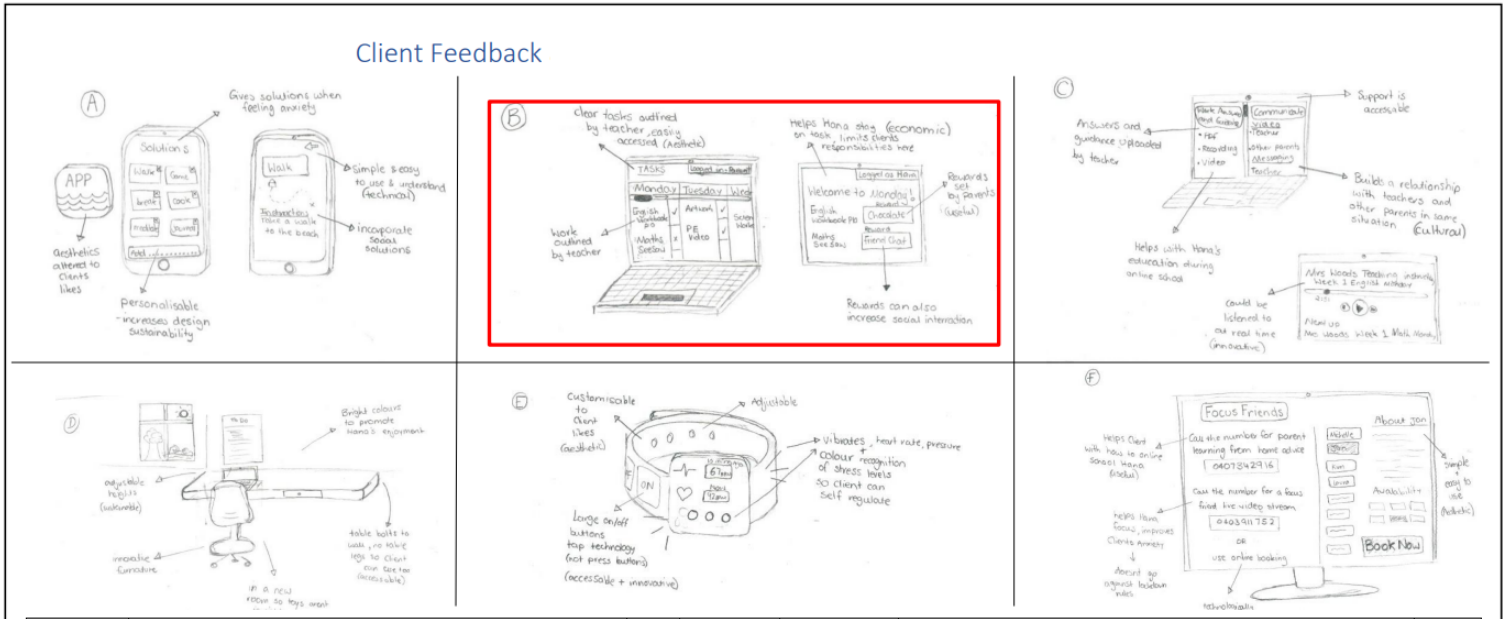
Excerpt 2



Shows the distractions in the online learning environment. (Aesthetics)

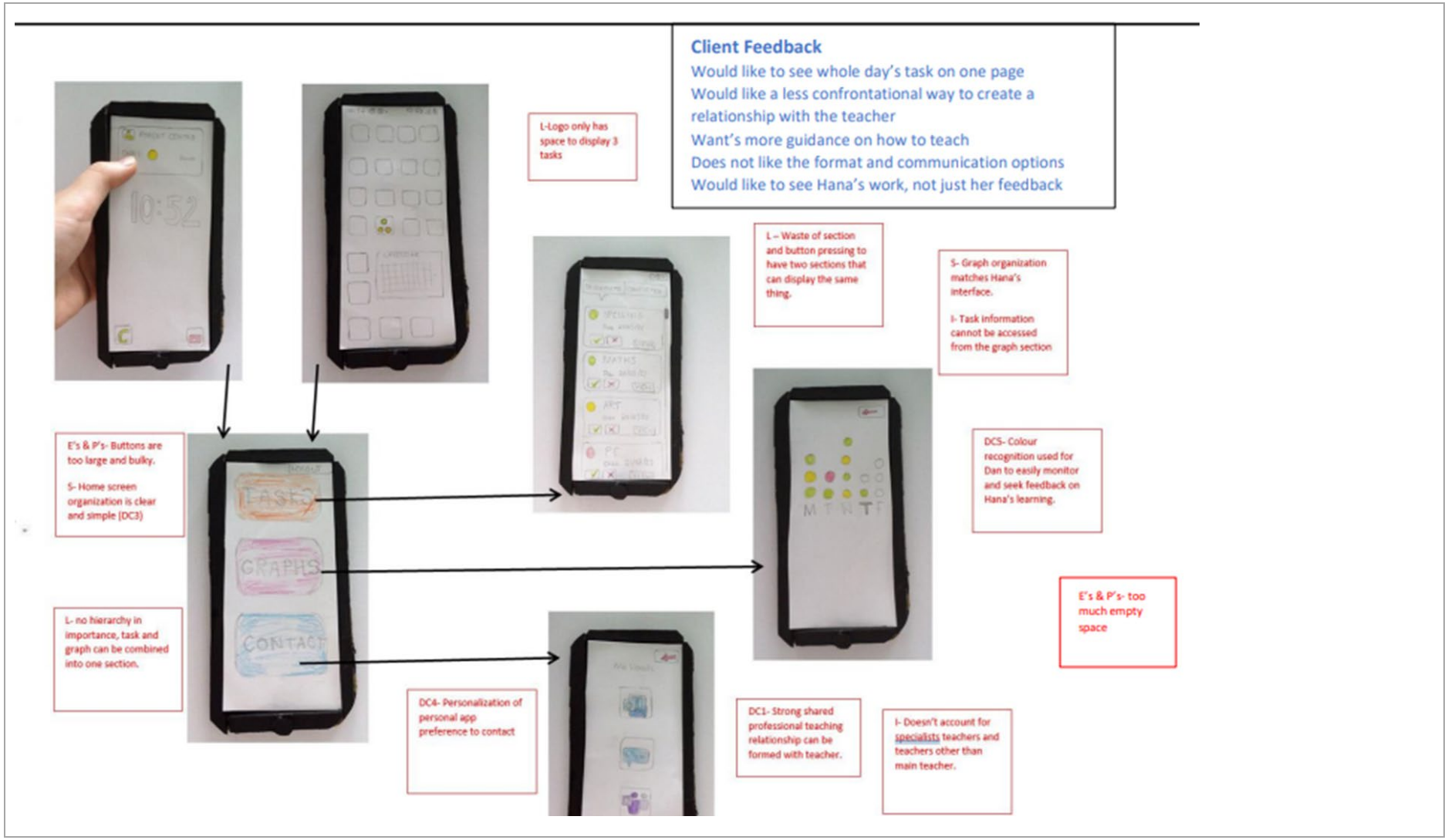
The senses may be overwhelmed when trying to get work done. (Physio)

The following excerpt has been included to demonstrate that conclusions have been confirmed with stakeholders to clarify understanding. Engagement with the stakeholder has occurred throughout the explore phase.



Opportunity	Client Feedback	Rating
A	Probably wouldn't use it Likes that its personalised Likes that it would be specifically for parents during online learning Would be another thing to do that takes up time.	1/5
B	Likes the clear set out of goals that are simply and well outlined Could add a cheat sheet for parents Likes that has separate sections for parent and child Likes that it can be used anywhere Could have a clear notification large green tick on parent section when Hana does the work so client doesn't have to hassle Hana where she's up to. Loves the reward section	5/5
C	Client isn't too fretful wouldn't ask teacher for help (too confrontational) Thinks video would be better than audio Realised that it would take too much of the teacher's time Doing the work online is hard for Hana due to outdated technology- stresses client out when Hana gets upset. Like chat function but worried about how it would be moderated Loves guidance provided by teacher.	3/5
D	Likes window/ something to look at far away for eyesight health Likes adaptability of height adjustability Too expensive for client Client wants the design to be free or very low cost as online school is temporary Thinks bright colours and lack of distractions will help Hana focus and alleviate pressure to get her to do the work.	2/5
E	Too similar to Apple Watch which he already has, not original or unique Could connect to an app to let client know of anxiety and offer solutions. (Combine with A) If integrated into an existing Apple product it would be easy to connect and be used.	1/5
F	Client is too stubborn to reach out for help from experts Wouldn't pay for the service Could change left to a list of kids in the class to see who is online and who has done the work to motivate Hana to take pressure off Dan.	1/5

The following excerpt has been included to demonstrate critical evaluation where the student has provided evidence of applying Unit 3 subject matter to collaborate with stakeholders to test and refine ideas, and to make decisions in consideration of stakeholder feedback and the design criteria. Engagement with the stakeholder has occurred throughout the develop phase.



Practices to strengthen

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

- in the Exploring criterion, responses demonstrate
  - an insightful analysis of the stakeholder's needs and wants that shows understanding of the complexity of the person's situation informed by observation and deduction. The analysis should be undertaken by applying Unit 3 subject matter to demonstrate authentic engagement with the stakeholder throughout the explore phase, e.g. an insightful analysis should be informed by primary data collected by more than one interview and supported by observations and experiences
  - a discerning description of aesthetic, cultural, economic, social and technical features of the problem, based on features identified in the analysis of the stakeholder's needs and wants. This description should be evident in in Part A, where possible problems are being identified and communicated to the stakeholder for consideration, and in Part B, where the selected design problem is being formally communicated in the design brief
- in the Devising criterion, responses demonstrate
  - the use of divergent thinking strategies, evidenced by the characteristics of the set of devised ideas. Divergent thinking results in the creation of choices through the generation of many possible ideas of various kinds or forms. The syllabus provides examples of strategies that can be used to foster divergent thinking, such as devising as many ideas as possible without critique, combining ideas with another design, substituting a new component, and collaborating to edit, amend and add to ideas. However, there is no definitive list of strategies in the syllabus that must be identified in a response to award the highest performance level in the Devising criterion
- in the Synthesising and evaluating criterion, responses demonstrate application of Unit 3 subject matter by
  - showing collaboration with stakeholders throughout the develop phase of the process, testing and refining low-fidelity prototypes and ideation sketches, and seeking feedback to judge the suitability of ideas
  - making judgments in consideration of stakeholder feedback on the strengths, limitations and implications of ideas. This may require revision of the initial design criteria during the develop phase in consultation with the stakeholder.

Additional advice

- A successful response to this assessment instrument requires interaction with stakeholders throughout the process. Observations, interviews and experiences are used to avoid making assumptions about stakeholders' needs and wants, and the suitability of ideas. For this reason, it is crucial that students identify stakeholders that are accessible and willing to be involved in the project from start to final presentation, as well as being demographically different to themselves, so that the decisions are based on data rather than their own personal preferences or knowledge.
- Responses must demonstrate use of low-fidelity prototyping to progress understanding of ideas. The purpose of low-fidelity prototyping is to quickly and simply move ideas from drawings to reality to clarify understanding and seek feedback from a stakeholder to inform further development. For this reason, an object needs to be produced physically rather than represented as a virtual three-dimensional (3D) object in computer-aided drafting (CAD) software. Where it is not valid for designs to be physically produced, there is the opportunity to

use digital prototyping techniques that generate interactive or sequential experiences using ICT software. Examples include prototyping the functionality of an application, simulating a service or generating a walk-through animation of an environment.

- Teachers should 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, e.g. where a student has not provided a spoken evaluation of the design concept in Part C, annotate this gap in the response on the ISMG beside the Evaluation descriptor and also beside the Communication descriptor.
- Responses must follow the IA2 specifications for Part C. This is a 2–3 minute spoken pitch for stakeholders that evaluates how well the design concept satisfies the design criteria. It is not necessary for the process of exploration and development to be explained in this presentation.

Internal assessment 3 (IA3)

Project (25%)

The IA3 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 need or want. 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	79
Authentication	29
Authenticity	46
Item construction	13
Scope and scale	45

*Each priority might contain up to four assessment practices.

Total number of submissions: 241.

Effective practices

Validity priorities were effectively demonstrated in assessment instruments that:

- featured contexts based on the Unit 4 syllabus unit description
  - incorporated reference in the context to the importance of balancing economic, social and ecological impacts in sustainable design
  - included a task statement based on the instruction provided in the syllabus instrument specifications, e.g. 'You are required to identify an opportunity and redesign a product, service or environment to improve its sustainability'
  - included the correct syllabus specifications for Parts A, B and C in the task instructions

- included specific drafting points (e.g. Part B — design brief and criteria, Part A — evidence of the explore and develop phases and Part C — design proposal, in that order) to clarify that each part would only have one close-to-final draft submitted for feedback.

Practices to strengthen

It is recommended that assessment instruments:

- ensure the context allows students to identify their own opportunity. Reference to specific data, situations or information statements, if given, must be clearly identified as an example
- ensure the task allows all students in the cohort to identify problems related to a different opportunity, e.g. reducing e-waste is an opportunity that one student might choose to explore. The task must not stipulate that all students are to explore the same opportunity of reducing e-waste.

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	2
Layout	0
Transparency	3

*Each priority might contain up to four assessment practices.

Total number of submissions: 241.

Effective practices

Accessibility priorities were effectively demonstrated in assessment instruments that:

- used Figure 4: The design process in Design (from Syllabus section 1.2.4) in scaffolding.

Practices to strengthen

There were no significant issues identified for improvement.

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	81.7%	17.87%	0.43%	0%
2	Devising	80.85%	18.72%	0.43%	0%
3	Synthesising and evaluating	81.28%	17.87%	0.43%	0.43%
4	Representing and communicating	79.15%	20.43%	0%	0.43%

Effective practices

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

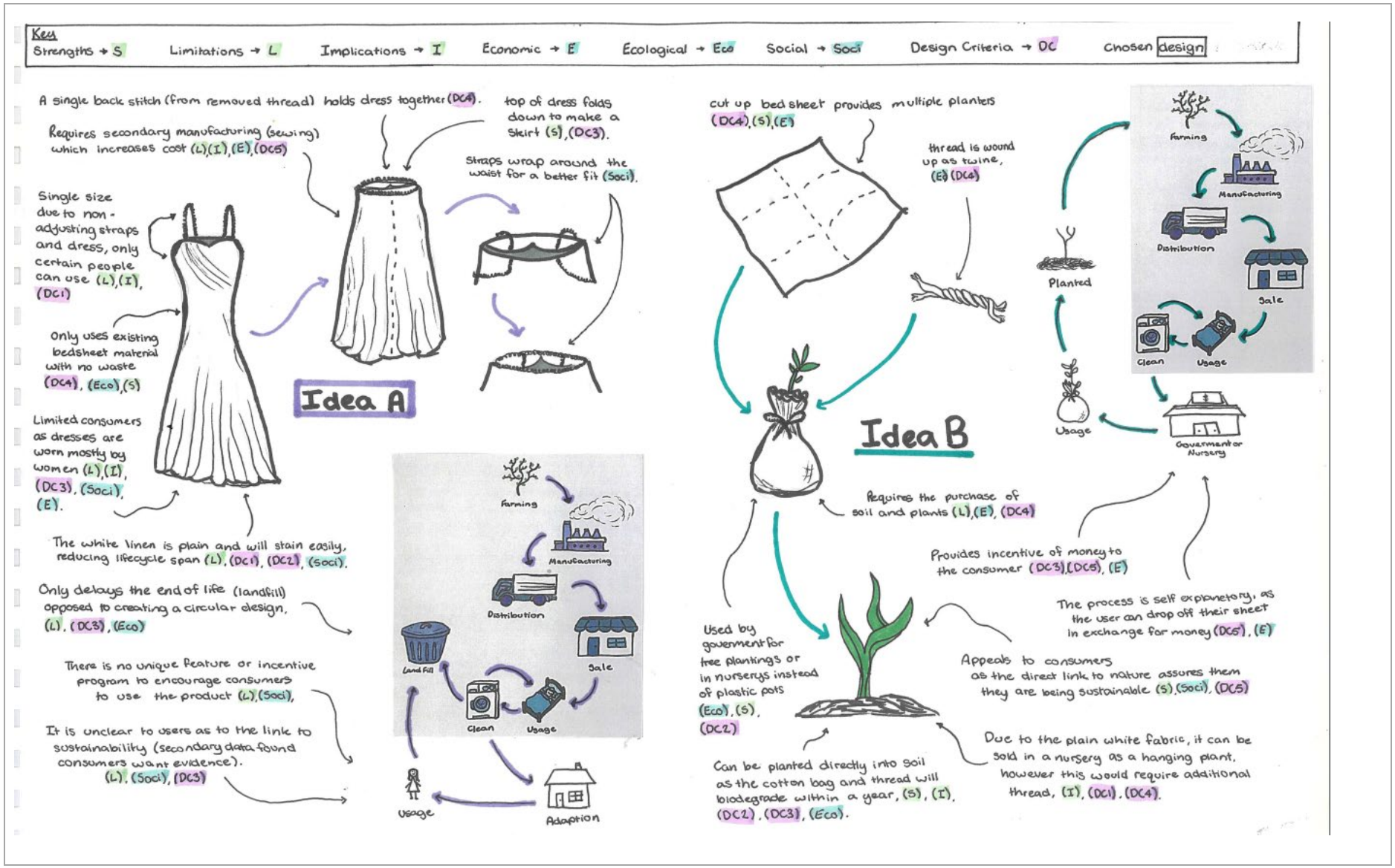
- in the Exploring criterion
  - responses demonstrated an insightful analysis of redesign opportunities that were based on secondary data about existing designed solutions. The analysis considered the existing life cycle and the influence of economic, social and ecological sustainability. The described design problems were based on the aesthetic, social, cultural, economic and technical features identified in the analysis
- in the Synthesising and evaluating criterion
  - a simple design concept at the middle performance level demonstrated the selection of a refined idea from the set of ideas devised in the divergent phase of the process and included ecological sustainability information.

Samples of effective practices

The following excerpt has been included to demonstrate:

- perceptively devised ideas that show insight and understanding of the impacts of economic, social and ecological sustainability. Ideas respond to the design criteria and are elaborated to show detail and credibility. Transformation and modification of items from common use, such as the single back stitch that is removable, and alternative options for potting plants, demonstrate unique attributes of the ideas.

Note: The characteristic/s identified may not be the only time the characteristic/s has occurred throughout a response.


Key
Strengths → S
Limitations → L
Implications → I
Economic → E
Ecological → Eco
Social → Soci
Design Criteria → DC
Chosen design
A single back stitch (from removed thread) holds dress together (DC4).
top of dress folds down to make a skirt (S), (DC3).
Requires secondary manufacturing (sewing) which increases cost (L), (I), (E), (DC5)
Straps wrap around the waist for a better fit (Soci).
Single size due to non-adjusting straps and dress, only certain people can use (L), (I), (DC1)
Only uses existing bedsheet material with no waste (DC4), (Eco), (S)
Idea A
Limited consumers as dresses are worn mostly by women (L), (I), (DC3), (Soci), (E).
The white linen is plain and will stain easily, reducing lifecycle span (L), (DC1), (DC2), (Soci).
Only delays the end of life (landfill) opposed to creating a circular design, (L), (DC3), (Eco)
There is no unique feature or incentive program to encourage consumers to use the product (L), (Soci),
It is unclear to users as to the link to sustainability (secondary data found consumers want evidence). (L), (Soci), (DC3)
Farming
Manufacturing
Distribution
Sale
Land Fill
Clean
Usage
Usage
Adoption
cut up bed sheet provides multiple planters (DC4), (S), (E)
thread is wound up as twine, (E) (DC4)
Idea B
Requires the purchase of soil and plants (L), (E), (DC4)
Used by government for tree plantings or in nurserys instead of plastic pots (Eco), (S), (DC2)
Can be planted directly into soil as the cotton bag and thread will biodegrade within a year, (S), (I), (DC2), (DC3), (Eco).
Provides incentive of money to the consumer (DC3), (DC5), (E)
The process is self explanetory, as the user can drop off their sheet in exchange for money (DC5), (E)
Appeals to consumers as the direct link to nature assures them they are being sustainable (S), (Soci), (DC5)
Due to the plain white fabric, it can be sold in a nursery as a hanging plant, however this would require additional thread, (I), (DC1), (DC4).
Farming
Manufacturing
Distribution
Sale
Clean
Usage
Planted
Usage
Gouvernment or Nursery

Practices to strengthen

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

- in the Devising criterion
  - schematic sketches, ideation sketches and low-fidelity prototypes are used to generate multiple redesign ideas
  - detail is provided to demonstrate insight and understanding of the problem, design criteria and circular design methods
  - ideas demonstrate flexibility of thinking through different ways of approaching the problem and include aspects that are unique in that they show something that is a transformation or modification of an existing item
- In the Representing and communicating criterion
  - responses demonstrate discerning decision-making about the use of visual communication to promote the design opportunity to stakeholders. The specifications for this instrument state the requirement for a visual presentation of the design concept, with an evaluation of how well the concept satisfies the design criteria. This is not a spoken pitch. The emphasis in the ISMG is on how effectively the design can be promoted to stakeholders using illustrations on a single A3 page.

Additional advice

- The design approach in this assessment instrument requires students to identify a design opportunity without working from identified needs and wants of stakeholders. The response should seek to encourage stakeholders to accept the designed solution. Therefore, stakeholder interviews are not required; however, user feedback should be sought when testing ideas.
- Responses must follow the IA3 specifications for Part C. This is a single A3 visual presentation for stakeholders. The illustrations should be supported with notes that evaluate how well the design concept meets the design criteria.
- 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 10 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.

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 a single question (34 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 AS unit 4 specifications, conditions and assessment objectives described in the summative external assessment section of the syllabus. The examination consisted of the same single question as Design (34 marks).

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:

- devise a range of ideas that showed different ways to solve the problem. This demonstrated the characteristics of fluency and flexibility associated with divergent thinking
- use circular design methods that demonstrated application of Unit 4 subject matter across the range of devised ideas
- represent ideas using two- and three-dimensional sketches that were fit for purpose and suited the context of the design problem. Elements and principles of visual communication such as line, tone, colour and scale were used to elaborate key characteristics
- use visual thinking to modify and change ideas across the pages of the response
- apply the develop phase of the design process to propose a credible design concept in response to the problem.

Samples of effective practices

Extended response

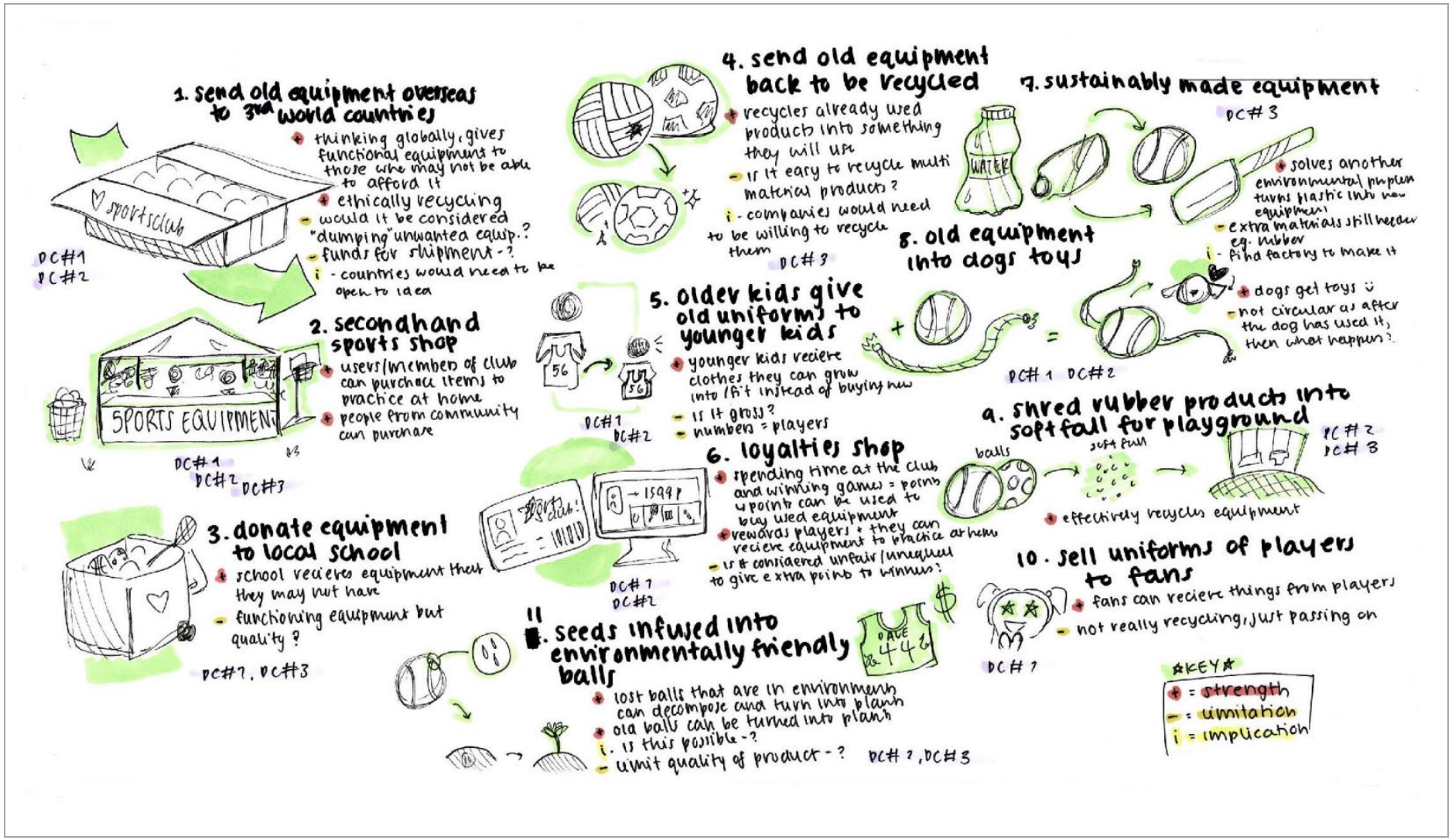
The following excerpt is Question 1. It required students to use the stimulus and circular design methods to reduce the waste of equipment and improve the sustainability of a sporting club.

Effective student responses:

- demonstrated a range of divergent ideas in response to the problem
- demonstrated the evaluation of ideas in relation to relevant design criteria by noting strengths and limitations
- proposed a credible design concept that reduced the waste of equipment and improved the sustainability of the sporting club.

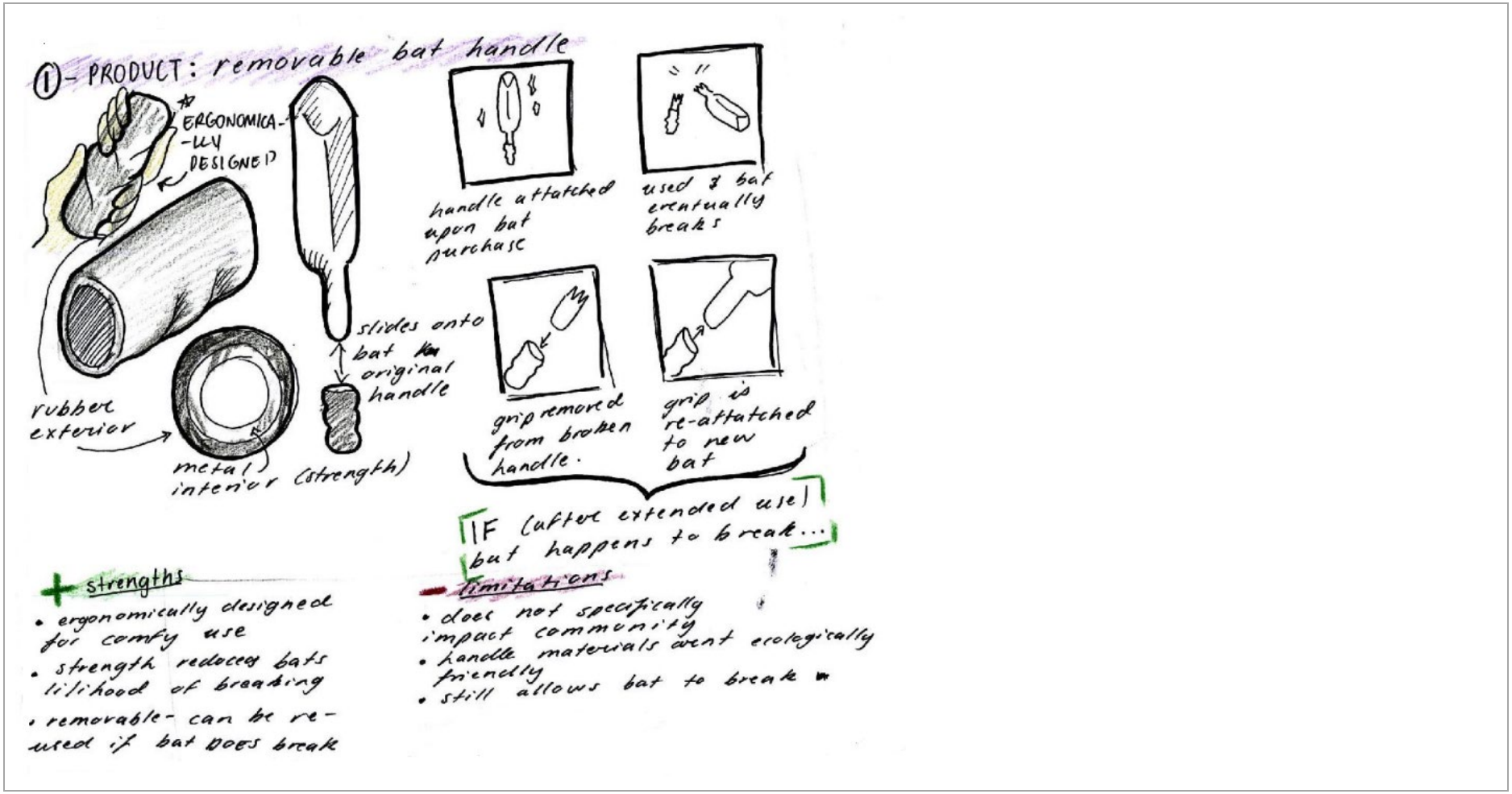
This excerpt has been included:

- to demonstrate divergence in the Devising assessment objective, as it provides evidence of a wide range of sketched ideas with supporting notes that respond to the problem. The excerpt is the first page of the response. Across the range of ideas, the stimulus information has been applied and all the design criteria have been considered. The student's engagement with the breadth of the problem has demonstrated flexibility of thinking, as they have proposed different ways to solve the problem. The outcome is a range of different choices; ideas are not variations of the same central thought. The evidence of a range of ideas demonstrates that divergent thinking strategies have been applied.


1. send old equipment overseas to 3rd world countries
+ thinking globally, gives functional equipment to those who may not be able to afford it
+ ethically recycling
- would it be considered "dumping" unwanted equip.?
- funds for shipment - ?
i - countries would need to be open to idea
DC#1
DC#2
2. secondhand sports shop
+ users/members of club can purchase items to practice at home
+ people from community can purchase
SPORTS EQUIPMENT
DC#1
DC#2
DC#3
3. donate equipment to local school
+ school recieves equipment that they may not have
- functioning equipment but quality ?
DC#1, DC#3
4. send old equipment back to be recycled
+ recycles already used products into something they will use
- is it easy to recycle multi material products ?
i - companies would need to be willing to recycle them
DC#3
5. older kids give old uniforms to younger kids
+ younger kids recieve clothes they can grow into / fit instead of buying new
- is it gross?
- numbers = players
DC#1
DC#2
6. loyalties shop
+ spending time at the club and winning games = points
+ points can be used to buy used equipment
+ rewards players + they can recieve equipment to practice at home
- is it considered unfair / unequal to give extra points to winners?
DC#1
DC#2
7. sustainably made equipment
DC#3
WATER
+ solves another environmental problem turns plastic into new equipment
- extra materials still needed eg. rubber
i - find factory to make it
8. old equipment into dogs toys
+ dogs get toys
- not circular as after the dog has used it, then what happen?
DC#1
DC#2
9. shred rubber products into soft fall for playground
balls
soft fall
+ effectively recycles equipment
DC#2
DC#3
10. sell uniforms of players to fans
+ fans can recieve things from players
- not really recycling, just passing on
DC#1
11. seeds infused into environmentally friendly balls
+ lost balls that are in environment can decompose and turn into plants
+ old balls can be turned into plants
i. is this possible - ?
- limit quality of product - ?
DC#1, DC#3
KEY
+ = strength
- = limitation
i = implication

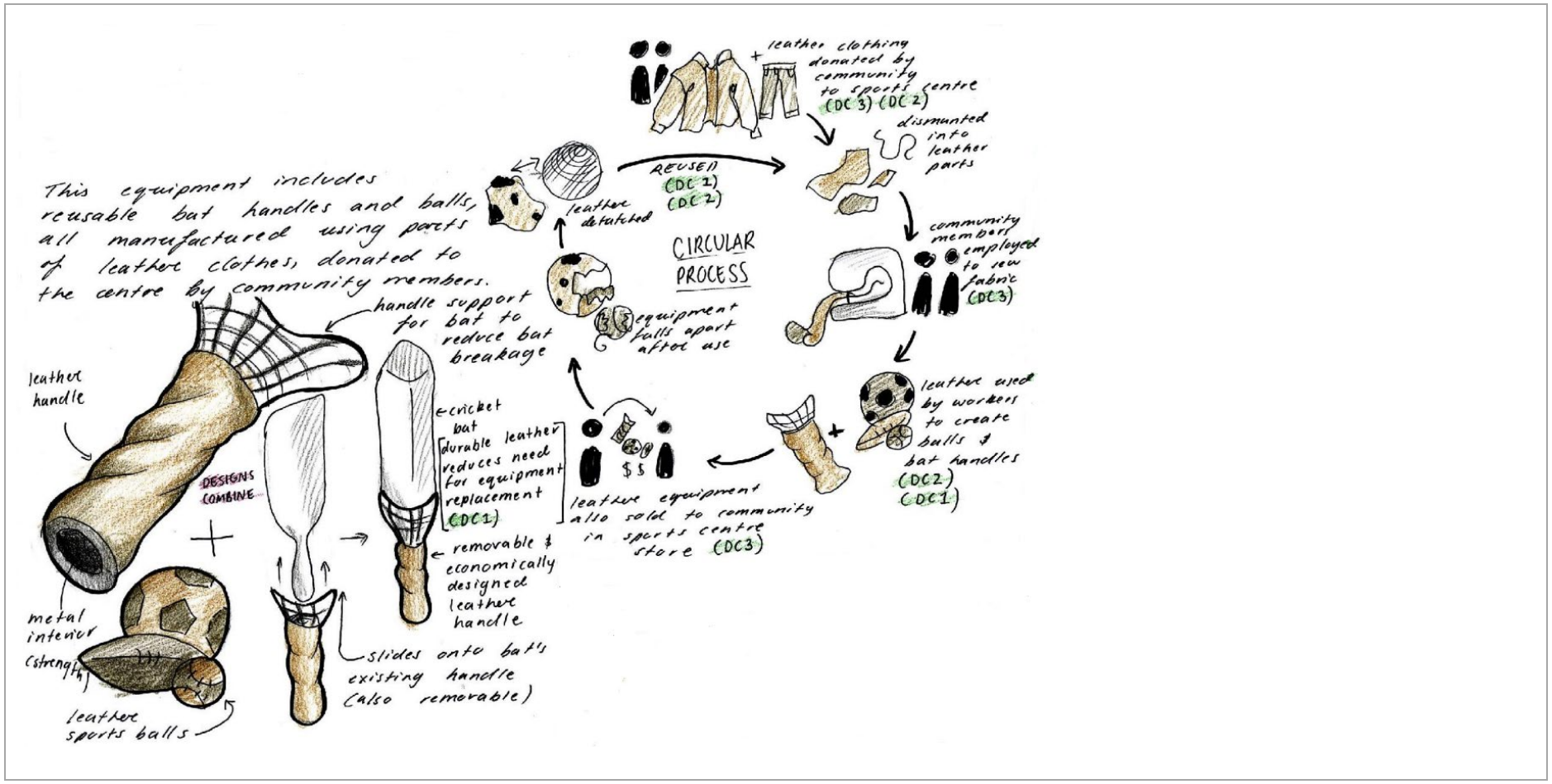
This excerpt has been included:

- to demonstrate the Evaluating and refining assessment objective, as it provides evidence of evaluating to determine the significance of particular attributes in relation to relevant design criteria by noting strengths and limitations, e.g. identifying that the original idea does not impact the community and the handle materials could be improved. An identified strength is that the removable handle could reduce the likelihood of the bat breaking.



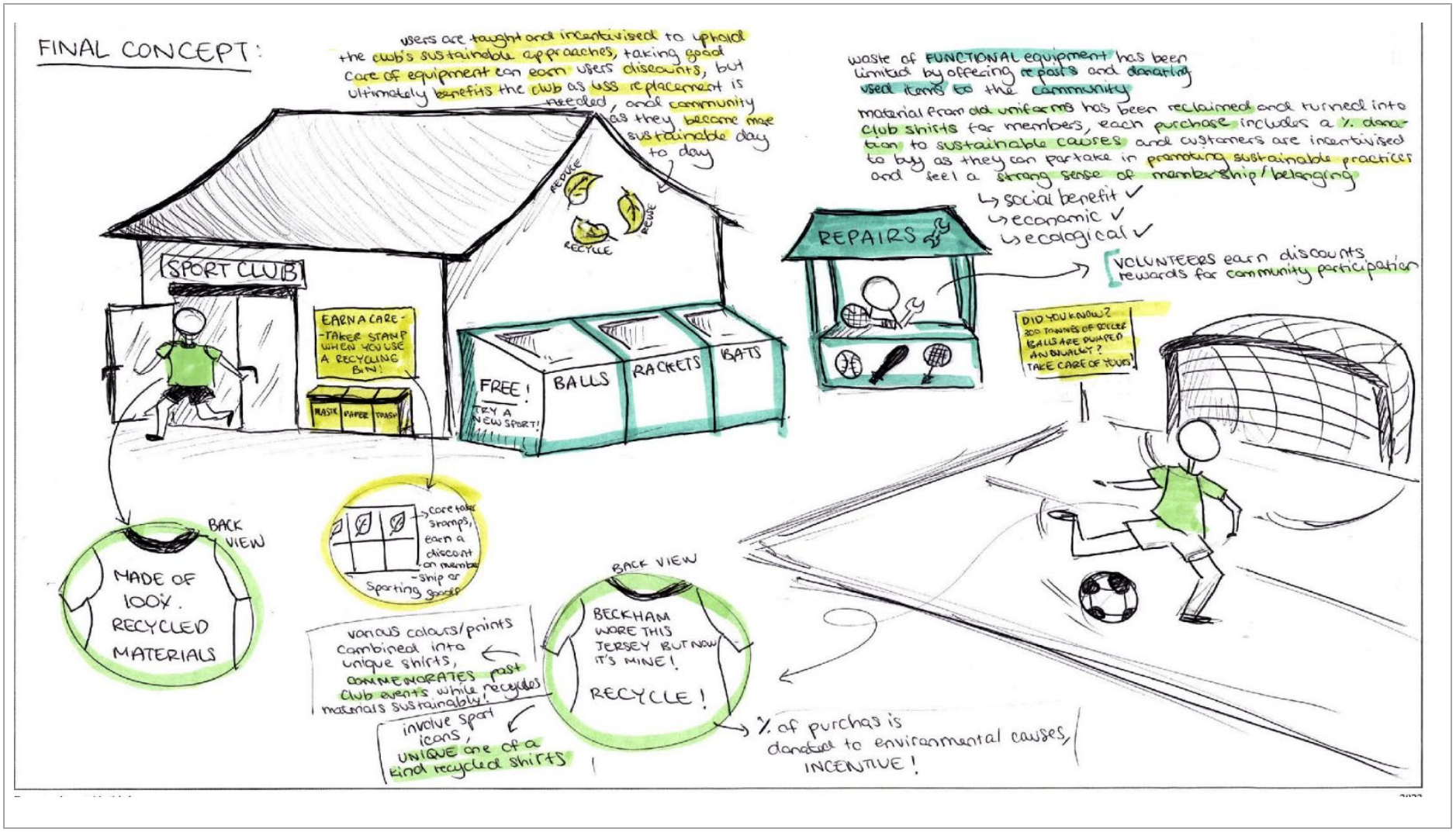
This excerpt has been included:

- to demonstrate the Evaluating and refining assessment objective, as it provides evidence of refining through visual changes to the idea that are based on judgments related to the criteria, e.g. the earlier identified strength — the reduced likelihood of the bat breaking — has been retained and further developed. The identified limitations relating to the handle materials and the community impact have been addressed by using a circular design strategy to source leather through community engagement. The idea has now been modified to respond to more than one criterion, and shows discerning application of Unit 4 subject matter and the stimulus information.



This excerpt has been included:

- to demonstrate two assessment objectives — Synthesising and Representing. In the Synthesising objective, the response demonstrates evidence of a design concept that satisfies all the design criteria, as well as a coherent and logical combination of ideas and information about circular design, economic, social and ecological impacts, the stakeholders, club identity and the available club spaces. In the Representing objective, the response demonstrates the use of
  - line, tone, colour, shape, contrast, proximity and scaled detail to show form, function and detail about the important design concept characteristics that satisfy the design criteria
  - arrows, boxes, circles, connecting lines to show the relationships between the different parts of the design concept
  - notes to support the sketch. There is no evaluation of the design concept. The notes are used to effectively explain and label different parts of the concept.


FINAL CONCEPT:
users are taught and incentivised to uphold the club's sustainable approaches, taking good care of equipment can earn users discounts, but ultimately benefits the club as less replacement is needed, and community as they become more sustainable day to day
waste of FUNCTIONAL equipment has been limited by offering repairs and donating used items to the community
material from old uniforms has been reclaimed and turned into club shirts for members, each purchase includes a % donation to sustainable causes and customers are incentivised to buy as they can partake in promoting sustainable practices and feel a strong sense of membership/belonging
social benefit ✓
economic ✓
ecological ✓
SPORT CLUB
EARN A CARE - TAKE STAMP WHEN YOU USE A RECYCLING BIN!
PLASTIC PAPER TRASH
FREE! TRY A NEW SPORT!
BALLS
RACKETS
BATS
REPAIRS
VOLUNTEERS earn discounts rewards for community participation
DID YOU KNOW? 300 TONNES OF SOCCER BALLS ARE PUMPED ANNUALLY? TAKE CARE OF YOURS!
BACK VIEW
MADE OF 100% RECYCLED MATERIALS
core holder stamps, earn a discount on membership or Sporting goods
BACK VIEW
BECKHAM WORE THIS JERSEY BUT NOW IT'S MINE!
RECYCLE!
various colours/prints combined into unique shirts, COMMEMORATES past club events while recycles materials sustainably!
involve sport icons, UNIQUE one of a kind recycled shirts
% of purchas is donated to environmental causes, INCENTIVE!

Practices to strengthen

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

- instructing students to devise ideas that show
  - divergence in the range of ideas by using all the criteria provided. Responses that focused on design criterion 1, to limit the waste of functional equipment, but did not devise ideas in response to design criteria 2 and 3, were less effective. Focusing on one criterion resulted in multiple ideas that were all iterations of the same central idea, e.g. many ideas around donations of used equipment, such as donating to charity, giving away to members, handing down to younger players, or gifting to schools/clubs
  - unique, credible and detailed attributes. It is through the visual detail represented in the ideas, with supporting notes, that evidence is provided of the student's insight and understanding of the problem. To access high-level attribute marks, students need to respond perceptively by making connections between Unit 4 subject matter, stimulus information and the design criteria, e.g.
    - considering promotion of the club using the club's orange-and-black branding
    - using a sustainable equipment life cycle that shows old balls being reused for soft fall, as dog toys, and impregnated with seeds so lost balls degrade and grow plants
    - providing social, economic and ecological benefits to the sporting club through incentives such as athletes receiving discounts on new equipment for time spent using old equipment in the community to train others
- instructing students to evaluate ideas using written notes that describe the identified strengths, limitations and implications of ideas against the design criteria. Less effective responses included tables or diagrams that visually indicated the degree to which the student considered an idea met each criterion with limited supporting written information. Evidence of evaluation should be succinct notes referenced to particular attributes of the ideas on pages 1 to 3
- instructing students to refine ideas by making visual changes that progress how well ideas match the design criteria. The change or modification should be in reference to a stated evaluation of an earlier idea or attribute. The purpose of this refinement is to integrate the best attributes from across the range of ideas. Less effective responses attempted to use one or more SCAMPER strategies to rationalise the range of ideas rather than using evaluation and refinement as the convergent thinking approach.

Additional advice

- Teachers should instruct students to avoid dark colour highlighting of words in their notes, as this does not scan well and can result in illegible scripts. Coding of responses with colours and highlighting is not necessary and may not result in better student outcomes.
- Teachers should remind students that only the develop phase of the design process is assessable in the examination. Therefore, it is reasonable to advise students to use the first two pages for divergent thinking and the final two pages for convergent thinking. The planning page should be used to unpack the problem and make notes about subject matter relevant to the question. Page 1 of the response should begin with ideation sketches.