Food & Nutrition General Senior Syllabus 2019 v1.1

Subject report 2020

February 2021

Queensland Government
Queensland Curriculum & Assessment Authority
For all Queensland schools
210041

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Introduction

The first summative year for the new Queensland Certificate of Education (QCE) system was unexpectedly challenging. The demands of delivering new assessment requirements and processes were amplified by disruptions to senior schooling arising from the COVID-19 pandemic. This meant the new system was forced to adapt before it had been introduced — the number of summative internal assessments was reduced from three to two in all General subjects. Schools and the QCAA worked together to implement the new assessment processes and the 2020 Year 12 cohort received accurate and reliable subject results.

Queensland's innovative new senior assessment system combines the flexibility and authenticity of school-based assessment, developed and marked by classroom teachers, with the rigour and consistency of external assessment set and marked by QCAA-trained assessment writers and markers. The system does not privilege one form of assessment over another, and both teachers and QCAA assessors share the role of making high-stakes judgments about the achievement of students. Our commitment to rigorous external quality assurance guarantees the reliability of both internal and external assessment outcomes.

Using evidence of student learning to make judgments on student achievement is just one purpose of assessment. In a sophisticated assessment system, it is also used by teachers to inform pedagogy and by students to monitor and reflect on their progress.

This post-cycle report on the summative assessment program is not simply being produced as a matter of record. It is intended that it will play an active role in future assessment cycles by providing observations and findings in a way that is meaningful and helpful to support the teaching and learning process, provide future students with guidance to support their preparations for summative assessment, and promote transparency and accountability in the broader education community. Reflection and research are necessary for the new system to achieve stability and to continue to evolve. The annual subject report is a key medium for making it accessible to schools and others.

Background

Purpose

The annual subject report is an analysis of the previous year's full summative assessment cycle. This includes endorsement of summative internal assessment instruments, confirmation of internal assessment marks and external assessment.

The report provides an overview of the key outcomes of one full teaching, learning and assessment cycle for each subject, including:

- information about the application of the syllabus objectives through the design and marking of internal and external assessments
- information about the patterns of student achievement in each subject for the assessment cycle.

It also provides advice to schools to promote continuous improvement, including:

- identification of effective practices in the design and marking of valid, accessible and reliable assessments
- identification of areas for improvement and recommendations to enhance the design and marking of valid, accessible and reliable assessment instruments
- provision of tangible 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. The report is to be used by schools and teachers to assist in assessment design practice, in making assessment decisions and in preparing 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 and Senior External Examination subjects, where relevant) and General (Extension) subjects.

Report preparation

The report includes analyses of data and other information from the processes of endorsement, confirmation and external assessment, and 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 enrolments

- Number of schools offering the subject: 113.

Completion of units	Unit 1	Unit 2	Units 3 and 4*
Number of students completed	1096	1175	1185

*Units 3 and 4 figure includes students who were not rated.

Units 1 and 2 results

Number of students	Satisfactory	Unsatisfactory	Not rated
Unit 1	1008	85	3
Unit 2	1071	103	1

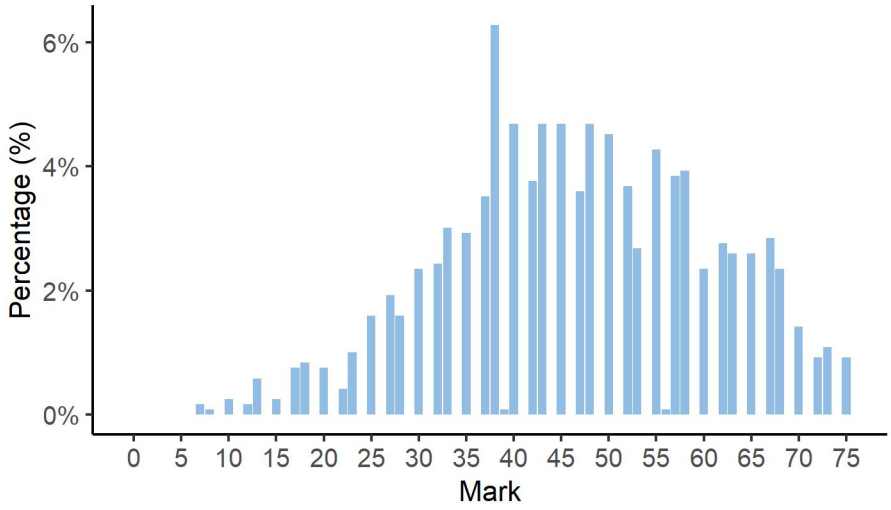
Units 3 and 4 internal assessment results

2020 COVID-19 adjustments

To support Queensland schools, teachers and students to manage learning and assessment during the evolving COVID-19 pandemic in 2020, the QCAA Board approved the removal of one internal assessment for students completing Units 3 and 4 in General and Applied subjects.

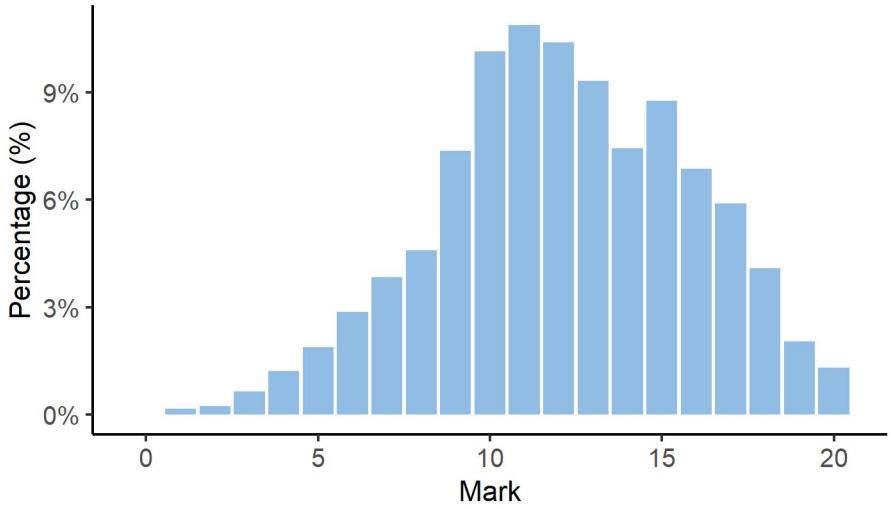
In General subjects, students completed two internal assessments and an external assessment. Schools made decisions based on QCAA advice and their school context. Therefore, across the state some instruments were completed by most schools, some completed by fewer schools and others completed by few or no schools. In the case of the latter, the data and information for these instruments has not been included.

Total results for internal assessment

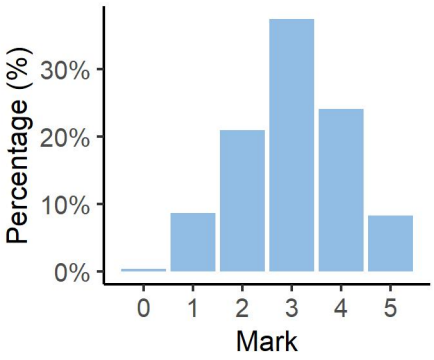


IA1 results

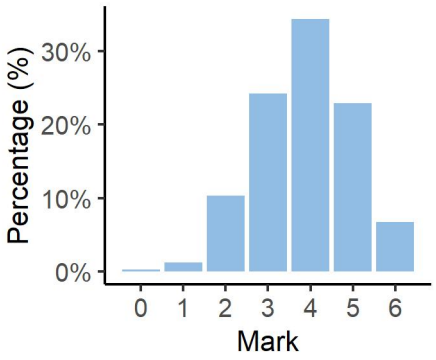
IA1 total



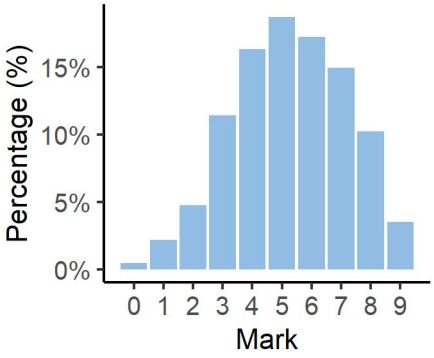
IA1 Criterion 1



IA1 Criterion 2

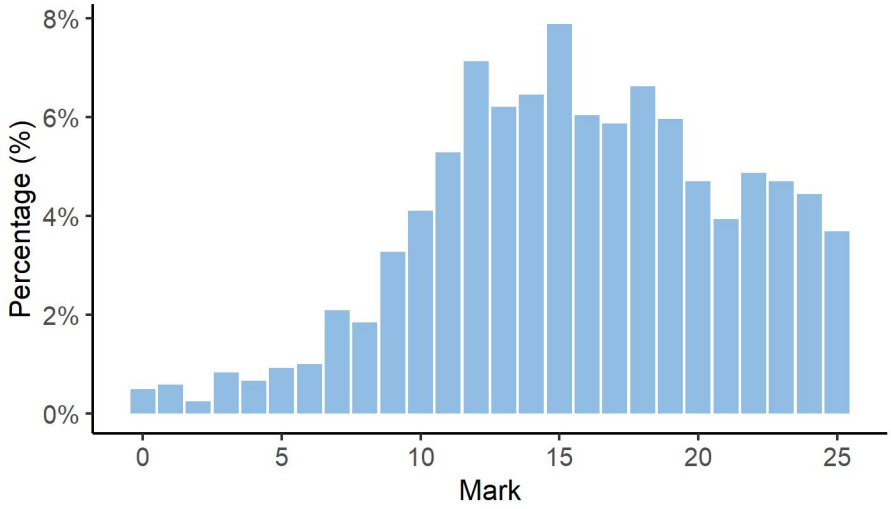


IA1 Criterion 3

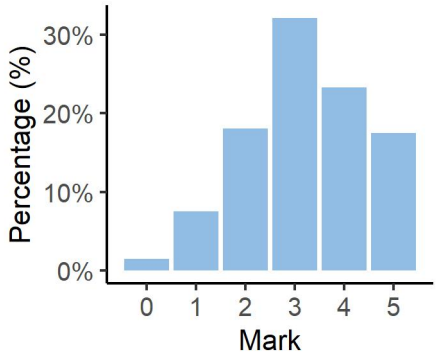


IA2 results

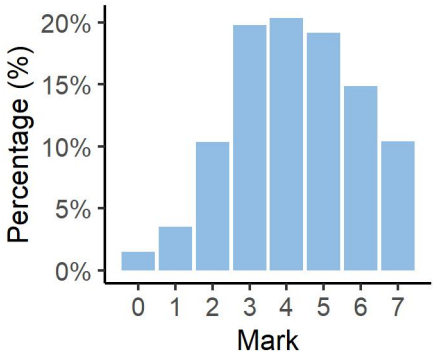
IA2 total



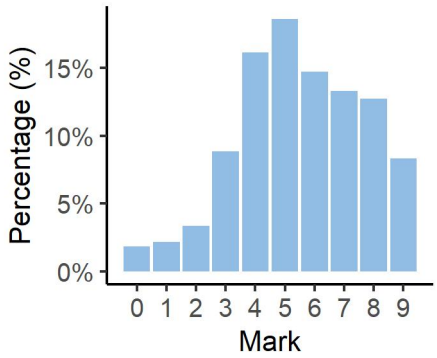
IA2 Criterion 1



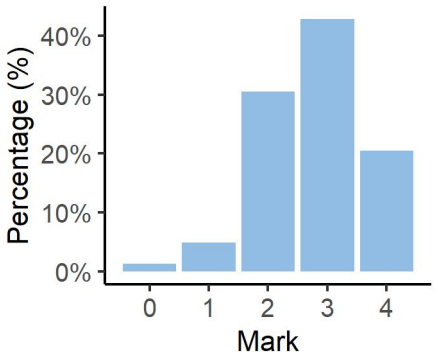
IA2 Criterion 2



IA2 Criterion 3



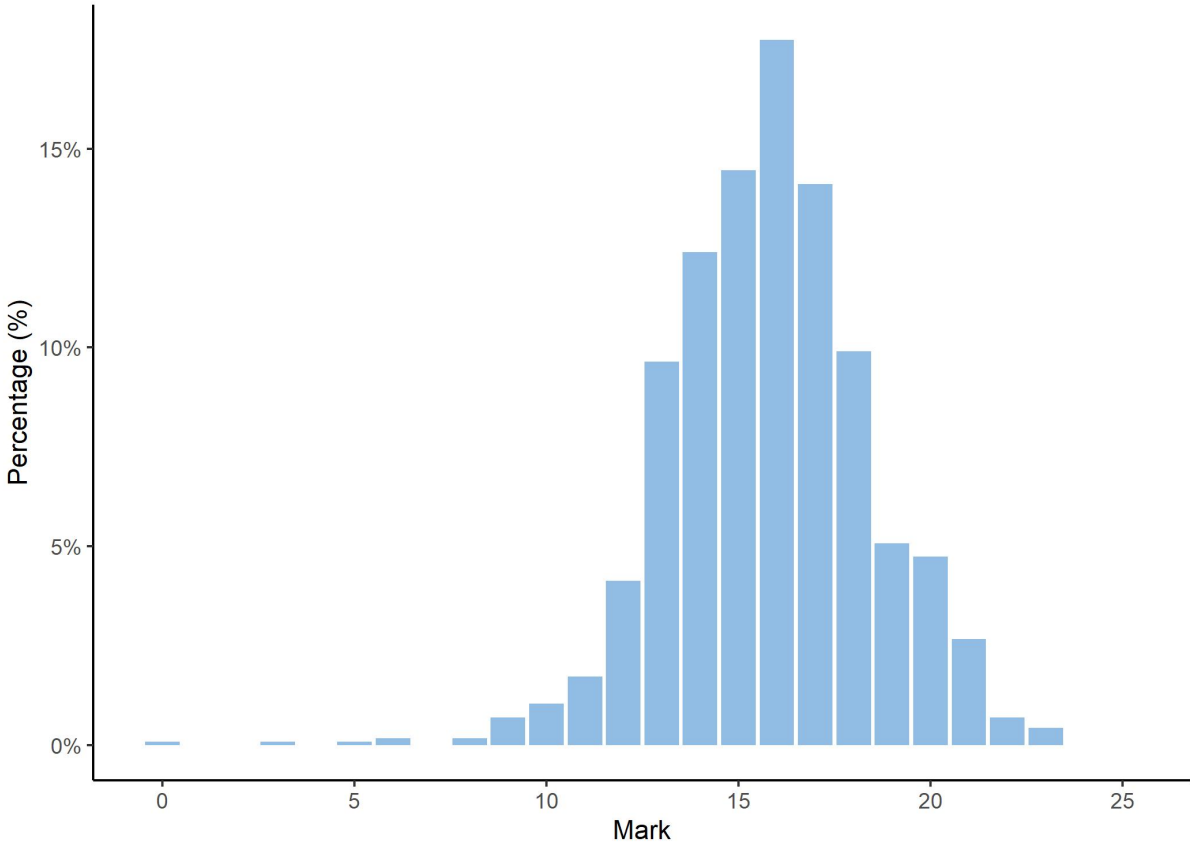
IA2 Criterion 4



IA3

Due to COVID-19 pandemic adjustments, there were insufficient student responses to this instrument to provide useful analytics.

External assessment results



Final standards allocation

The number of students awarded each standard across the state are as follows.

Standard	A	B	C	D	E
Number of students	132	430	485	112	0

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	43–18	17–0

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 sections 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 subject matter and to the assessment objective. Refer to the quality assurance tools for detailed information about the assessment practices for each assessment instrument.

Total number of items endorsed in Application 1

Number of items submitted each event	IA1	IA2	IA3
Total number of instruments	118	118	118
Percentage endorsed in Application 1	31	55	35

Confirmation

Confirmation is the quality assurance process based on the attribute of reliability. Teachers make judgments about the evidence in students' responses using the instrument-specific marking guide (ISMG) to indicate the alignment of students' work with performance-level descriptors and determine a mark for each criterion. These are provisional criterion marks. The QCAA makes the final decision about student results through the confirmation processes. Data presented in the assessment decisions section identifies the level of agreement between provisional and final results.

Number of samples reviewed at initial, supplementary and extraordinary review

IA	Number of schools	Number of samples requested	Supplementary samples requested	Extraordinary review	School review	Percentage agreement with provisional
1	113	545	74	31	8	96.06
2	112	571	179	0	44	91.86

Internal assessment 1 (IA1)

Examination — 20%

The examination assesses the application of a range of cognitions from Recognising and explaining to Synthesising and evaluating. Student responses must be completed independently, under supervised conditions, and in a set timeframe. The examination uses a combination of one extended response and a number of short-response questions related to Unit 3 topics. The exam must provide students with sufficient opportunities to demonstrate the assessable objectives at the highest performance level.

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 practices

Validity priority	Number of times priority was identified in decisions*
Alignment	12
Authentication	0
Authenticity	47
Item construction	10
Scope and scale	24

*Total number of submissions: 118. Each priority might contain up to four assessment practices.

Effective practices

Validity priorities were effectively demonstrated in assessment instruments that featured:

- instructions using cues aligned to the task and syllabus specifications, objectives and ISMG
- items carefully constructed using a range of appropriate cognitions that aligned with the assessment objectives
- a different context for IA1 from the IA2 project — folio, e.g. if the project — folio uses a carbohydrate-based food context, the examination must have a fat-based food context
- stimulus for the extended response and sufficient data on the prototypes to give students the opportunity to solve the problem with a unique response
- scaffolding providing clear instructions that inform students about the processes they could use to complete the responses but still allows for a unique student response.

Practices to strengthen

It is recommended that assessment instruments:

- include stimulus items of suitable scope and scale that give students the opportunity to solve the problem with a unique response. Data provided in the stimulus should be succinct and clear without leading students to a predetermined response. Stimulus should be unseen and not be copied from information or texts that students have previously used in class

- are developed to allow students to demonstrate the higher cognitions in the syllabus objectives to be demonstrated, not just the Recognising and explaining objectives. This is for both the short-response and extended-response items
- align to the subject matter of Unit 3, focusing on the processing, nutritional, chemical, functional and sensory properties of carbohydrate- or fat-based food
- include items that suit the local school context and are sufficiently different from the QCAA sample instrument to ensure students are able to demonstrate authentic responses.

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 practices

Accessibility priority	Number of times priority was identified in decisions*
Transparency	5
Language	2
Layout	2
Bias avoidance	1

*Total number of submissions: 118. Each priority might contain up to four assessment practices.

Effective practices

Accessibility priorities were effectively demonstrated in assessment instruments that featured:

- a clear layout for, and alignment to, the syllabus assessment specifications (Syllabus section 4.1.6)
- stimulus presented accurately and is able to be interpreted and responded to in depth
- questions on a specific topic, either carbohydrate- or fat-based food, and did not include both topics
- questions using clear, explicit and unambiguous language and instructions formatted correctly with appropriate use of text, headings, numbering and bold
- inclusive language and practices.

Practices to strengthen

It is recommended that assessment instruments:

- include appropriate and technically correct language and the meanings for terms and definitions align with the syllabus, e.g. use ‘formulation’ or ‘reformulation’, ‘process’ and ‘prototype’ instead of ‘recipe’
- are carefully checked to ensure there are no errors in the stimulus material, e.g. inaccurate food component lists, quantities, procedures, or inaccurate data in nutrition panels and/or in graphical data
- ensure stimulus material has relevant and sufficient data to allow students the opportunity to respond fully to the problem.

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 final results

Criterion number	Criterion name	Percentage agreement with provisional	Percentage less than provisional	Percentage greater than provisional
1	Recognising and explaining	97.29	1.81	0.9
2	Analysing and determining	96.96	2.63	0.41
3	Synthesising and evaluating	93.92	5.09	0.99

Effective practices

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

- evidence in student work was clearly aligned to qualifiers in the performance-level descriptors defined in the syllabus glossary definitions, e.g. in the Recognising and explaining criteria, the evidence in student responses for the upper-performance levels matched with an accurate and discriminating recognition and discerning description of facts and principles related to the nutritional, chemical, functional and sensory properties and processing of carbohydrate- or fat-based food
- for Analysing, responses matched to the upper- and mid-performance levels when evidence in the student response explicitly referenced stimulus data
- for Determining, responses matched to the upper- and mid-performance levels when evidence in the student response showed keen discernment of the problem in self-determined criteria
- for Evaluating, responses matched to the upper- and mid-performance levels when evidence of refinement of ideas and solutions showing perception and relevance were evident and effective recommendations for enhancement were justified from the stimulus data.

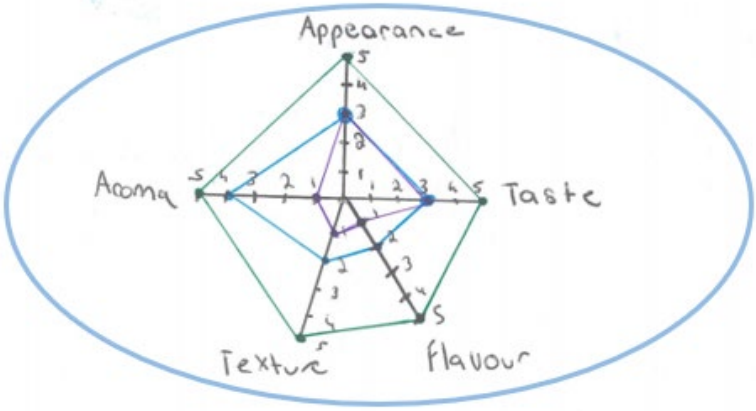
Samples of effective practices

The following excerpts are from a response that illustrates the characteristics for the criteria at the performance level indicated. The characteristics highlighted may not be the only time the characteristics have occurred throughout the response.

Criterion: 2 Analysing and determining
This response provides evidence of analysis using data from the stimulus to determine numerical values for written statements and to develop the graph.

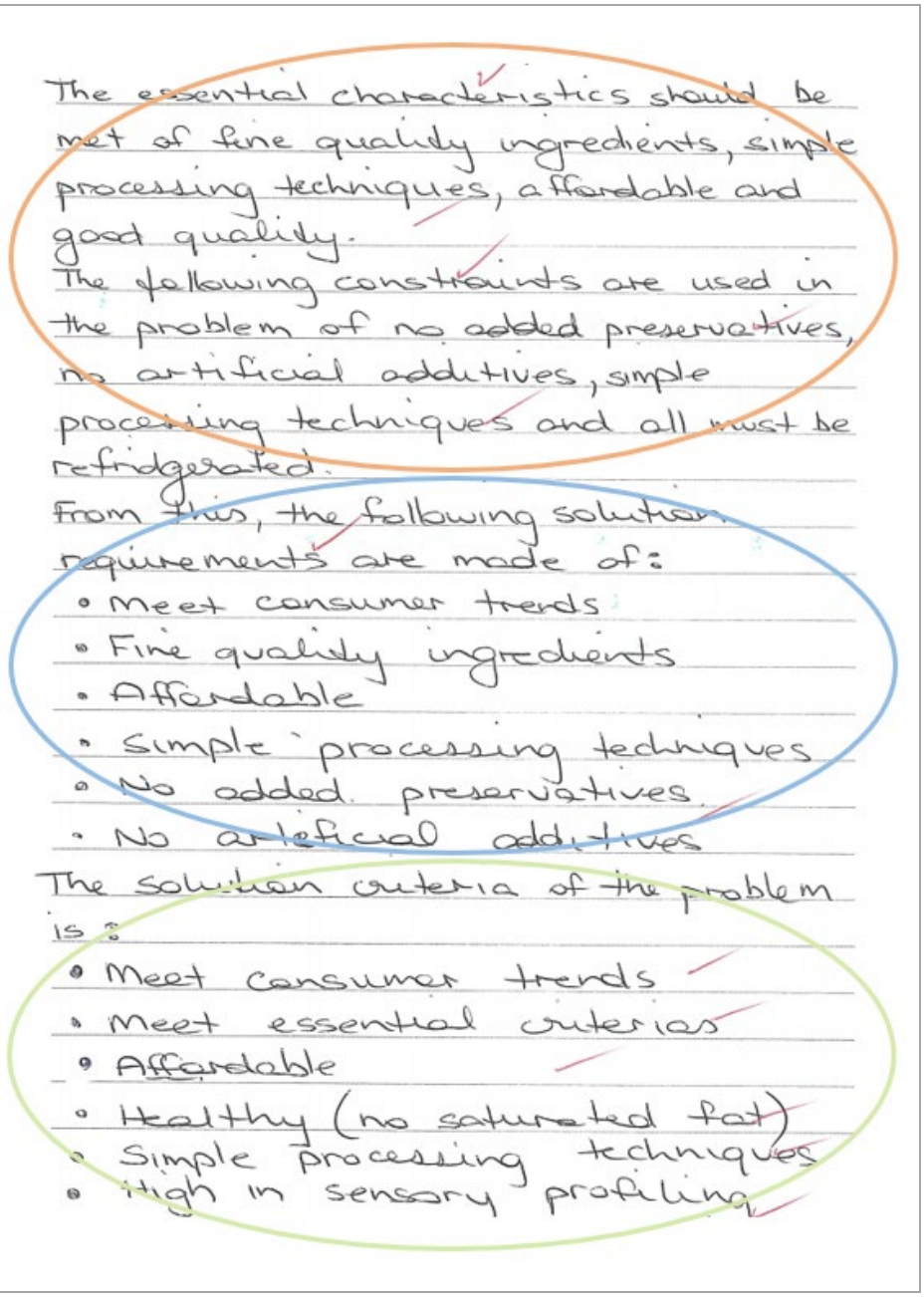
Question 5 continued

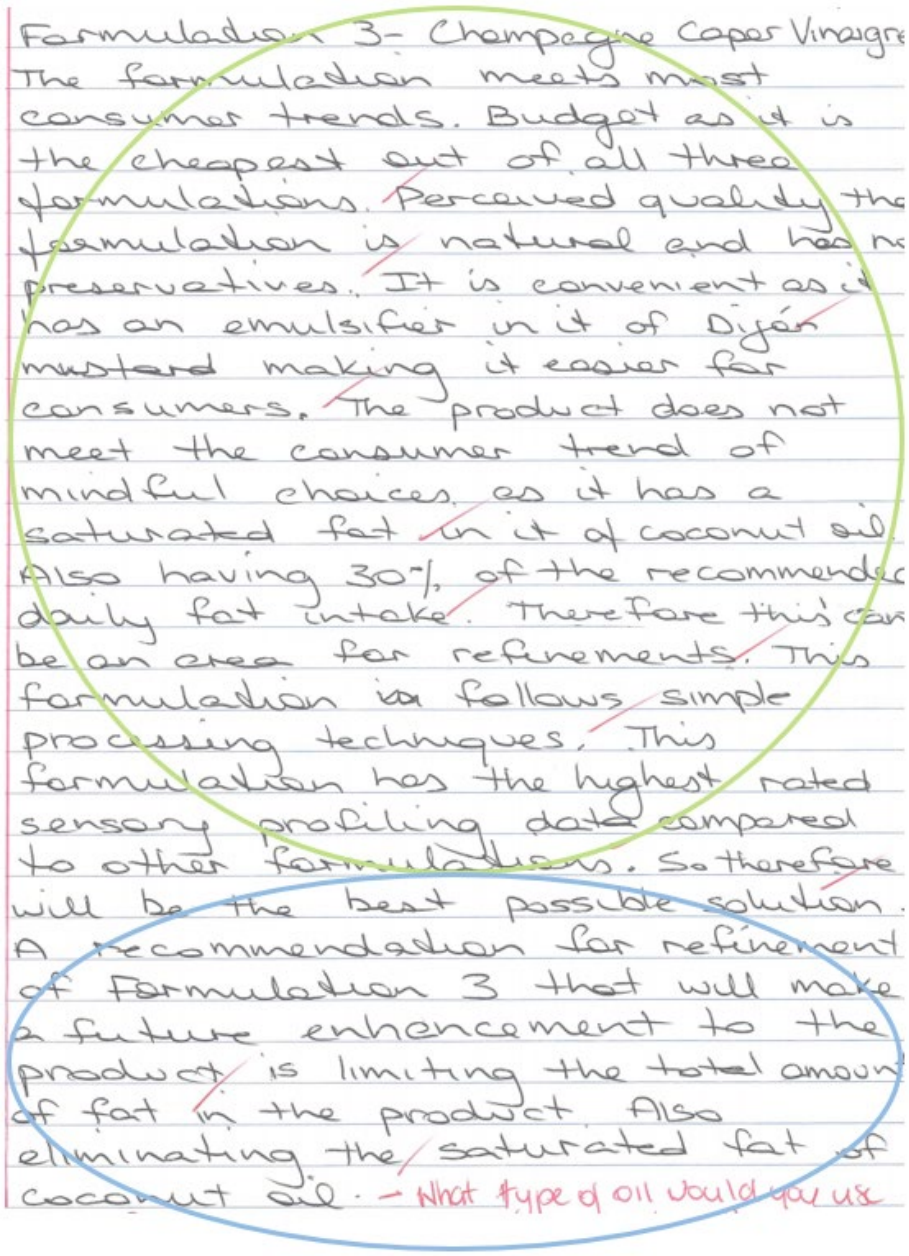
b) Use a sensory profiling method to graphically represent sensory attributes of each biscuit, which could be used to evaluate the quality of each prototype. Respond with a graphical representation in the space below.



Legend for graph	Star Rating	
Formulation 1 Formulation 2 Formulation 3	Excellent Good Satisfactory Fair Poor	5 4 3 2 1

Consumer feedback		
Formulation 1	Formulation 2	Formulation 3
Appearance - even golden colour and round 5 Taste - sweet 5 Flavour - buttery, vanilla, chocolate 5 Texture - soft in the centre and crisp on the outside 5 Aroma - sweet, chocolate, vanilla 5	Appearance - lighter in colour and flat 3 Taste - sweet and greasy 3 Flavour - oily, lingering taste of olives 1 Texture - gritty, oily, soggy, doughy in centre 1 Aroma - olive oil 1	Appearance - golden brown misshapen and flat 3 Taste - sweet and greasy 3 Flavour - buttery, undercooked on inside 2 Texture - underdone in the centre, edges cooked 2 Aroma - buttery and sweet, acceptable 4

Criterion: 2 Analysing and determining This response provides evidence of analysis from the problem and the stimulus to determine the solution requirements and the self-determined criteria.	 The essential characteristics should be met of fine quality ingredients, simple processing techniques, affordable and good quality. The following constraints are used in the problem of no added preservatives, no artificial additives, simple processing techniques and all must be refridgerated. From this, the following solution requirements are made of: • Meet consumer trends • Fine quality ingredients • Affordable • Simple processing techniques • No added preservatives • No artificial additives The solution criteria of the problem is: • Meet consumer trends • Meet essential criterias • Affordable • Healthy (no saturated fat) • Simple processing techniques • High in sensory profiling

Criterion: 3 Synthesising and evaluating This response shows feasible evaluation and justification of decision. **The sample provides fundamental recommendations as it doesn't name the type of fat, which would enhance the solution.**	 Formulation 3- Champagne Caper Vinaigre The formulation meets most consumer trends. Budget as it is the cheapest out of all three formulations. Perceived quality the formulation is natural and has no preservatives. It is convenient as it has an emulsifier in it of Dijon mustard making it easier for consumers. The product does not meet the consumer trend of mindful choices as it has a saturated fat in it of coconut oil. Also having 30% of the recommended daily fat intake. Therefore this can be an area for refinements. This formulation is follows simple processing techniques. This formulation has the highest rated sensory profiling data compared to other formulations. So therefore will be the best possible solution. A recommendation for refinement of formulation 3 that will make a future enhancement to the product is limiting the total amount of fat in the product. Also eliminating the saturated fat of coconut oil. - What type of oil would you use

Practices to strengthen

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

- when making judgments about the Analysing and determining criterion at the higher performance levels:
  - the evidence of the characteristics and constraints of the problem includes consideration of the problem, information and data related to the properties and processing of carbohydrates or fat from the stimulus when establishing solution success criteria, e.g. the 6–7 performance-level responses should include evidence of the astute determination of essential success criteria
- when making judgments about the Synthesising and evaluating criterion at the higher performance levels:

  - the use of stimulus data for the extended response includes chemical, functional, nutritional and sensory primary data and information, e.g. data from nutrition information panels (NIP) and sensory profiling for prototypes
  - the 8–9 performance-level evidence demonstrates rational appraisal of ideas and a solution to the carbohydrate- or fat-based problem. The sensory profiling data is used to justify solutions, to make thoughtful and accurate refinements, and to make further recommendations for enhancement. Skilful judgments are made about the suitability of ideas and the solution with reference to critically important success criteria
- teachers construct a high-level response to the problem prior to implementing an assessment instrument to gauge the effectiveness of the instrument and stimulus.

Internal assessment 2 (IA2)

Project — folio (25%)

In Food & Nutrition, a folio involves individual students documenting the application of the problem-solving process in response to an identified real-world problem that requires a solution. In Unit 3, students will define and analyse the problem, develop ideas, generate prototypes and evaluate a solution for a carbohydrate- or fat-based problem. Students document the iterative process undertaken to develop a solution to a food-related problem. The response is a coherent work that may include written paragraphs, annotations and diagrams and occurs over an extended and defined period of 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 practices

Validity priority	Number of times priority was identified in decisions*
Alignment	33
Authentication	0
Authenticity	11
Item construction	3
Scope and scale	8

*Total number of submissions: 118. Each priority might contain up to four assessment practices.

Effective practices

Validity priorities were effectively demonstrated in assessment instruments that featured:

- contexts accessible to students, such as those that relate to the real world and require students to apply syllabus subject matter without placing students in professional roles
- a clear layout for the syllabus assessment specifications (Syllabus section 4.6.1) by outlining a context that was relevant to the unit/topic subject matter and provided a clear overview and framework for the assessment task
- clear links and the diagram of the problem-solving model from the syllabus (Section 1.2.4)
- scaffolding that provided clear instructions to inform students about the processes they could use to complete the response or the presentation requirements for their response.

Practices to strengthen

It is recommended that assessment instruments:

- align to the Unit 3 subject matter, focusing on the processing and the nutritional, chemical, functional and sensory properties of carbohydrate- or fat-based food

- provide task instructions and sufficient stimulus that enable students to provide a unique response to a carbohydrate- or fat-based problem and achieve at the highest performance level
- suit the local school context and are sufficiently different from the QCAA sample instrument to ensure students are able to demonstrate authentic responses.

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 practices

Accessibility priority	Number of times priority was identified in decisions*
Transparency	3
Language	1
Layout	0
Bias avoidance	0

*Total number of submissions: 118. Each priority might contain up to four assessment practices.

Effective practices

Accessibility priorities were effectively demonstrated in assessment instruments that featured:

- a clear layout for the assessment specifications that aligned with the syllabus (Section 4.6.1)
- appropriate stimulus images only when required to answer the question.

Practices to strengthen

It is recommended that assessment instruments:

- provide clear instructions, using cues that align to the IA2 syllabus specifications, objectives and ISMG
- maintain alignment to the IA2 syllabus assessment specifications outlined in ‘to complete this task’ (Syllabus section 4.7.2)
- use syllabus language and terminology. Language such as ‘recipe’, ‘design brief’ and ‘home cooking’ are not featured in the specifications. Write all tasks with a food industry context rather than a home or hospitality background
- contain stimulus material that is specific, relevant to the task and concise. The stimulus is best uploaded as a PDF and separate to the assessment item.

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 final results

Criterion number	Criterion name	Percentage agreement with provisional	Percentage less than provisional	Percentage greater than provisional
1	Recognising and explaining	92.01	5.97	2.02
2	Analysing and determining	91.34	8.07	0.59
3	Synthesising, generating and evaluating	88.56	10.68	0.76
4	Communicating	95.54	3.7	0.76

Effective practices

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

- the nutritional, chemical, functional and sensory properties and processing were evident in the student response for the Recognising and explaining criteria at the higher performance level
- the high-level response detailed accurate and valid data in graphical format to enable the judgment of the feasibility of the prototypes for the solution to the carbohydrate- or fat-based problem
- the student response fluently articulated the syllabus language, using appropriate technical language at the higher performance levels.

Samples of effective practices

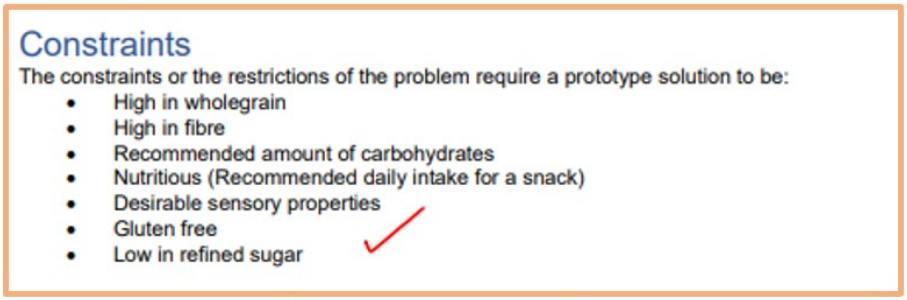
The following are excerpts from a response that illustrates the characteristics for the criteria at the mid-range performance level. The characteristics highlighted may not be the only time the characteristics have occurred throughout the response.

Analysing and determining

The response demonstrates insightful analysis of a relevant problem, information and data related to the properties and processing of carbohydrate- or fat-based food to identify essential characteristics and constraints.

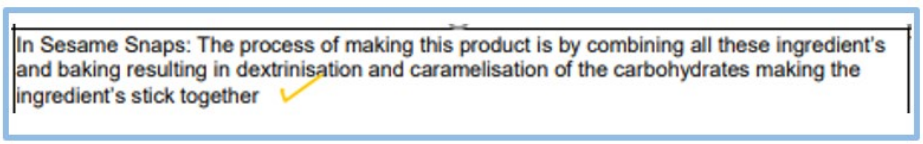
Recognising and explaining

The response demonstrates appropriate explanation of food science ideas


Constraints

The constraints or the restrictions of the problem require a prototype solution to be:

- High in wholegrain
- High in fibre
- Recommended amount of carbohydrates
- Nutritious (Recommended daily intake for a snack)
- Desirable sensory properties
- Gluten free
- Low in refined sugar


In Sesame Snaps: The process of making this product is by combining all these ingredient's and baking resulting in dextrinisation and caramelisation of the carbohydrates making the ingredient's stick together

and a problem related to the processing of a carbohydrate- or fat-based food solution

Analysing and determining

The response demonstrates insightful analysis of a relevant problem, information and data related to the properties and processing of carbohydrate- or fat-based food to identify essential characteristics and constraints

The response demonstrates astute determination of essential solution requirements.

The response uses self-determined criteria that include the relevant impacts and implications, and the quality, functionality and reliability indicators for the carbohydrate- or fat-based food problem.

This product has 213kj which is just under the recommended under the recommendation for a snack food of 400-600kj (Nutrition guidelines | Australian Healthy Food Guide, 2019).

7 grams of fibre is the recommended amount in snack food. This product has no fibre.

Underconsumption of fibre can lead to constipation, irritable bowel syndrome, diverticulitis, heart disease and some cancers (Victoria State Government, 2020).

A snack food should have approximately almost 3 grams of sugar or lower. This product meets the requirements of a snack.

This product meets does not meet recommended amount of carbohydrates for a snack as it should be 15 to 30 grams. This product has 4.8 grams.

Solution requirements

The company currently produces products of high quality and taste. Products with no artificial preservatives. As a line extension, the solution would also need to maintain all of these assets.

The range currently includes only gluten free crackers and limited amount of muesli and muesli bars products and this opportunity to extend the gluten free range of products available.

As extension, the prototype solution must be consistent with the current products by using natural ingredients, With a limited use of highly refined, processed ingredients. The formulation of the prototype solution must be the chemical and functional properties of carbohydrate and appropriate processes for carbohydrate foods

Self-determined criteria

Carbohydrate-based, snack food line-extension should be:

processed using the chemical and functional properties of carbohydrates formulated using good quality ingredients.
refrigeration-free.
semi perishable with appropriate shelf life.
fresh, flavoursome and appetising in appearance.
comply with recommendation for the nutritive value and serving size for a snack food free of highly-refined, processed components and artificial preservatives.

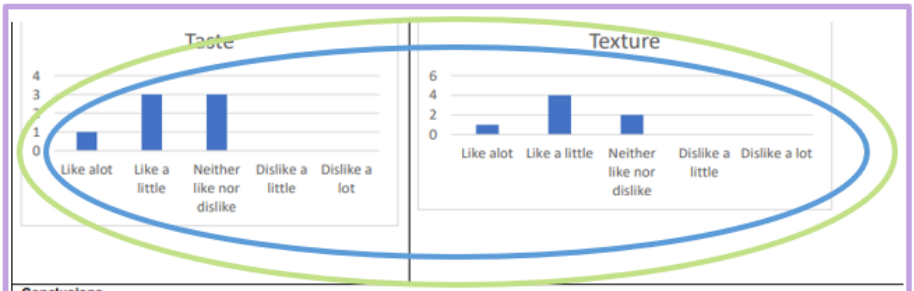
Additional considerations
Carbohydrate-based, snack food line-extension could be:

The solution must consider the focus group feedback such as a savoury products and gluten free.

Synthesising, generating and evaluating
The response shows logical synthesis of chemical, functional, sensory and nutritional information and primary and secondary data to develop ideas for a chosen solution

Communicating
This response demonstrates discerning decision-making about and fluent use of written and visual (if appropriate) features.

The student response provides an example of adequate generation of a carbohydrate- or fat-based food-processing solution to provide relevant



Conclusions

This solution was the most well accepted by the panel of samplers. One hundred percent of profilers rated 'like a lot' for Appearance. The taste was rated 14% like a lot, 42.9% Like a little, and 42.9% neither dislike nor like. Profilers provided feedback on the taste that it had a strong taste of coconut oil, further experimentation could occur with the formulation to decrease coconut oil. 14% of consumers liked a lot for the texture, 57% like a little and 28% neither like nor dislike. The aroma was rated 14% like a lot, 57% like a little and 28% neither like nor dislike.

Profilers commented favourably that this prototype was 'gluten-free' and made from quinoa and buckwheat. This prototype would be a suitable solution for the problem and may involve further refinement to increase consumer satisfaction. As it was commented that there was a strong cocon oil taste.

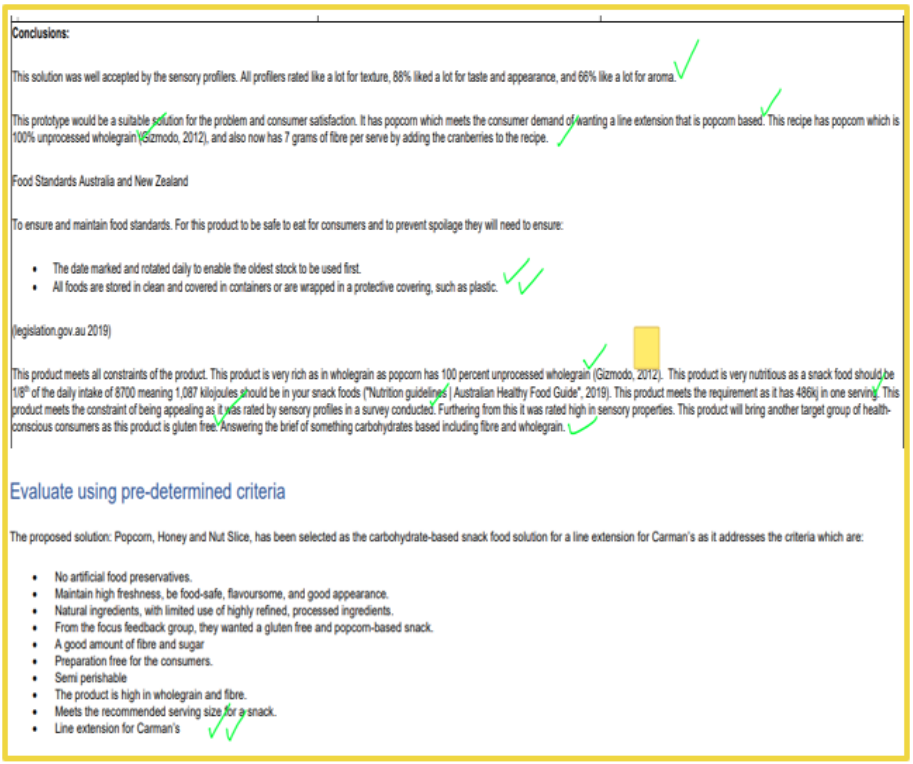
This product can be evaluated against the self-determined criteria. This product is refrigeration-free, appropriate shelf life, fresh, flavoursome, and appetising. This product does comply with the recommended nutritional value and serving size for a snack food. It also considers the focus groups feedback of a gluten free product. This product would need to be refined by adding more fibre.

sensory profiling data to determine the feasibility of the solution.

This part of the student response shows feasible evaluation and adequate refinement of ideas and a solution, against self-determined criteria to make fundamental recommendations for enhancements.

Communicating

Here the student demonstrates discerning decision-making about, and fluent use of, written and visual (if appropriate) features to communicate a solution language for a technical audience using grammatically accurate language structures referencing and folio conventions.



Conclusions:

This solution was well accepted by the sensory profilers. All profilers rated like a lot for texture, 88% liked a lot for taste and appearance, and 66% like a lot for aroma.

This prototype would be a suitable solution for the problem and consumer satisfaction. It has popcorn which meets the consumer demand of wanting a line extension that is popcorn based. This recipe has popcorn which is 100% unprocessed wholegrain (Gizmodo, 2012), and also now has 7 grams of fibre per serve by adding the cranberries to the recipe.

Food Standards Australia and New Zealand

To ensure and maintain food standards. For this product to be safe to eat for consumers and to prevent spoilage they will need to ensure:

- The date marked and rotated daily to enable the oldest stock to be used first.
- All foods are stored in clean and covered in containers or are wrapped in a protective covering, such as plastic.

(legislation.gov.au 2019)

This product meets all constraints of the product. This product is very rich as in wholegrain as popcorn has 100 percent unprocessed wholegrain (Gizmodo, 2012). This product is very nutritious as a snack food should be 1/8th of the daily intake of 8700 meaning 1,087 kilojoules should be in your snack foods ("Nutrition guidelines | Australian Healthy Food Guide", 2019). This product meets the requirement as it has 486kj in one serving. This product meets the constraint of being appealing as it was rated by sensory profiles in a survey conducted. Furthering from this it was rated high in sensory properties. This product will bring another target group of health-conscious consumers as this product is gluten free. Answering the brief of something carbohydrates based including fibre and wholegrain.

Evaluate using pre-determined criteria

The proposed solution: Popcorn, Honey and Nut Slice, has been selected as the carbohydrate-based snack food solution for a line extension for Carman's as it addresses the criteria which are:

- No artificial food preservatives.
- Maintain high freshness, be food-safe, flavoursome, and good appearance.
- Natural ingredients, with limited use of highly refined, processed ingredients.
- From the focus feedback group, they wanted a gluten free and popcorn-based snack.
- A good amount of fibre and sugar
- Preparation free for the consumers.
- Semi perishable
- The product is high in wholegrain and fibre.
- Meets the recommended serving size for a snack.
- Line extension for Carman's

Overall this product of solution 3: Popcorn, Honey and Nut slice would be a satisfactory product for the company to add as a line extension. Further enhancement can be made to the line extension by creating other flavours such as Carmel Popcorn slice.

References

Bjarndottir, A. (2016). The 14 Most Common Sighs of Gluten Intolerance. Retrieved from https://www.healthline.com/nutrition/signs-you-are-gluten-intolerant

Butler, N. (2017). How Much Fiber Should I Eat Per Day? Retrieved from https://www.healthline.com/health/food-nutrition/how-much-fiber-per-day

Chemistry Is Life. (N.D). The Chemistry of Popcorn. Retrieved from http://www.chemistryislife.com/t-3

Practices to strengthen

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

- the analysis of a problem at a high level includes relevant information and data related to the processing of food and the essential characteristics and constraints
- a high-level response in the Analysing and determining criteria requires the inclusion of the relevant impacts and implications, and the quality, functionality and reliability in the solution requirements and self-determined criteria
- evidence of synthesis of the chemical, functional, sensory and nutritional data and information and a range of primary data in relation to the problem is required to achieve a high-level response in the Synthesising, generating and evaluating criteria
- responses document data in visual and written forms using folio conventions
- high-level responses require the evaluation of ideas and the generated solution against all self-determined criteria and data, considering the solution's impacts and implications
- refinements and recommendations for enhancement require data to support student responses at high performance levels
- the students' response length meets the assessment conditions of 10–12 A3 pages

- schools consider the *QCE and QCIA policy and procedures handbook* guidance on managing response length, e.g. schools may include annotations on a response that exceeds work length to indicate the school's strategy to mark the response.

Internal assessment 3 (IA3)

Project — folio (30%)

In Food & Nutrition, a folio involves individual students documenting the application of the problem-solving process in response to an identified real-world problem that requires a solution. In Unit 4, students will define and analyse the problem, develop ideas, generate prototypes and evaluate a solution for a nutrition consumer market problem. Students document the iterative process undertaken to develop a solution to a food-related problem. The response is a coherent work that may include written paragraphs, annotations and diagrams, and occurs over an extended and defined period of 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 practices

Validity priority	Number of times priority was identified in decisions*
Alignment	22
Authentication	1
Authenticity	38
Item construction	20
Scope and scale	35

*Total number of submissions: 118. Each priority might contain up to four assessment practices.

Effective practices

Validity priorities were effectively demonstrated in assessment instruments that featured:

- task instructions aligned to the IA3 Unit 4 ISMG and syllabus specifications (Syllabus section 5.5.1) and offered students opportunity to develop unique responses
- stimulus material relevant to the task, specific to the syllabus and concise
- a context relevant to the subject matter for the unit/topic and provided a clear overview and framework for the assessment task, e.g. a specific nutrition consumer market
- task requirements that were of suitable scope and scale for Unit 4, i.e. students were not expected to be dietitians
- the inclusion of the problem-solving model diagram to provide clear instructions of the process referred to in the task outline
- task instructions explaining how students' work would be authenticated, e.g. by providing guidance for drafting, scaffolding and teacher feedback
- scaffolding that provided clear instructions to inform students about the processes they could use to complete the response or the presentation requirements for their response.

Practices to strengthen

It is recommended that assessment instruments:

- have task requirements allowing students to individually identify a nutrition consumer market problem and develop a food formulation or reformulated solution. The context must be less specific and include an industry focus. The task context should allow students to explore a food prototype solution chosen from a number of consumer markets to ensure authenticity. **Note:** The syllabus lists the nutrition consumer markets to consider. Adolescents are not listed as a nutrition consumer market
- provide students with opportunity to cover the required assessable objectives and performance-level descriptors of the ISMG
- provide scaffolding with clear instructions that inform students about the processes they can use to complete the response or the presentation requirements for their response
- exclude lactose-intolerant nutrition consumers to limit responses that may be similar to the QCAA sample instrument IA3 model response
- provides stimulus aligning with the task purpose and directs students to formulate a unique response and that is concise, allowing students to complete the research
- require students to demonstrate an appropriate scale of information, knowledge and skills when completing the task according to the syllabus conditions. Tasks should not ask students to act as dietitians or food scientists in their responses.

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 practices

Accessibility priority	Number of times priority was identified in decisions*
Transparency	7
Language	3
Layout	0
Bias avoidance	0

*Total number of submissions: 118. Each priority might contain up to four assessment practices.

Effective practices

Accessibility priorities were effectively demonstrated in assessment instruments that featured:

- clear instructions using cues aligned to the IA3 specifications, objectives and ISMG
- explicit and unambiguous language, avoiding complex and convoluted sentence construction
- relevant stimulus material that did not lead to a predetermined response
- scaffolding that provided clear instructions about the processes students could use to complete the response or the presentation requirements for their response
- inclusive language and practices.

Practices to strengthen

It is recommended that assessment instruments:

- provide clear instructions, using cues aligning to the IA3 syllabus specifications, objectives and ISMG
- use stimulus items of suitable scope and scale and ensure the stimulus is concise and aligned to the Unit 4 subject matter
- include the syllabus's problem-solving process diagram and scaffolding developed from the IA3 task specification
- have a clear, unambiguous layout, using headings and subheadings, as well as use bold and bullet points to enhance formatting. Underlining should be avoided
- use syllabus and food industry language and terminology. Language such as 'recipe', 'design process' or 'tuckshop' are not part of the specifications. Write all tasks with an industry context and use the nutrition consumer markets stated in the syllabus
- have stimulus that is specific, relevant to the task and referenced from reliable sources. The stimulus is best uploaded as a PDF and separate to the assessment item.

Assessment decisions

Due to COVID-19 pandemic adjustments, there were insufficient student responses to this instrument to provide useful analytics.

External assessment

Examination

Assessment design

Assessment specifications and conditions

The short response:

- is constructed using several items, which are a response to an unseen question, scenario or problem with unseen stimulus materials
- may require analysis, synthesis and/or evaluation to fully respond to a question, scenario or problem
- requires students to write in bullet points, with some full sentences, constructing a response that may have paragraphs so ideas are maintained, developed and justified
- may require other types of item responses, such as drawing, labelling, graphing and tabulation of food and nutrition data.

The extended response:

- is constructed to include a minimum of one problem to a maximum of two problems. If two problems are presented, they will be from different contexts. Students respond to one problem only
- an unseen problem with unseen stimulus materials
- requires sustained analysis, synthesis and evaluation to fully respond to the problem
- requires students to write in full sentences, constructing a response of several paragraphs so ideas are maintained, developed and justified.

Conditions

- Time: 2 hours plus perusal (10 minutes).
- Length: 800–1000 words in total or equivalent, including
  - short-paragraph response items of 50–250 words per item
  - 400 words or more for extended response.

The 2020 assessment instrument consisted of two sections — one short response and one extended response. Questions were derived from the context of Unit 4: Food solution development for nutrition consumer markets and Topic 1: Formulation and reformulation for nutrition consumer markets and Topic 2: Food development process. The subject matter examined the following nutrition consumer markets of:

- elderly
- health-conscious
- fitness-focused
- vegetarian or vegan

- pregnant
- infant
- allergic or food-intolerant
- consumers experiencing diet-related conditions or chronic disease, such as obesity, heart disease, type 2 diabetes or diet-related cancer.

This assessment was used to determine student achievement in the following assessment objectives:

1. recognise and describe facts and principles related to the food system, food formulation and nutrition consumer markets
2. explain ideas and problems related to current and emerging nutrition consumer markets
3. analyse problems, information and data related to current and emerging nutrition consumer markets
4. determine solution requirements and criteria for nutrition consumer market problems
5. synthesise information and data for solutions related to nutrition consumer market problems
6. evaluate and refine ideas and solutions to make justified recommendations for enhancement.

Note: Unit objectives 6 and 8 were not assessed in this instrument.

The stimulus included data and information related to the problem, which was designed to elicit a solution to a problem.

Section 1 (18 marks) included 5 short-paragraph response items that required 50–250 words per item.

Section 2 (42 marks) was 1 extended response question that required 400 words or more.

Assessment decisions

Overall, students responded well to the following assessment aspects:

- understanding and applying instructional terms such as *explain*, *analyse*, *evaluate*, and *use data in your response*
- recognising and describing facts and principles related to food formulations and nutrition consumer markets
- analysing the nutrition requirements of different nutrition consumer markets
- determining how food formulations can solve problems associated with food choices for different nutrition consumers
- using data to develop ideas to solve problems related to food reformulations for specific nutrition consumer markets.

Effective practices

The following samples were selected to illustrate highly effective student responses in some of the assessment objectives of the syllabus.

Short response

Question 1:

This question required students to explain the term *nutrition consumer market*.

Effective student response included:

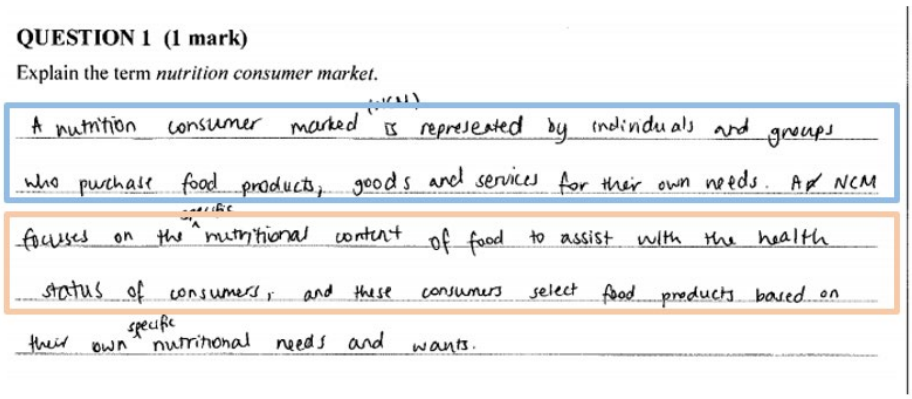
- a group focused on nutrient content of foods
- the nutrient content benefits the nutritional status of the group.

This sample has been included to:

- illustrate the exact match of response to EAMG. The samples demonstrate where a student has achieved the full marks available.

High-level response (1 mark)

The item required the student to give an accurate response that included a group of people focused on nutrient content of foods that would benefit their nutritional status.



QUESTION 1 (1 mark)

Explain the term *nutrition consumer market.*

A nutrition consumer marked is represented by individuals and groups who purchase food products, goods and services for their own needs. A NCM focuses on the nutritional content of food to assist with the health status of consumers, and these consumers select food products based on their own specific nutritional needs and wants.

Question 4a:

The protein shake makes the following health claim: 'A protein shake for those who want strong physical performance'. Use the NPSC data to justify whether this health claim is warranted.

Effective student responses:

- identified that the health claim was not warranted
- provided an accurate justification for why the health claim was not warranted
  - the justification may have included that the product's NPSC score is not less than 1, but as a Category 1 food it must be less than 1 to make a health claim.

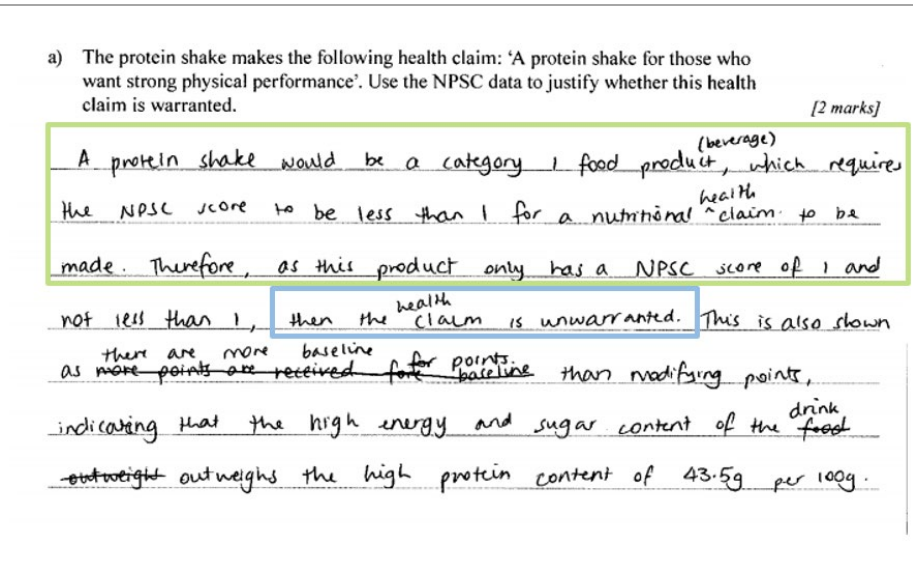
This sample has been included to:

- illustrate the exact match of response to EAMG. The samples demonstrate where a student has achieved the full marks available.

High-level response (2 marks)

The item required the student to give an accurate response that identified that the health claim is not warranted (1 mark)

and provide an accurate justification for why, e.g. the product's NPSC score is not less than 1 but, as a Category 1 food, it must be less than 1 to make a health claim (1 mark).



a) The protein shake makes the following health claim: 'A protein shake for those who want strong physical performance'. Use the NPSC data to justify whether this health claim is warranted. *[2 marks]*

A protein shake would be a category 1 food product (beverage), which requires the NPSC score to be less than 1 for a nutritional health claim to be made. Therefore, as this product only has a NPSC score of 1 and not less than 1, then the health claim is unwarranted. This is also shown as ~~more points are received for~~ there are more baseline points for baseline than modifying points, indicating that the high energy and sugar content of the ~~food~~ drink ~~outweighs~~ outweighs the high protein content of 43.5g per 100g.

Extended response

Question 6:

This question required students to use the problem-solving process to determine which of the three prototype formulations was the most suitable option for the Food Kit Company to add to its range.

Effective student responses:

Students who responded effectively to the assessment were prepared to think flexibly, using the Food & Nutrition problem-solving process effectively. They combined this with their knowledge of the Unit 4 subject matter and with the stimulus data to justify their response.

Effective student responses:

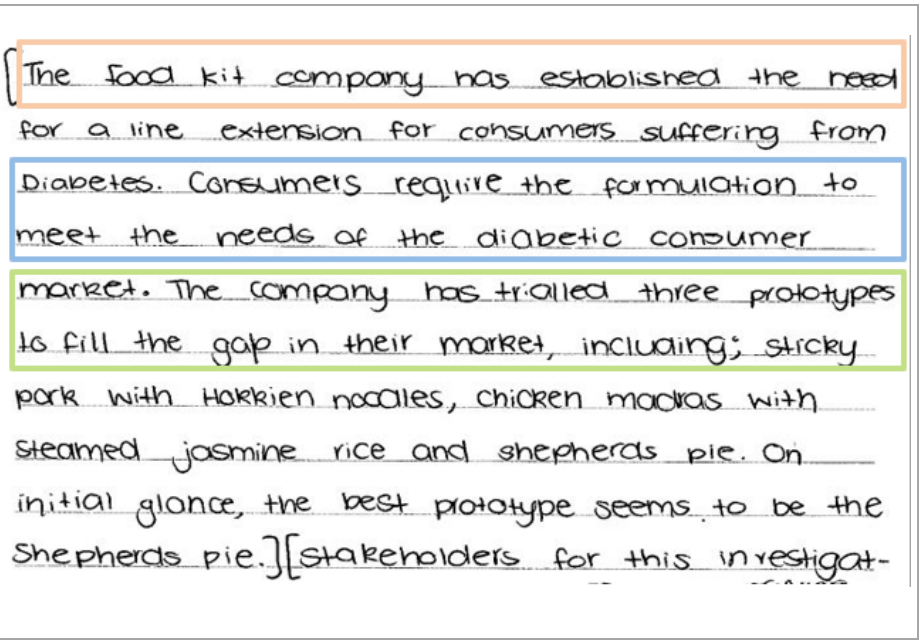
- identified relevant stakeholders and their needs
- analysed in detail the problem to determine solution requirements and solution criteria
- recognised the relationships between the stakeholders and the solution
- evaluated in detail the prototypes against the solution criteria using stimulus data
- synthesised information and data to effectively determine valid conclusions
- drew valid conclusions with refinements
- made recommendations for enhancement justified by stimulus data.

This sample has been included to demonstrate the use of some the following features from the EAMG:

- identifies the needs of the Food Kit Company
- determines accurate requirements for a solution to meet these needs.

Mid-level response (3–6 marks)
The item required the student to provide an insightful analysis of the stimulus to determine the needs of the stakeholders, the food kit company and the consumers experiencing diabetes. The response also required a list of solution requirements that included:

- a new product to fill a gap in its range and the market
- a product that is suitable for consumers experiencing diabetes
- a product that represents current consumer trends
- a product that has acceptable sensory profiling
- a food choice that complements the existing range of menu choices
- a food choice selected from the proposed prototype formulations.


The food kit company has established the need for a line extension for consumers suffering from Diabetes. Consumers require the formulation to meet the needs of the diabetic consumer market. The company has trialled three prototypes to fill the gap in their market, including; sticky pork with Hokkien noodles, chicken madras with steamed jasmine rice and shepherds pie. On initial glance, the best prototype seems to be the shepherds pie.][stakeholders for this investigat-

This sample has been included to demonstrate the use of some the following features from the EAMG:

- analysis the sensory profiling data to make a recommendation about the appropriateness of prototype formulations and
- justification their opinion with evidence from the sensory profiling data as per the EAMG below.

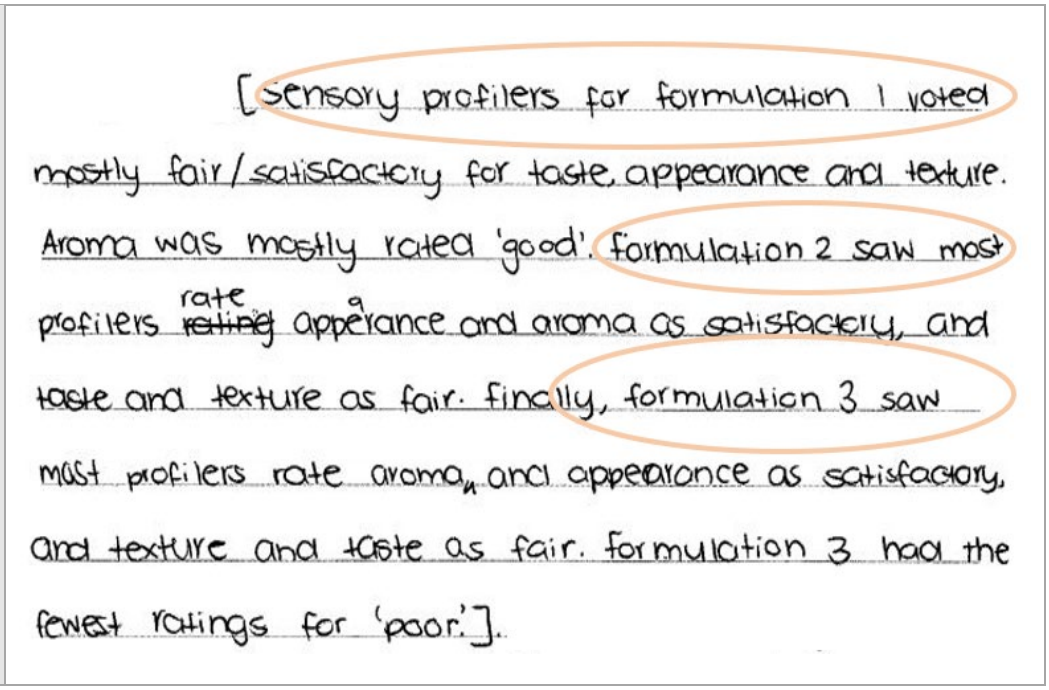
Student sample/s of effective responses

This sample has been included to show the discussion of the three prototypes together. The discussion features the evaluation of the prototypes against the sensory properties and against one another.

Mid-level response (5–9 marks)

The item required the student to analyse the sensory profiling data to make a recommendation about the appropriateness of each prototype formulation.

The student was required to justify their opinion with evidence from the sensory profiling data - that was not done.



[sensory profilers for formulation 1 voted mostly fair/satisfactory for taste, appearance and texture. Aroma was mostly rated 'good'. formulation 2 saw most profilers ~~rating~~ rate appearance and aroma as satisfactory, and taste and texture as fair. finally, formulation 3 saw most profilers rate aroma, and appearance as satisfactory, and texture and taste as fair. formulation 3 had the fewest ratings for 'poor'].

This sample has been included to demonstrate the use of some the following features from the EAMG:

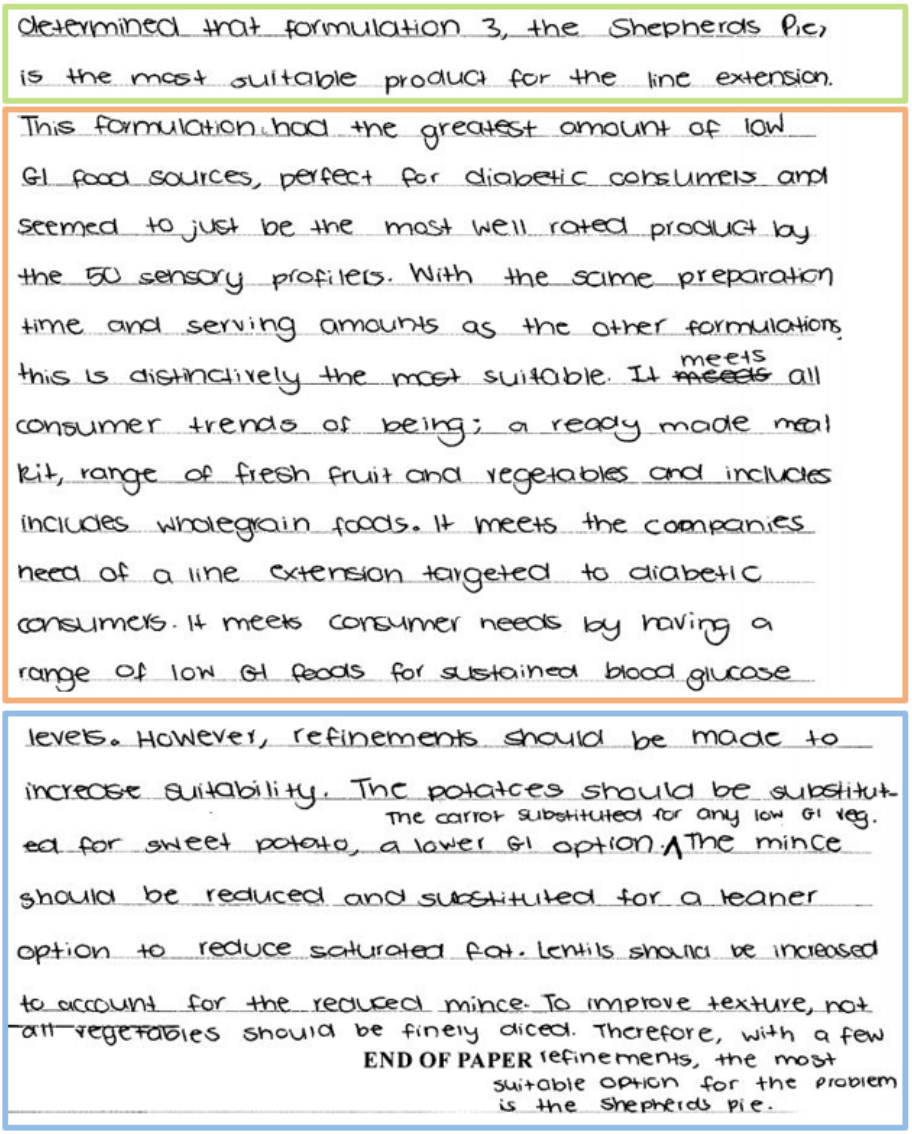
- the evaluation of prototypes against all solution criteria to determine the best solution
- the discussion of the prototype that has been chosen as the solution and provides detailed justification for why the prototype formulation was chosen
- effective recommendations for the enhancement of the chosen solution
- justification of recommendations with some evidence from the stimulus.

Student sample/s of effective responses

A mid-level response (7–9 marks)

The student was required to determine a prototype formulation as the best solution. They then needed to provide a detailed justification for why the prototype formulation was chosen as the best solution. The student would then have to make effective recommendations for future enhancement of a prototype formulation and justify these recommendations with detailed and accurate evidence from the stimulus.

This response doesn't include any data to support the refinements.



determined that formulation 3, the Shepherds Pie, is the most suitable product for the line extension.

This formulation had the greatest amount of low GI food sources, perfect for diabetic consumers and seemed to just be the most well rated product by the 50 sensory profilers. With the same preparation time and serving amounts as the other formulations this is distinctively the most suitable. It ~~needs~~ meets all consumer trends of being; a ready made meal kit, range of fresh fruit and vegetables and includes includes wholegrain foods. It meets the companies need of a line extension targeted to diabetic consumers. It meets consumer needs by having a range of low GI foods for sustained blood glucose levels. However, refinements should be made to increase suitability. The potatoes should be substituted for sweet potato, a lower GI option. The carrot substituted for any low GI veg. The mince should be reduced and substituted for a leaner option to reduce saturated fat. Lentils should be increased to account for the reduced mince. To improve texture, not all vegetables should be finely diced. Therefore, with a few refinements, the most suitable option for the problem is the Shepherds Pie.

END OF PAPER

Practices to strengthen

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

- referring to the syllabus definitions for high-level responses rather than definitions from other sources
- engaging students in activities that assess the relevance of stimulus and data to the problem and the solution, and that enable students to practise analysing data in different problem contexts
- increasing practice of evaluation of prototypes against the solution criteria and use of data in the justification of decisions for a solution
- providing more opportunities for students to engage with NPSC classifications, and the definitions and rules that apply to each of those categories.