

# Nutrition

2010 ASSESSMENT REPORT

Health and Personal Development Learning Area



Government  
of South Australia

**SACE**  
Board of SA

# NUTRITION

## 2010 ASSESSMENT REPORT

### GENERAL COMMENTS

In 2010, 803 students from South Australia and the Northern Territory completed Nutrition, a decrease from 898 students in 2009.

### ASSESSMENT COMPONENT 2: PRACTICAL AND COLLABORATIVE WORK

A variety of practical activities were presented for moderation, ranging from the use of standard and modified support materials from the SACE website, to teacher-developed materials to meet the interests of student cohorts. When teachers supplied the requested 2010 Marks Allocation for Assessment Component 2: Practical and Collaborative Work form, it assisted the moderators to confirm assessments, as did the clear labelling of students' work indicating the grade band they had achieved (for example, 'Highest A' or 'Lowest C'), as specified in the learning area manual.

When submitting the confirmation results sheets (yellow) in the moderation package, teachers should complete all details in all columns carefully and accurately, only rounding off decimal figures for the final mark out of 80.

The most successful students were given tasks with clear instructions and guidelines to follow and which included a formative (validation) practical to allow for skills development and understanding of procedures and methods of reporting. Some practical tasks were more complicated than necessary. Students should be guided to investigate only one hypothesis per practical. If a student wishes to investigate both a nutritional and a sensory hypothesis, teachers could suggest it may be more prudent to examine the nutritional hypothesis in the formative practical and then the sensory hypothesis in the summative practical. Not all practical tasks need to include a hypothesis; only the design practical tasks require it. The most successful students considered their data logically and rounded figures to one decimal place.

It was noted that a few practical tasks have been modified significantly compared with the exemplars and are now over-simplified, leaving students with little opportunity to demonstrate their analysis and evaluation skills to the high level required of an 'A' student. A small number of practical tasks did not require students to restrict the report to a word-limit commensurate with the weighting of the task compared to other assessment components. For practical and collaborative tasks weighted at 5%, students should not be writing responses in excess of 2000 words. They need to be directed to be concise and to respond to the criteria for assessment.

### Criteria for Judging Performance

The criteria for judging performance for all practical and collaborative work must use those in the current Nutrition curriculum statement. Teachers should select clarifying questions for each criterion appropriate for the practical they are assessing. Some teachers need to review the selection of criteria, particularly if using the *designing*

*skills* criteria, as these were sometimes linked to the *practical skills* criteria; these two criteria sets should be separated as outlined in the curriculum statement.

Students who presented practical reports under subheadings related to the specific criteria for assessment were generally more successful, as this provided direction for discussion and ensured they addressed all aspects required in the report.

Moderators noted that some teachers were often generous when marking student work in the *analysis and evaluation* criteria. Some students were awarded marks for repeating data, rather than for analysis of why the patterns of results were formed. Discussion at times was simplistic and not related to the practical task, but based on research from secondary sources.

### ***Designing skills***

It was pleasing to note that more students than previously wrote testable hypotheses; however, if teachers did make corrections to them, it seemed inappropriate to award full marks. The design of the practical should be assessed prior to the students conducting the investigation, and if it appears that the original design would not be successful, teachers should have the students modify the design while keeping the original marks awarded for design.

There was some confusion about the use and storage of agar plates. Students should modify the conditions of the food storage (independent variable) prior to incubating all the plates under the same conditions (one of the factors held constant). Food samples should be swabbed, using a cotton tip onto agar gel prior to the plate being sealed, inverted, and then incubated. A control (either half an agar plate or an unopened agar plate) needs to be incubated in the same conditions in order for comparisons to be made.

### ***Practical Skills***

Students carried out a range of practical tasks and teachers were able to discriminate between students' efforts. Annotated photographic evidence was often used well to demonstrate skills and to clarify points. Some teachers used rubrics or scales effectively in order to indicate student achievement in both the practical and collaborative criteria.

### ***Collaboration***

Teachers who used the 2010 Marks Allocation for Assessment Component 2: Practical and Collaborative Work form were able to correctly weight this component. Students who had the opportunity to reflect on their efforts through writing were able to clarify their thoughts and comment on the strengths of the process. It was noted that groups consisting of three students often allowed each member to be actively involved in the investigation and therefore achieve more successful results. Larger groups needed more complex tasks to provide the same opportunities.

### ***Analysis and Evaluation***

Many of the students in the lower grade bands had difficulty in discriminating between describing results and analysing them. Some also did not link their results to the aim or hypothesis being investigated. In some instances, students were not able to analyse and evaluate much data due to the construction of the practical task. Teachers need to ensure there is enough complexity for this to be achieved.

Comparing students' primary results with supplied or researched secondary data often assisted in this process. Students who used subheadings reflecting the dot points of the criteria for assessment were able to address all aspects of the analysis and evaluation. This also assisted many to be concise in their discussion. Strengths and weakness should reflect what happened in the practical, not the results of the practical.

In practical tasks of the 'completion' type, it was difficult for students to suggest suitable improvements as the practicals were so well-refined by teachers. It may not be suitable to have this as a criterion for assessment in tasks such as these, and should only be included in the design tasks.

### ***Reporting***

It was noted during moderation that the standard of student reporting had improved from last year, particularly the reporting of graphs and tables. Further improvements could be achieved through presenting raw data in appendixes and only significant data in summary form in the final report. Students should also be guided to be selective about what needs to be graphed; if a simple table supplies easily read data, then that is all that is required. The more successful students were able to construct graphs that compared data rather than supplying two separate graphs.

The use of supplied data from computer programs needs to be considered as raw data and be placed in an appendix. Students should then extract the specific information they wish to discuss and construct their own modified graph to include in the main body of the report. It is essential for students to discuss any graph or table they insert in their report. Graphs and tables sitting in isolation do not contribute to the quality of the work. Students are also not required to repeat materials and methods if they are using the same as supplied in the task. They should refer the reader to the appendix and include the original task sheet there.

### **Summary of Practical Tasks**

The following is a summary of some of the practical tasks presented at moderation.

#### *Core Topic 1*

- Macronutrient identification: powders and solutions. The powders allowed students to compare with secondary data, increasing the complexity of the task. Four powders was a standard requirement in most of these practical tasks.
- Burning food to determine energy released. Foods varied, such as nuts, seeds, popcorn, and cheese balls. Most required the comparison of two foods with supplied data. When considering the use of nuts, be aware of student allergies and make appropriate modifications.
- Vitamin C content of selected liquids.
- Salt content of potato chips.

#### *Core Topic 2*

- Diet analysis in a variety of forms including supplied case studies, where students were required to predict how the diet would rate for selected macronutrients and micronutrients.
- Selection of a diet-related disorder and then preparing a meal that would be suitable to prevent further symptoms or progression of the disorder. Some

students were then required to link ingredients to the Australian Guide to Healthy Eating.

#### Core Topic 3

- Sensory testing of foods, either student-prepared foods or purchased foods for those students with limited or no access to food preparation areas.
- Evaluation of own diet and then an examination of psychological reasons why the student ate those foods.
- Diet for two different stages in the lifecycle, and then selecting and preparing a suitable main course for one of the stages.
- How advertising influences food choices.

#### Core Topic 4

- Microorganism testing. A great variety of these were presented. Some students need to consider the handling of the agar plates and ensure that they are one of the factors held constant.
- Processing and packaging of food and resultant quality.
- Additives in foods and the effects on density, shelf life (visual indicators), and so on.
- Comparison between the shelf life of home-cooked and commercial foods.

### ASSESSMENT COMPONENT 4: EXAMINATION

The mean for the examination was 59.1%, which compares with 65.6% in 2009.

#### General Comments

This year, more students were able to answer at least some parts of each question, but depth of answers was lacking in many cases.

#### Part 1: Short-answer and Analytical Questions

##### Question 1 (mean 57%)

- (a) Many students confused total energy intake with minimum energy to sustain life when defining 'basal metabolic rate' (BMR).
- (b) Students were required to round numbers to the nearest whole number.
- (c) Predominant answers included gender, climatic conditions, age, and exercise. Each factor presented needed to indicate if BMR was increased or decreased with the explanation.

##### Question 2 (mean 62%)

- (a) Most students were able to identify osteoporosis as a consequence, with only some identifying a correct second consequence, such as rickets, poor tooth structure, and impaired nerve impulses or muscle contraction and relaxation.
- (b) Generally well answered.
- (c) Key words were 'lifestyle factors'. The question asked about prevention, therefore students needed to state *no smoking*, rather than *smoking* to get the mark. Students needed to be specific about load-bearing exercise. Many correctly identified lack of sunlight.
- (d) (i) and (ii) Correctly answered by the majority of students.

- (d) (iii) Answered reasonably well. However, some students confused greater muscle bulk in males compared to females, rather than the difference in bone mass.

**Question 3** (mean 70%)

- (a) Generally well answered, with correct identification of macronutrients and micronutrients, using the figures from the data and performing simple calculations. A few students discussed common dietary issues faced by vegetarians, which was not required.
- (b) Some student answers were more appropriate for a vegan diet, rather than for lacto-vegetarian as required.
- (c) The identification of the nutrient was most often correct. However, by stating food groups rather than foods, many students did not get credit for their answers.
- (d) Calculations were generally correct, but failure to round to a whole number meant full marks were not gained by some students.

**Question 4** (mean 55%)

- (a) Most graphs did not have a title, which was required, and a number of students did not know how to draw this type of graph. Sensory characteristics were labelled on the sides of the pentagon, instead of where the lines meet.
- (b) Generally poorly interpreted question. Only a few students related the answers back to teenagers and consequently fully explained the answer. Many did not explicitly say how low salt or high sugar was detrimental. A number mentioned that it was simply 'too sweet' or that teenagers would not like the colour.

**Question 5** (mean 61%)

- (a) (i) The majority of students correctly identified a suitable trend, but a few incorrectly stated how just one age group was affected.
- (a) (ii) The most successful answers included susceptibility to infections, possible blindness, kidney failure, and shortened life span.
- (a) (iii) Diet and lifestyle strategies were not described well or not linked back to Type 2 diabetes.
- (a) (iv) Body mass index (BMI) was the common diagnostic tool given, but the justification was not always related back to how it monitors the health of people at risk of developing Type 2 diabetes.
- (b) (i) and (ii) Generally well answered by most students.
- (c) Some students had difficulty identifying a preservation method, but those that could identify a suitable preservation method provided a reasonable explanation of the method's principle. The nutrient partially destroyed by the method of preservation was poorly answered by many students.

**Question 6** (mean 61%)

- (a) The method was correctly identified by most students; however, few identified that grilling allows for fat to drip off and therefore not be consumed.
- (b) The dietary requirement selected by many students was high cholesterol (for Friend X). They correctly identified Warm Chicken Salad as the best option, but did not justify why it was so. Few students used the term 'saturated fats' or suggested that the other options have foods high in cholesterol or saturated fat that lead to cholesterol production. For those who selected the

dietary requirement of weight gain (for Friend Y), the meal recommended was correctly identified in the majority of cases. A comment was required to explain that to gain weight a person needs to increase their kilojoule intake, and this would be easier with energy-dense foods.

- (c) Most students realised that the best storage method would involve refrigeration or freezing. Few actually indicated the temperature range for these methods, and most did not adequately explain how these methods limited microbial growth.
- (d) Prawns, bacon, and cream were the most common choices. Contaminant and condition were not well explained by most students. Common responses included food being 'left out for some time' or 'not stored properly'. Students need to be aware that to be awarded marks they must give specific rather than broad answers. Some students had a good knowledge of food-poisoning micro-organisms and the foods with which they were associated. Others mentioned time and temperature in the danger zone.

#### **Question 7** (mean 62%)

- (a) Most students were able to recognise and select one of the symbols; however, many did not link the impact to consumers or to the environment.
- (b) When students answered from the promotion point of view, rather than from a recycling point of view, the question was well answered.
- (c) Well answered. A few candidates misinterpreted the instructions and discussed Internet, radio, and television promotions.
- (d) Mostly well done, although some stated nutritional information instead of nutrition panel and repeated recall information.
- (e) Not well answered by the majority of students, who generally did not name one food (naming food groups instead), and did not adequately explain why it was not required to have a label. Multipack items was a popular choice and was generally well explained for those students who used this as an example.
- (f) Packaging was well answered, but candidates had difficulty in stating reasons why the packaging chosen would be suitable for the product. Preventing light from spoiling the food was a common incorrect answer.

#### **Question 8** (mean 53%)

- (a) Most students had difficulty in suggesting two different reasons. Many identified the need to reduce the increasing obesity rates in children, or the role of education in promoting healthy eating habits as important reasons for introducing traffic-light systems to their canteens, but only a few students managed to suggest both.
- (b) The fact that young people are more open to change (impressionable) was not often given as the reason for the use of this strategy in primary schools and pre-schools. Some students did recognise that developing good eating habits early in life is likely to continue into adulthood.
- (c) (i) Well answered. Most students recognised that that these foods were lower in fat (kilojoules) than the others.
- (c) (ii) Generally not well answered. Students did not compare amber with green and red foods.
- (d) This was well answered by most students. Popular answers focused on the lack of profitability for companies selling foods in the amber or red categories; others suggested it could make manufacturers adapt their products to make them nutritionally acceptable.

### **Question 9** (mean 51%)

- (a) While some students did very well with this question, many did not achieve more than 2 marks. The large intestine was frequently cited incorrectly as the site of digestion for lipids, and glucose was not often correctly identified as the end product of carbohydrate digestion.
- (b) Most students correctly identified the structure in the small intestine responsible for the absorption of nutrients. Very few students were able to state specific foods which should be avoided by people with coeliac disease; many mentioned specific grains, not foods.
- (c) It was clear that many students had a poor understanding of coeliac disease, and even if they could name a symptom, they could not explain why it occurred. Generic terms like 'stomach pain' were common, and vomiting was a common (but incorrect) symptom.

### **Question 10** (mean 55%)

- (a) Students could state a diet-related disorder, but often did not describe how the factor leads to low birthweight. A common answer was to list two or more factors with no description.
- (b) Generally not well answered, with only few students correctly describing how the identified lifestyle factor leads to low birthweight in babies.

## **Part 2: Extended-response Questions on Option Topics**

### **General Comments**

Students wrote fluently and with acceptable terminology in the extended-response answers. Most students clearly addressed each dot point in the order written. Some students did write introductions and conclusions, which do not accrue marks, and they should therefore be discouraged from doing this.

### **Option Topic 1: Global Nutrition and Ecological Sustainability**

#### **Question 11** (mean 49%)

Natural disasters such as drought and flooding were common environmental issues identified. Global warming and deforestation were also mentioned by some students. Many of the discussions lacked depth, and only a few students clearly explained the implications of these issues on food production. Many students repeated simplistic answers.

There was obvious confusion about food processing and how this differs from food production. Many students incorrectly discussed food production. Students who did write about food processing rarely explained the basic principles of the methods and did not link them to how they could help a community after a natural disaster has affected the food supply. Successful answers mainly focused on canning, vacuum packaging, UHT, and dehydration of food.

Environmental impacts were discussed fairly well; however, many students were still focused on food production and incorrectly discussed organic farming and genetically modified crops. Packaging and the waste generated from processed foods was a popular answer, followed by a specific process such as canning and its impact on the environment through the use of fossil fuels and other finite resources, and the creation of rubbish contributing to landfill.



Most students were able to identify strategies implemented by government and non-government organisations; however, few could clearly explain how these strategies lead to a sustainable food-supply. Many students resorted to incorrectly discussing short-term strategies, not suitable for sustainability. The most successful responses defined the term 'sustainable' and discussed fair-trade agreements, education in relation to food production and storage methods, and interest-free loans and subsidies to farmers.

### **Option Topic 2: Global Hunger**

#### **Question 12** (mean 58%)

Most students identified a deficiency disease correctly. Some incorrect answers were osteoporosis, diverticulitis, and malnutrition. Several students discussed marasmus and kwashiorkor, which are similar, but they did not highlight actual differences in enough depth. The most successful responses addressed the question and listed specific foods to be consumed. Students generally mentioned water, emergency food, and shelter. The explanation of why these strategies were important was only discussed well by the more successful students.

Students generally answered one political decision well, referring to options such as reallocating finances to improve infrastructure, providing interest-free loans, and allowing international aid and for it to be distributed appropriately. Students had difficulty in explaining how eliminating corruption and providing education could prevent Picture 3 from continuing.

Many students demonstrated a clear understanding of the role of non-government organisations, could name some such organisations, and described in detail micro-financing, such as revolving loan funds. Others mentioned education, but were not specific in their description of how this could achieve an adequate food-supply. Less successful responses repeated information from dot point 2.

Chief Assessor  
Nutrition