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Agriculture and Horticulture

2015 Chief Assessor’s Report

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## Overview

Chief Assessors’ reports give an overview of how students performed in their school and external assessments in relation to the learning requirements, assessment design criteria, and performance standards set out in the relevant subject outline. They provide information and advice regarding the assessment types, the application of the performance standards in school and external assessments, the quality of student performance, and any relevant statistical information.

## School Assessment

Assessment Type 1: Practical Skills

Overall, the moderators were pleased to see that the tasks undertaken by students this year continued to develop in both the variety of tasks and the quality of task design. However, there is still a concern that some teachers are not taking on board the feedback provided through this report, the clarifying forums, or other professional development opportunities provided throughout the year.

The main areas of concern in this assessment type are a lack of connection between the task and specific features, a lack of opportunity for students to analyse and evaluate their findings, tasks that were not of Stage 2 standard, and a lack of evidence of how a student achieved the assigned grade.

Many of the tasks used by teachers across the state have been used in one form or another for many years. While most teachers have modified and adapted these tasks to reflect the requirements of the current subject outline, there are still a number of these tasks that have insufficient connection to the specific features that are used to make assessment decisions in this subject. It is imperative that teachers take time to reflect on the tasks that they are presenting to their students and ensure that they provide the opportunity for their students to meet the specific features required and at a level necessary to achieve an A grade.

This leads to the next area of concern. In many cases, the difference between a practical skills task that is appropriate for Stage 2 and one that would be more suited to lower year levels is the depth of analysis and evaluation required. Further to this, students should be given the opportunity to use information or data from the practical activity to develop recommendations for farmers to improve the productivity or profitability of their enterprises. There is also the opportunity for this information to be used to discuss social, environmental, or economic issues that may result from, or be linked to, the activity being undertaken. For example, the practical skills required to undertake many soil tests are quite basic and could be achieved by Year 9 or Year 10 students. To give the task the depth required at Stage 2, the students could then be required to analyse the results of their testing to find deficiencies or excessive levels of certain nutrients and draw conclusions about the suitability of the soil for growing specific crops. They could then be required to make a recommendation on the type and amount of fertiliser required to ameliorate these deficiencies. Finally, the students could then be asked to comment on the economic viability of applying this fertiliser and the possible environmental outcomes of doing so. This is a very simple example to illustrate a point, but there are examples of tasks on the Agriculture and Horticulture minisite that more fully demonstrate these ideas, and there is further opportunity to discuss task design at the clarifying forum and other professional development activities.

In some cases, teachers have assigned grades for specific features but have not provided evidence of how they have made this judgment. This is particularly true of the specific features I3 (Manipulation of apparatus, equipment, and technological tools to implement safe and ethical investigation procedures) and A3 (Demonstration of skills in individual and collaborative work), but is not limited to them. While it is difficult to present direct evidence of student performance against these specific features, a simple rubric that shows the criteria used and the corresponding student grades is adequate to give the moderators the information they require. Again there are several examples of these rubrics available on the Agriculture and Horticulture minisite.

Practical skills tasks require students to carry out some practical activity that involves using apparatus and equipment, and to use individual and/or collaborative work skills in an agricultural context. Therefore students should be assessed against the I3 and A3 specific features in this assessment type. If there is no requirement in a task for students to undertake any practical activity, then the task should be in Assessment Type 2: Skills and Applications Tasks.

Finally, all students are required to undertake at least one practical activity that assesses their ability to design an experimental method. The moderation panel understand the logistical problems for some classes to have each student carrying out an individual practical investigation, as well as completing an external investigation. In this case, it is quite legitimate for each student to design an experimental activity, individually developing hypotheses, identifying dependent and independent variables, and identifying the factors that need to be controlled. Each student could also individually develop a materials list and outline the method to be used. The class could then decide on which of these experimental activities they will actually undertake as groups or as a whole class and then use collaborative work skills to collect the data. Each student would individually write up a report using this data. In this situation, each student would also be required to hand up the initial experimental design that was done individually, for assessment against specific feature I1(Design of agriculture and horticulture investigations), and include it with the report submitted for final moderation. It is a requirement that specific feature I1 is covered at least once throughout the school assessment and this is generally the most suitable method of achieving this.

Assessment Type 2: Skills and Applications Tasks

As in Assessment Type 1, the moderation panel saw an overall improvement in the standard of work being presented. However, many of the concerns addressed in the previous section are also relevant here.

The main issue raised by the moderation panel is the lack of opportunity for students to address analysis and evaluation, and to make recommendations based on their knowledge and understanding of agricultural concepts. This was particularly the case in tests, where there were often not enough higher-order questions to allow better students to demonstrate their skills and knowledge. While the use of multiple-choice questions has a place in tests, there was a tendency by some teachers to overuse them. It is more difficult to differentiate between a very good student and an average one in relation to the performance standards when using predominantly this type of question. Test questions that allowed students to demonstrate their knowledge and understanding in a familiar context, and then asked them to project these into a new context, provided the best opportunity for students to achieve excellent results.

The overall grade for any task should be determined using the performance standards. Simply using marks can lead to a skewed result, especially in tests, as there are often a large number of marks allocated for questions that ask for recall and similar lower-order thinking skills and less for the higher-order questions. Therefore, it can be relatively easy to achieve a high percentage mark but not address all of the specific features to a high level. Simply matching a high mark to a high grade may not truly reflect the ability of the student across the performance standards. Teachers should include a rubric of the performance standards for the specific features being assessed in each task that indicates the level of achievement in each of these features.

It is also important that teachers consider carefully which of the specific features their assessment tasks are addressing. Addressing all or nearly all of the specific design features in one task can make it difficult for students to demonstrate each of these at a high level. Similarly, some tasks do not lend themselves readily to addressing certain specific design features. One example of this is assessing I2 (Selection and acknowledgment of information about agriculture and horticulture and issues in agriculture and horticulture from different sources) in a test situation where it would be expected that students would have very limited access, if any, to a range of sources of information, and would not be expected to acknowledge these sources in this context.

## External Assessment

Assessment Type 3: External Investigation

There was a higher percentage of strong investigations, showing clear evidence against all of the required specific features. The most successful students chose relevant and contemporary topics with which they were familiar and therefore confident. They developed a valid scientific method, the analysis made clear links to current agricultural practice, and the reports delivered information clearly using an organised structure.

It was pleasing to see small class groups solving some logistical issues by using the same resource (such as a feedlot) to test different hypotheses. This ensured the students were producing quite distinct investigations while still working collaboratively with the data collection. However, when students in one class group undertake the same investigation, it can be difficult to find evidence that they have actually designed the method themselves and they run the risk of their reports being identical in many areas.

The main areas of concern remain around analysis and application. Specific feature AE1 continues to be an area of weakness, with students struggling to directly link their results with their hypothesis and provide a detailed analysis of the scientific principles involved. Sometimes this process was also compromised by the fact that the investigation was very basic and did not allow scope for detailed analysis.

Specific feature AE2 was handled well by some students, who included discussion of random and systematic errors. However, many students missed the obvious evaluation of their small sample sizes and the limitations this places on the validity of the results. It would be pleasing to see more specific and less superficial suggestions for improvements to designs. It is not necessary for students to explain concepts like random and systematic errors; they can demonstrate their understanding by giving correct and appropriate examples from their investigation and indicate the effect on the conclusion.

For many, the investigation design was the greatest limiting factor. While the subject outline does allow for a case study, it is extremely difficult for students to achieve in relation to the specific features I1, I4, AE1, and AE2 within this framework, especially when no primary data has been collected. This style of investigation invariably ends up with an ‘information report’ structure and it is challenging for markers to find evidence that address all the required specific features. For this reason, teachers are encouraged to steer their students toward practical investigations — either laboratory or field based.

Students need to select a topic that is not too simple, so that they have plenty of scope for analysis, and that is directly related to agriculture or horticulture. Controlling the number of variables affecting the trial is important to enable clear analysis. Some students did not demonstrate clear understanding of the different types of variables and trial-design principles. Concepts like randomisation and replication need to be incorporated and demonstrated with the specific situation for the investigation, but students do not need to provide definitions of the terms. An explanation of how randomisation and replication will improve the quality of the data collected is much more useful. Very small sample sizes do not allow valid interpretation and limited the success of otherwise robust experimental designs. Investigations where animal welfare is compromised must not be allowed.

Many reports still did not address specific feature KU2 adequately. Making clear the links to social (e.g. animal welfare, global trends, community impact), environmental (e.g. contamination, erosion, sustainability), and economic (e.g. profit margins, costs, yields) aspects of agriculture or horticulture should be emphasised more strongly. Teachers are encouraged to ensure that students plan for this section when initially designing their investigation.

An improvement in the presentation of results was noted, with summary data and graphs that showed the comparison required for the hypothesis provided in the results section, rather than the raw data which belongs in an appendix. Multiple photos are not required — a selected few to provide further information can be beneficial. Photos of all the equipment used are not necessary.

Contents lists and abstracts are not necessary and compromise effective use of the available word-count. Lengthy and repetitive introductions are not required. Concise background information allows students to clearly link their investigation to previous research and commercial agriculture.

The presentation of some reports could be improved by checking that student and school names are not present, and even photographs identifying the school should not be included. Again, there were some graphs presented in black and white when they had been constructed using various colours and thus they lost their effectiveness. Some reports appeared to be missing entire sections, so students and teachers are encouraged to check that all sections have been included in the copy that is sent for assessment.

In summary, teachers are encouraged to apply the suggestions provided in this report to allow their students to maximise their results. They must ensure that the reports demonstrate evidence against all nine required specific features listed in the subject operational information. A clear and detailed task sheet that provides scaffolding around investigation design and report structure is recommended. Attendance at the SACE Board’s clarifying forum early in 2016 is also highly recommended, even for experienced teachers.

## Operational Advice

School assessment tasks are set and marked by teachers. Teachers’ assessment decisions are reviewed by moderators. Teacher grades/marks should be evident on all student school assessment work. The more information that moderators have about how a grade was arrived at, the easier it is for them to confirm that grade.

As mentioned before, a rubric highlighting the specific features assessed in each task with the level of achievement for each indicated on the rubric should be included with all tasks in the student file. There should be some form of evidence of what the student has achieved for each of the specific features assessed that the moderators can access. Each student task should also have a cover sheet attached so that the moderators are clear about what the student was asked to do in the task.

An overall summary of grades for tasks in the assessment type is useful for moderators to see how the overall grade was determined. All tasks for each assessment type should be presented together, rather than, for example, having practical skills tasks and skills and applications tasks mixed together in chronological order. Also, a teacher file including the approved learning and assessment plan (LAP) and a copy of each task for each assessment type should be included in the moderation materials. Any changes made to the LAP should also be indicated on the addendum of the LAP. A Variations —Moderation Materials form should be included if student evidence submitted varies from what would be expected. These variations can be due to breaches of rules being applied, school-based special provisions, or misplaced work that was assessed. If student work is missing and there is no evidence that it was completed, the moderators will assume that the work is not submitted and therefore adjust the grade accordingly.

It is also important that teachers understand that work not submitted is allocated an I grade, not an E or D grade. If the student has demonstrated some achievement against some of the specific features but, for example, not handed up any written work, the teacher needs to provide evidence of this achievement to justify a grade higher than an I.

Teachers are reminded to refer to the subject operational information and other sources before preparing their students’ materials for final moderation. It is not necessary to remove identification from student work for final moderation. De‑identification is only required for the external investigation, which is centrally marked rather than moderated.

Please check that all material submitted in an electronic form works and is in a format that is readily accessed by the moderation panel. A significant amount of the panel’s time was spent trying to open corrupted files or work saved in obscure formats.

## General Comments

Teachers preparing to teach this course in 2016 should take the time to familiarise themselves with the subject minisite on the SACE website, paying particular attention to the subject outline and the subject operational information. There are also a growing number of exemplars available to assist in developing and designing tasks.

Moderation feedback is provided to all schools and teachers should check their class feedback before commencing the next year. If there are significant changes made to grades, teachers are encouraged to contact the SACE Officer — Curriculum.

All teachers are strongly encouraged to attend the clarifying forum provided by the SACE Board early in the year. The object of this forum is to enhance teachers’ understanding of the performance standards and how they can be best addressed in this subject. There is also a workshop provided by the Agriculture Teachers Association of South Australia following on from the clarifying forum, and this provides an excellent opportunity for the sharing of ideas and discussion of programs and tasks.

All teachers are encouraged to consider applying for a role in assessment panels as either markers or moderators. Teachers who have been involved in these roles appreciate the valuable professional development gained. For more advice, contact the SACE Officer — Curriculum for this subject.

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