

**A study of content, curriculum and
standards of year 12 assessment in
English, Literature, Mathematics,
Physics and Chemistry**

A response to the Draft Terms of Reference

**Prepared by the Australian Association of
Mathematics Teachers Inc.**

Contact Officer:

Will Morony
08 8363 0288
wmorony@aamt.edu.au

4 November 2005

Preamble

The AAMT welcomes the opportunity to comment on the draft Terms of Reference for this proposed project. In the short period available to prepare our responses we have been able to seek comments from members of our Council in all states and territories — their input is reflected in this response.

As the national organization representing the professional interests of teachers of mathematics, this response from the AAMT naturally reflects that perspective. It is likely, however, that many of the comments will reflect opinions in other curriculum areas.

General comments on the project

‘Key subjects’

The covering letter describes these as ‘key subjects’. This language suggests that other subjects are not ‘key’. Setting up this kind of hierarchy is neither helpful, nor, indeed, sustainable. Many in business, for example, would argue that Asian languages, for example are ‘key’ to Australia’s economic future.

Context

It appears arbitrary to only look at Year 12. Curriculum, content and standards in these subjects are nestled in a context that needs to be clearly articulated. One component of this context is the over-arching curriculum framework. In many (most?) jurisdictions many students undertake a course that encompasses both Years 11 and 12, and it is risky to consider only one of these. One risk, for example, is that work covered in Year 11 might be regarded as ‘missing’ from Year 12 in one particular state, because it is (sensibly) not repeated in Year 12.

Another aspect of the context is that each state has different structures that impact on the length of time spent at secondary school on each subject, the age of students in year 12 (and hence their cognitive capabilities), the length of time spent on each subject in secondary school and the various starting points for learning at the commencement of secondary school. This is of particular relevance to mathematics.

A third component of the context that is relevant is articulation with post school options — in particular first year university courses. The study should compare first year university content, curriculum and standards as this is an important pathway for many students undertaking study in these subjects.

All of these factors should be included for this type of comparative study to be complete and useful.

International Baccalaureate

The project appears to be solely focussed on the curricula of the jurisdictions. However, the International Baccalaureate is a bona fide pathway for many students in Australia and should be included. This would also provide an international reference for the work.

Comments on the Draft Terms of Reference

Terms of Reference 1 — variety of options

It is recommended that a more logical order for these sub-headings is to start with Curriculum (as below).

Curriculum

This TOR should identify the proportion of the age group at present studying any particular unit, subject or course.

It may also be wise to include in the TORs the identification of the 'currency' of a particular unit, subject or course by identifying how long it has been in place and whether it is undergoing review or redevelopment at present or at a known time in the future.

As they are currently stated, the second and fourth 'dash-points' imply analysis that is better undertaken under TOR 2. They could be stated as :

- How the learning goals and...; and
- The guidance provided...

Content

In describing topics and areas of study treated by courses, the Study will need to be careful that a measure of consensus is reached on this matter, to avoid obvious problems. An example of the latter is the almost complete omission of statistics as a 'topic' in the recent ICE-EM study, despite the fact that most jurisdictions regards statistics as an important part of mathematics for Year 12. In general, a report that reflects mostly the views of the report writers, not the wider community around Australia, will be of very little value. Part of the TOR ought to be generating a common view on the appropriate criteria to be used for comparison, with some evidence of agreement provided.

It can be quite difficult to identify content or standards from a list of topics. It's not the topic that is important, but what students are expected to be able to do as a result of learning something about it. Again, the number of hours devoted to a topic is not by itself a good enough gauge of expected depth, as it also reflects how much (if anything) was 'covered' previously (eg in Year 10). Great care is needed with content descriptions to obtain valid and reliable interpretations of the information written in official documents; in most cases, the people best placed to do this are those working in a particular state.

In the second last dash-point 'an assessment of the hours required based on the content' suggests that the researchers will do this from the documents. It would be much better to seek informed input on this matter from people on the ground with experience of teaching these units.

The last dash-point should be omitted. It will require analysis that is appropriately located in the third TOR (see below for further discussion)

Standards

The term 'moderation' in dash-point three could have several meanings. One is the sort of 'consensus' or 'table' moderation by groups of assessors that is used to define standards and ensure comparability of results *within* a subject. This would seem to be what is meant here. 'Statistical' moderation is an entirely different numerical process that is widely used to ensure

comparability *between* subjects. This does not seem to be what is meant here. A third meaning could be moderation to determine grade cut-offs, but this is covered in the second dash-point.

Terms of Reference 2 — analyse differences

It will be a process of *identifying* and analysing both the *similarities* and differences.

Understanding the actual picture when options are involved will require some attempt to quantify the uptake of the various options. A particular topic in mathematics may be listed as optional, but actually studied by a large proportion of the students. This will be important data in making comparisons that are meaningful and reflective of the true picture. Hence it is suggested that this TOR read ‘...options available within each subject, including the proportional uptake of these.’

Terms of Reference 3 — compare differences

It is difficult to understand what this means. The Study will be able to identify and clearly state the differences between Chemistry in Victoria and Tasmania; and between Chemistry in SA and Queensland. Comparing these differences would not seem to be a useful thing to do. Further, these dichotomous differences are not transitive — Chemistry in the various jurisdictions are almost certainly different from each other in different ways. That is, knowing the differences between Chemistry in SA and Queensland and SA and Tasmania will tell us nothing about the differences between Queensland and Tasmania.

It would appear that what is really meant by this TOR is some sort of commentary on the relative strengths and weaknesses in curriculum, content and standards between the jurisdictions in these subjects.

Terms of Reference 4 — reporting

The suggestion that the report be written in 'plain English' is inappropriate. Some use of technical terms is unavoidable in professional work, and important distinctions are likely to be obscured if reports are prevented from using the nuances of professional writing. Indeed, it is noted that the Terms of Reference are not written in 'plain English' — in fact a 'plain English' version of them would be quite uninformative.

Given the nature of this Study the 'suggestions for future action' will need to be confined to matters that have been investigated. It will not be possible to indicate future actions that go beyond advice to existing authorities, although this could legitimately include recommendations to collaborate on various matters. There is nothing in the TORs to indicate that the Study can investigate or make recommendations on possible means for achieving a 'national curriculum' in these subjects.

Conclusion

It is hoped that these comments are useful. Please do not hesitate to contact AAMT Executive Officer Will Morony (08 8363 0288; wmorony@aamt.edu.au) for clarification or further information.

This Study has the potential to inform efforts to understand the current state of curriculum, content and standards around the country, and this is a laudable intention. It is not an easy task, however. The comments above serve to highlight some of the complexities. The AAMT stands ready to contribute to the work as appropriate and possible.

The Association and its members have invested significant time and effort in preparing this material. Hence it would be appreciated if feedback could be provided, particularly in cases where the advice has not been accepted. It may be that this needs to wait until the TORs are made public in the Request for Tender.

Barry Kissane
PRESIDENT AAMT

4 November 2005

Appendix 1 — About the AAMT

The Australian Association of Mathematics Teachers is the pre-eminent professional association in school mathematics and numeracy education. It exists to support and enhance the work of teachers, to promote the learning of mathematics and to promote progress in mathematics and numeracy education.

The Association's members come from all states and territories and all levels of schooling. They form an extensive network of committed and enthusiastic mathematics and numeracy education professionals including teachers, academics, policy leaders and administrators.

Through the work of its many volunteer members and a highly skilled staff, the AAMT provides a range of services that includes:

- Three refereed journals (primary, middle school and secondary)
- Student Activities
- A catalogue of teaching materials
- Professional Development activities
- Research and development projects

The nature of the organisation enables the AAMT to play a significant role of national leadership in mathematics and numeracy education. Since 1999 its work on the development and implementation of advanced teaching standards in mathematics has been an important and valued contribution to the professional work of teachers of mathematics. This work continues to inform wider efforts in the area of teaching standards.