

Australian Certificate of Education - Exploring a Way Forward

Questionnaire

DRAFT Response from the Australian Association of Mathematics Teachers Inc.

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Explanatory Note:

This response to the Questionnaire is submitted on behalf of the AAMT. It is not anonymous from the Association's perspective — the Executive has used an open process to provide opportunities for members to provide input, and will make the final response publicly available.

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In brief, the process has been:

- AAMT Executive and staff prepared a Draft AAMT Response after consideration of the report 1 June
- The Draft AAMT Response was made available on the AAMT website, and members were informed that their views were being sought 1 June
- Final date for members' input 24 July
- Executive considered input in order to prepare the Final AAMT Response 24 July-4 August
- Final AAMT Response submitted 4 August

Part One of Questionnaire General Information

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Q1: Is your interest in this report primarily as a (select one)

| | | |
|--------------------------|--|----------|
| <input type="checkbox"/> | School student | <i>f</i> |
| <input type="checkbox"/> | Parent of (a) school-aged child/children | <i>f</i> |
| <input type="checkbox"/> | Parent of student/s who has/have already completed Year 12 | <i>f</i> |
| <input type="checkbox"/> | School teacher/principal | <i>f</i> |
| <input type="checkbox"/> | Other educator | <i>f</i> |
| <input type="checkbox"/> | Other (please describe below) | X |

If your interest is "Other", please describe:

National professional association.

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Q2: Gender
N/A

Q3: Region
N/A

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Q4: In which State/Territory do you reside?

The AAMT's head office is located in Adelaide, South Australia. Current President is in Queensland; other Executive Members in SA, Vic, Tas, WA.

Part Two of Questionnaire
The AAMT's views about the Report's recommendations

Recommendation 1 is:

5 ***That curriculum essentials be identified—at least in some nominated mathematics, English, science and social science/humanities subjects—to ensure that all Australian students have opportunities to engage with the fundamental knowledge, principles and ideas that make up these disciplines. Essential elements of subject curricula should be identified by national subject panels comprising subject matter and***
10 ***assessment experts and members of the relevant professional subject associations.***

Q5 On a scale of 1 to 5 (where 1 is Strongly support, 2 is Support, 3 is Neither Support nor Oppose, 4 is Oppose and 5 is Strongly Oppose), please indicate your level of support for **Recommendation 1**.

| | | |
|---|----------------------------|----------|
| 1 | Strongly support | <i>f</i> |
| 2 | Support | X |
| 3 | Neither support nor oppose | <i>f</i> |
| 4 | Oppose | <i>f</i> |
| 5 | Strongly oppose | <i>f</i> |

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Comments

The AAMT's support for this work comes with several caveats:

- 20 1. The members of the national mathematics panel should have demonstrated expertise in relation to senior secondary school mathematics, and that at least one half of the members should be practising teachers nominated by the AAMT.
- 25 2. The time allocated for this work should be adequate to allow for genuine and thorough consultation with stakeholders. The process should demonstrate that feedback has been considered and provide a rationale for decisions. There should be at least 6 months for the actual consultation, plus sufficient time for the preparation of the final recommended 'essentials'.
- 30 3. The task for the national mathematics panel is essentially analysing *what is* in order to identify *what should be the core* for mathematics in the proposed certificate. The process is part of designing a certificate for the future. Hence, the panel should undertake its work with a forward-looking perspective that is informed by an appreciation of the role and nature of mathematics in the knowledge age and students' lives. The AAMT would not support an outcome that does not reflect this perspective, and the needs of **all** students.
- 35 4. The AAMT notes and strongly agrees with the commitment (p.62) that '*a future Australian Certificate of Education...would be available to all senior secondary school students*'. This is not only a matter of location, however. All jurisdictions have a range of mathematics courses available in the senior years. This range recognises that students have different backgrounds, needs and aspirations in terms of their mathematics in the final years at school and provides courses reflect these parameters. What this range allows is for all students to have access to an appropriate mathematics course up to the completion of their schooling.

45 The discussion on p. 71 suggests that *fundamental knowledge, principles and ideas* will be able to be developed for several subjects within a discipline, and that decisions about the set of subjects will be made by the 'national standards body'. The AAMT broadly supports this approach, as it will allow all students to have access to rigorous and relevant mathematics within the context of the certificate. We note that this differentiation of courses need to account for the range of destinations within the 'non-tertiary' bound pathways, as well as

50 between these and those that are tertiary bound.

The examples of names used on p. 71 (*advanced* and *general*) seem to be locked into a 'hierarchical' view of the subject likely to emerge. The AAMT takes the view that this is not appropriate and that subjects should have names that describe them (as for the examples of Ancient and Modern History).

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5. It will also be necessary, in the context of 'differentiated' mathematics subjects, to have some sort of over-arching statement of the core values and intentions of the mathematics discipline. This statement would provide the high level purpose for, and the consistency and coherence between, the individual subjects. It would be a good place to enshrine the forward-looking perspective outlined in 3 above in a way that directly influences the detail within the subjects. Reaching consensus on such a statement will be a challenge for the mathematics community, but is a critical and much needed evaluation of purpose that would be catalysed by the development of the proposed certificate. Attention needs to be drawn to the nature of mathematics as an enabling subject for all other subjects and including VET – particularly considering the wide variety of pathways available and the fact that many jurisdictions have now legislated for compulsory schooling to year 12.
 6. The AAMT endorses the statement on p. 69 that *'the core should be more than the "lowest common denominator" of curriculum content'*. The focus on 'common' throughout the recommendations is understandable, but it needs to be noted that 'common' doesn't imply best practice/desirable/aspirational — these are also key metrics in identifying the core. Whilst the table on p. 70 is presented only as an example it seems only to represent content and facts. For mathematics, at least, 'procedural' knowledge such as application, communication and problem solving — the essentials of **doing** mathematics — would necessarily be part of the core.

Recommendation 2 is:

That achievement standards be developed—at least in some nominated English, mathematics, science and social science/humanities subjects—to ensure that students' results in these subjects can be compared throughout Australia. Achievement standards should be benchmarked internationally and could take the form of A to E grades in a subject.

Q6 On a scale of 1 to 5 (where 1 is Strongly support, 2 is Support, 3 is Neither Support nor Oppose, 4 is Oppose and 5 is Strongly Oppose), please indicate your level of support for **Recommendation 2**.

| | | |
|----------|-----------------------------------|----------|
| 1 | Strongly support | <i>f</i> |
| 2 | Support | <i>f</i> |
| 3 | Neither support nor oppose | X |
| 4 | Oppose | <i>f</i> |
| 5 | Strongly oppose | <i>f</i> |

Comments

This recommendation appears to align the reporting in the proposed certificate with the new Student Reporting Guidelines as outlined in the *Schools Assistance Regulations 2005*. While such an arrangement has internal logic, the AAMT is not convinced that the 'A to E' reporting requirement in general is a positive development for mathematics teaching and learning in schools, nor that it is a defensible means for addressing the need for 'parent-friendly' reporting. If the A to E reporting process unravels for what ever reason (eg research finds in unhelpful, misleading etc.), the certificate would be lumbered with it because of an unnecessarily early adoption of this level of detail.

The AAMT's ambivalence on this recommendation is based on two key observations. Firstly, there is the issue of the purpose for setting and reporting against standards. While it is certainly sensible to anticipate that 'it should be possible to compare students' performances in a subject...across

jurisdictions' (p. 72), the purposes for which these comparisons can and should be made need to be specified. Is it for the students, employers, universities, politicians or the general public? The process for making the judgements against the standards is outlined, but confidence in comparability is determined by the quality and consistency of the judgements made across the country. The AAMT seeks further elaboration of these matters.

The standards could be defined at the discipline level (against the over-arching mathematics statement outlined above) or at the subject level. If the former approach was used it could not be as a means for locking students out of higher achievement bands because the subject does not provide access to the performance needed to demonstrate that achievement. The AAMT would therefore only support standards linked to subjects, as is implied in the language of the discussion of standards (pp 72-81).

The AAMT notes that the example standards used throughout Section 10 of the report, and in the reporting example in Appendix 9 all highlight the sorts of procedural learning that is seen by the Association as essential and non-negotiable components of the 'core curriculum'.

Recommendation 3 is :

That, as part of the Australian Certificate of Education, all students undertake a national Key Capabilities Assessment part way through Year 12 of a number of key skills.

Q7 On a scale of 1 to 5 (where 1 is Strongly support, 2 is Support, 3 is Neither Support nor Oppose, 4 is Oppose and 5 is Strongly Oppose), please indicate your level of support for **Recommendation 3**.

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|----------|----------------------------|----------|
| 1 | Strongly support | <i>f</i> |
| 2 | Support | X |
| 3 | Neither support nor oppose | <i>f</i> |
| 4 | Oppose | <i>f</i> |
| 5 | Strongly oppose | <i>f</i> |

Comments

The AAMT believes that numeracy, as a general capability, is an essential requirement for participation in society. Given this view, the AAMT endorses the assessment of numeracy (or quantitative literacy) as part of this component of the proposed certificate.

Schooling should provide students with opportunities to develop as numerate citizens, and while students' learning of mathematics plays a key role in underpinning their numeracy, all educators have responsibilities in relation to numeracy development (see Policy on Numeracy Education in Schools (1998) <http://www.aamt.edu.au/about/policy/numpol.pdf>). Accepting and acting on these responsibilities through attention to, and effort on, 'numeracy across the curriculum' has been a slow process that would be accelerated by such an assessment approach, and this would be to the benefit of our students.

We note that there appears to be a wide range of approaches and level of emphasis on 'Key Capabilities' — in particular on numeracy — around the country. A national focus that results in broad, national consistency in inputs and outcomes in relation to numeracy in certification at the end of schooling would be a significant step forward.

The mode of assessment — through testing alone — is problematic. The AAMT is on record as applauding the effort through PISA to assess quantitative literacy (ie numeracy). The work of that project has broken new ground in assessment of quantitative literacy in the context on (international) pencil and paper testing. For a performance-oriented capability like numeracy, assessment through testing alone inevitably raises concerns about validity. Given that the proposed certificate enables the inclusion of school-based assessment, the AAMT would expect this mode of assessment to form at least part of the students' 'score' for numeracy as one of the Key Capabilities.

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Recommendation 4 is :

5 ***That an ACE Award of Excellence be introduced. This Award would be issued by the Australian Minister for Education, Science and Training to students who meet international standards of excellence in their school subjects and on the Key Capabilities Assessment.***

10 **Q8** On a scale of 1 to 5 (where 1 is Strongly support, 2 is Support, 3 is Neither Support nor Oppose, 4 is Oppose and 5 is Strongly Oppose), please indicate your level of support for **Recommendation 4**.

| | | |
|---|----------------------------|----------|
| 1 | Strongly support | <i>f</i> |
| 2 | Support | X |
| 3 | Neither support nor oppose | <i>f</i> |
| 4 | Oppose | <i>f</i> |
| 5 | Strongly oppose | <i>f</i> |

Comments

15 The AAMT believes it is appropriate to celebrate outstanding achievement by students. It is essential, of course, that there is equal opportunity across the country for students to develop the required skills to the 'outstanding achievement' level, including in relation to the 'Key Capabilities'.

20 If the proposed certificate is agreed and implemented it would be logical for these national awards to be linked to performance in the certificate. There should be no discounting of the value of outstanding performance in a particular mathematics subject based on a perception that the subject is lower in a hierarchy of mathematics subjects.

25 **Recommendation 5** is :

30 ***That a national standards body be established for this purpose. This body would not be an awarding body, but would be responsible for identifying essential curriculum content in nominated school subjects, developing achievement standards and managing the annual Key Capabilities Assessment.***

Q9 On a scale of 1 to 5 (where 1 is Strongly support, 2 is Support, 3 is Neither Support nor Oppose, 4 is Oppose and 5 is Strongly Oppose), please indicate your level of support for **Recommendation 5**.

| | | |
|---|----------------------------|----------|
| 1 | Strongly support | X |
| 2 | Support | <i>f</i> |
| 3 | Neither support nor oppose | <i>f</i> |
| 4 | Oppose | <i>f</i> |
| 5 | Strongly oppose | <i>f</i> |

35 **Comments**

40 The AAMT notes that the language of the Recommendations has changed dramatically from Recommendation 1 where the language is about '*curriculum essentials...fundamental knowledge, principles and ideas that make up these disciplines*' to '*essential curriculum content*' in this Recommendation. This narrowing of focus would not be supported by the AAMT. In fact, we again highlight the necessity for the 'curriculum essentials' to include essential 'procedural' learning.

45 Such body would be a logical part of the implementation of the proposed certificate. The AAMT would expect that its Board of Directors would have strong representation from teachers, through collaborative arrangements between relevant national subject professional associations.

Recommendation 6 is :

That all students in the final years of secondary school be given access to the Australian Certificate of Education. Following agreement to incorporate essential curriculum content in nominated subjects, to report against common achievement standards, and to incorporate the Key Capabilities Assessment, each of the existing senior secondary certificates would be eligible to become the Australian Certificate of Education.

Q10 On a scale of 1 to 5 (where 1 is Strongly support, 2 is Support, 3 is Neither Support nor Oppose, 4 is Oppose and 5 is Strongly Oppose), please indicate your level of support for **Recommendation 6**.

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|----------|-----------------------------------|----------|
| 1 | Strongly support | <i>f</i> |
| 2 | Support | <i>f</i> |
| 3 | Neither support nor oppose | X |
| 4 | Oppose | <i>f</i> |
| 5 | Strongly oppose | <i>f</i> |

Comments

The approach has appeal as a mechanism for this initiative. It also has some risks. The central question is how much is required as the 'core'. If the core is merely that which is currently 'common' between the jurisdictions' mathematics courses, then it likely to be quite small. As a consequence an Australian Certificate of Education delivered on this basis would be of little value and probably not worth the trouble. That said, the assessment of quantitative literacy could be an educational 'gain', subject to the quality of what was actually done in regard to the actual assessment process.

If, on the other hand, a substantial and meaningful core of mathematics (and other subjects) that is forward looking enough to be relevant to the knowledge era can be agreed then this would be an effective and efficient means for achieving what would be a useful development.

The use of the term *all students* is important here. The issues of access to quality provision of education for regional and rural students — and the attainment of results comparable with their metropolitan peers — are already well known. One measure that must be used to evaluate any details for this certificate is that rural and regional students are not further disadvantaged; in fact, the implementation of the certificate — through an emphasis on consistent delivery of high quality curriculum material via ICTs that would become more feasible than in current fragmented arrangements — could be a means for diminishing differences, and this should be actively explored.

Part 3 of Questionnaire

The AAMT's general views about the report

Q11: Do you support the concept of a nationally consistent Year 12 certificate?

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|----------|-----------------------------------|----------|
| 1 | Strongly support | <i>f</i> |
| 2 | Support | <i>f</i> |
| 3 | Neither support nor oppose | X |
| 4 | Oppose | <i>f</i> |
| 5 | Strongly oppose | <i>f</i> |

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The AAMT and its members would be strongly supportive of this proposal if and when the benefits for young people's learning of mathematics are clearly demonstrated. The social and economic well being of the country is dependent on the provision of the highest quality education for our young people. In the context of the proposed certificate, one of the key dimensions of 'quality' is diversity; whilst it is not a direct concern for teachers of mathematics and the AAMT, maintaining the rich range of offerings for young people that enable them to reach their potential as learners that characterises senior secondary education in most jurisdictions and schools should not be compromised. The ACE should not become a vehicle for limiting student choice to some small set of perceived 'high status' disciplines.

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Q12: Are there any other comments you would like to make about the issues raised in the report?

Comments

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As with many major developments the 'devil is in the detail'. That is, while the current report establishes and argues for some broad parameters, the AAMT would expect to see more detail (and, indeed, would expect to be carefully consulted in the development of that detail) before committing itself to a position on the Certificate of Education.

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That said, the AAMT sees this as an opportunity to get some quality, nationally agreed rigour into the teaching and learning of mathematics at post compulsory and university level. In mathematics the challenges of the knowledge era require rethinking of 'rigour' in the context of senior schooling and beyond. The AAMT believes that Australian education can only move forward — that is, meet the needs of students and the society more generally — from a perspective of 'mathematics being in everything' rather than looking backward and trying to protect mathematics as a discipline.

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All discipline areas will probably argue that they are 'special' in some way or another. The AAMT believes this is very much the case for mathematics, and some of the key issues are outlined above. These and other issues will need careful investigation, and reaching consensus among stakeholders will only be possible through careful discussion that draws on legitimate evidence bases to reach conclusions. A 'futures-orientation' is non-negotiable if the development and implementation of an Australian Certificate of Education is to be in the best interests of our young people and the society as a whole. The country's mathematics teachers — through the AAMT as their representative body — stand ready to contribute to the work.

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End of Questionnaire

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