



**Feedback to ACARA's 2015 Australian Curriculum  
monitoring process**

**September 2015**

## Introduction

The Australian Association of Mathematics Teachers (AAMT) welcomes this invitation to provide input to the 2015 Australian Curriculum Monitoring Process. It continues the constructive engagement between ACARA and AAMT to provide the best possible mathematics curriculum for Australian teachers and schools.

In preparing this advice, the AAMT Council has focussed on substantive issues that were raised in some quarters during the development of the Australian Curriculum: Mathematics.

As practitioners whose day to day work involves the implementation of the ACM, AAMT Councillors and others we consulted did have some difficulty focusing as requested on the curriculum itself rather than its use in jurisdictions and schools. This is quite understandable. Where respondents led out concerns about implementation matters the follow up was to ask whether they had any suggestions about how the curriculum documentation could assist with addressing their concern. These suggestions are included when appropriate in the submission.

## Proficiencies

AAMT has consistently highlighted the Proficiencies as an important and forward looking component of the ACM. However, there is a common view that there is not yet sufficient focus in practice on the Proficiencies to realise the sort of transformation of the teaching and learning of mathematics that is anticipated in the Shape paper and the curriculum documents themselves.

Hence AAMT sees a need for further work on the Proficiencies to support their effective use by teachers and schools:

- exemplars in which the Proficiencies are clearly articulated;
- the Proficiencies as expressed in the Year Level Descriptions need to be rewritten with a greater emphasis on specific skills – particularly in Problem solving and Reasoning – rather than as currently where they are expressed quite generally in terms of, and directly related to, the current content at each year level. The Problem Solving proficiency involves more than learning how to solve predictable problems, for example. And
- work samples that illustrate how to assess the Proficiencies at a particular year level would also be helpful.

The development of ‘standard elaborations’ that emphasise the Proficiencies’ presence in Achievement Standards by the QCAA may be a model for developing support materials for bringing the Proficiencies to the foreground of teachers’ thinking and practice in mathematics<sup>1</sup>. The Year 7 Mathematics standard elaborations from QCAA is an example of the approach [http://www.qcaa.qld.edu.au/downloads/p\\_10/ac\\_math\\_yr7\\_se.pdf](http://www.qcaa.qld.edu.au/downloads/p_10/ac_math_yr7_se.pdf)

## Achievement Standards

The Achievement Standards are also reported to be problematic in use in the classroom. AAMT believes that they are currently written too generally. For example at Year 9 we have ‘*They expand*

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<sup>1</sup> Our Queensland colleagues note that, whilst this is a positive development, school authorities are not providing sufficient professional development to enable effective uptake in schools.

*binomial expressions.*' This begs the actual level required. Is it binomial expressions with numbers only? Or those that include one variable only, or with multiple variables? There are many examples like this. The lack of clear definition can only lead to ambiguity in the level of performance that is the 'standard'

One respondent whose work has a component of test development reported that he finds the current Achievement Standards "useful for gauging the intent of a curriculum point."

## **Foundation Level**

There is a disconnect between the Foundation level of the ACM and the Early Years Learning Framework (EYLF). In many respect they represent different epistemologies – certainly they reflect different traditions and cultures. This is a general issue that comes into clear focus in jurisdictions where Kindergartens or Pre-schools or whatever the year before Foundation is called are located in school settings. Two frameworks for student learning and development are operating in the one site. Effectively this leaves teachers at this level "in no man's land", often left out of Professional Learning, and unable to have meaningful discussions with their colleagues using the ACM around reporting and assessment and so on.

In terms of the ACM, AAMT believes that, to support important transitions it would be good to develop linking documentation between the EYLF and the ACM to provide clarity of the Birth-F area of the curriculum.

## **10A**

AAMT recalls that at the time of the adoption of the ACM the 10A level was seen to be difficult for many students. It is something of an outlier in the ACM in that it is 'optional' and not part of the curriculum guarantee for all students. That content is generally accepted as necessary for some senior years pathways.

In its consultation on this matter AAMT received mixed responses. Whilst there is consensus that, given the current expectations of the Mathematical Methods subject in the senior years' ACM, what is currently the content of 10A is required as prerequisite knowledge, there was wide variation between jurisdictions. In some – notably NSW – the matter is unproblematic. The NSW BOSTES syllabus, largely for historic reasons, offers a range of choice and challenge for Year 10 students. In other jurisdictions the predictions that the content of 10A is too demanding for all but a relatively small number of students has largely been confirmed, and this has generated management issues that are being solved in a range of sometimes creative ways in schools.

AAMT concludes that the current 10A needs to be retained and not reincorporated into the curriculum for all students. A longer term, 'root and branch' review of the total ACM should consider it as an anomaly and establish articulation of the curriculum for Year 10 with senior years subjects in general, and Mathematical Methods in particular.

## **Mapping conceptual development**

AAMT believes that the current expression of the curriculum through the Content Descriptions does not foreground or emphasise the 'big ideas' of mathematics in a meaningful way. This leads to

the criticism that the ACM is 'death by a thousand dot points' (Askew<sup>2</sup>) and is a curriculum that is 'a mile wide and an inch deep' (Schmidt et al<sup>3</sup>).

This is not to say that the ACM cannot support learning of these 'big ideas'. AAMT believes that a companion document that articulates key conceptual underpinnings in terms linked to the content descriptions is needed. Again, any future 'root and branch' review of the ACM should address this issue.

## Conclusion

We sincerely hope these comments are useful to ACARA. Please do not hesitate to contact either of us for any clarification that is necessary.



**Dr Mary Coupland, President**



**Mr Will Morony, CEO**

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<sup>2</sup> Askew, M. (2008). Mathematical discipline knowledge requirements for prospective primary teachers, and the structure and teaching approaches of programs designed to develop that knowledge. In P. Sullivan & T. Woods (Eds.), Knowledge and beliefs in mathematics teaching and teaching development, (pp. 13-35). Retrieved from

<https://www.sensepublishers.com/media1079-the-handbook-of-mathematics-teacher-education-volume-1.pdf#page=22>

<sup>3</sup> Schmidt, W., Houang, R. & Cogan, L. (2002). A coherent curriculum, the case of mathematics. American Educator, 26(2), 10- 26, 47- 48. Retrieved from

<http://ed-share.educ.msu.edu/scan/te/mtattoo/TATTO009.PDF>