The Australian Association of Mathematics Teachers

Submission to the Senate Inquiry

The effectiveness of the National Assessment Program - Literacy and Numeracy

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Preamble

The Australian Association of Mathematics Teachers (AAMT) is the national peak body for teachers of mathematics. It has members in all states and territories, across the levels of schooling from Foundation to year 12 and beyond, and across government and non-government sectors of schooling.

Much of the commentary relates to the NAPLAN program overall, but where reference is made to 'items' or other specifics, this submission refers only to the Numeracy component.

Overview

The key matter that AAMT wishes to emphasise is that discussion about NAPLAN and its impacts are surrounded by a great deal of emotion, but with relatively little well-grounded research to identify the facts. A research program to establish a clear evidence base around key issues, particularly benefits and impacts, is urgently needed.

Responses to the terms of Reference

a) whether the evidence suggests that NAPLAN is achieving its stated objectives;

- At http://www.nap.edu.au/about/why-nap.html , ACARA state the following in a rationale for NAPLAN: "It is important that there be consistent and well understood measures of student achievement around the country, and that the outcomes of these assessments be used to inform future policy development, resource allocation, curriculum planning and, where necessary, intervention programs. The NAP provides useful nationally comparable evidence about student achievement." http://www.nap.edu.au/about/why-nap.html
- NAPLAN has become a means of increasing school accountability for student learning – and measuring changes in student and school performance, over time – in many contexts although these are not listed among the purposes named by ACARA.
- Any objectives relating to diagnosis at the student level are compromised by the time it takes for schools and teachers to receive student results. (see comments to e) below)

b) unintended consequences of NAPLAN's introduction

The consequences are an area in which anecdote and emotion seem to play a major role in the debate.

- Although debated there are strong arguments that NAPLAN tests are high stakes, largely as a result of the publication of results on the My School website, and hence may have the unintended and negative consequences noted in relation to high stakes testing in the international literature. These include some students experiencing unreasonable levels of test anxiety, narrowing of the curriculum, and a reduction in the quality of learning experiences offered to students (Polesel, Dulfer, & Turnbull, 2012)
- Some have used NAPLAN to generate opportunities for teacher professional learning through item analysis (e.g., Anderson, Perso)

c) NAPLAN's impact on teaching and student learning practices

As above, impacts that are identified are largely based on anecdote and extrapolation from findings regarding high stakes testing in places such as the UK and US, rather than firm on evidence from rigorous studies in the Australian context.

That said, there is persistent advice that schools or teachers are 'preparing' students for NAPLAN and do this in lieu of their normal teaching and learning. The schools and teachers feel the need to prepare students for sitting an 'exam' such as this, believing that their students won't perform as well as others of equal ability who have been prepared. This is of great concern from the viewpoint of students receiving a balanced education. Research and action to combat this thinking is urgently needed.

d) the impact on teaching and student learning practices of publishing NAPLAN test results on the MySchool website

As mentioned in relation to b, this action has arguably "raised the stakes" in relation to NAPLAN testing.

There was significant resistance among school leaders to publishing NAPLAN results on MySchool (ASPA survey, 2009). There does not seem to have been a follow up study to determine whether these predictions have proved valid or not.

It is unclear how publication of the results contributes to the purposes of NAPLAN as outlined by ACARA and referred to here in relation to a. Specifically, it appears not to enhance the utility of the results in contributing to "policy development, resource allocation, curriculum planning and, where necessary, intervention programs" (ACARA). However, there is a need for schools to be accountable to their communities. Publishing NAPLAN results can certainly be seen contribute to accountability, although its efficacy in this regard does not appear to have been established – yet another matter that may need further research.

There is anecdotal evidence that the availability of nationally comparable results has, at least in some states, begun to focus the attention of Education Departments on the need to better support teachers to teach mathematics. The extent to which their publication has increased this focus is impossible to know.

e) potential improvements to the program, to improve student learning and assessment;

AAMT is on record, through communication with ACARA Secretariat, to urge that student results be returned to the students, parents and schools in a much more timely fashion. For teachers, any time lag beyond a few weeks considerably diminishes the diagnostic potential of the program for individual students.

Diminishing the timelag between testing and reporting to something like few weeks opens up the possibility of radically different timing for the test, and at least two quite opposing views. Some argue that the test should be held early in the year (February) as this would diminish the potential for the testing to skew the focus of teaching and learning in schools. Alternative arguments support holding NAPLAN tests towards the end of the year. This would be in line with traditional 'end of year assessments' and would decrease the problem noted by some teachers with sequencing of topics – the curriculum for the year would largely have been covered in all schools, with proponents seeing this as a more even playing field. However, the matter of timing can only realistically be addressed when the timelag between testing and results is diminished.

The use of online means for securely transmitting student responses for analysis by ACARA would mean, in theory, that schools could have the raw data immediately. Teachers could then use the information for immediate action in their teaching programs, in the same way as they would with other localised assessments.

This benefit would be enhanced by the provision of professional learning for teachers and school leaders on the interpretation of the results and ways in which to respond most effectively. Specifically, teachers need to be able to identify the underlying mathematical difficulty or flawed mathematical thinking that has lead students to make particular incorrect responses. These difficulties are often discernible across a set of items rather than considering individual items in isolation. The need for professional learning is particularly acute for non-mathematics specialists which in many schools comprise the majority of teachers teaching mathematics in the year levels relevant to NAPLAN (see Senate report on Teaching and Learning: Maximising our investment in Australian schools, May 2013).

f) international best practice for standardised testing, and international case studies about the introduction of standardised testing

The PISA testing differs somewhat from NAPLAN in at least two important ways:

- NAPLAN numeracy items tend to be simpler, without the capacity for 'higher demand' items included in PISA;

- PISA offers a wider range of means for presenting responses, including written responses. It assesses the application of knowledge and not simply the acquisition of skills.

There is therefore a persuasive argument that, by expanding the modes for recording responses, NAPLAN could include higher demand items in the same way as does PISA

PISA uses a sampling methodology. If NAPLAN did this, much more detailed information would be able to be obtained to inform teachers and teaching. The trade-off would be that it would not be possible to report on individual achievement.

Polesel et al. (2012) provide a literature review that is relevant here.

g) other relevant matters.

As far as AAMT is able to determine, there is no publicly available 'assessment framework' for the testing program. In comparable assessments overseas such as the National Assessment of Educational Progress (USA; nces.ed.gov/nationsreportcard/) or the Program for International Student Assessment (OECD; oecd.org/pisa/) these documents provide extensive technical detail about all aspects of the program. Providing such a framework in a consolidated format for NAPLAN would add to clarity and transparency of process, thereby informing discussions of the program.

AAMT Position Paper

Whilst some aspects are not directly relevant to the actual terms of reference of this inquiry, the AAMT's *Position paper on the practice of assessing mathematics learning* (2008) is the backdrop for this submission. In that paper, the Association's position on Education authorities' assessments [1] are that these should be:

appropriate:

- **match the published curriculum or syllabus;**

Comment[2]: Matching the content of NAPLAN Numeracy tests to the Numeracy Continuum of the Australian Curriculum (rather than the 2006 Statements of Learning in mathematics) is apparently a 'work in progress' that should be accelerated.

- **match the published purpose(s) of the assessment program; and**
- **use instruments that are (financially) economical.**

Comment: The cost of NAPLAN is in the public record. Whether the program provides value for money rests on an objective assessment of its benefits and weighing these against the costs.

fair and inclusive:

- **fair to students; and**
- **take account of students' personal circumstances[3] as appropriate.**

inform learning and action:

- **make claims that can be related directly to what is actually assessed;**
- **provide information that maximises opportunities for teachers to capitalise, in their teaching, on the assessment information gathered;**

Comment: The time lag between the testing and receipt of results militates against this happening for individual students. Teachers and schools do report benefits from more global analysis of students' results, usually on a whole school basis (e.g. "It seems we may need to focus more in the measurement area, given the

[1] In addition to NAPLAN, education authorities undertake a range of assessments of students' mathematics including at school entry and for end of schooling credentialling.

[2] The '"Comments" in this section highlight NAPLAN specific matters directly related to the Position Paper. A number of aspects of the Position Paper do not relate to the NAPLAN program and therefore there are no comments.

[3] In this context these are such things physical disabilities or medical conditions that require special consideration.

students' results on those items."). They are then able to monitor progress in addressing issues by monitoring results over time.

- **prohibit the publication of league tables of schools from their data; and**

Comment: It has been reported that such prohibition was explored but found by jurisdictions to be impossible.

- **engage teachers in the design and conduct of the program.**

References:

Polesel, J., Dilfer, N., & Turnbull, M. (2012). The experience of education: The impacts of high stakes testing on school students and their families. Retrieved from http://uws.edu.au/__data/assets/pdf_file/0008/276191/High_Stakes_Testing_Literature_Review.pdf