

INQUIRY INTO REVIEW OF THE NEW SOUTH WALES SCHOOL CURRICULUM

Organisation: Mathematical Association of NSW

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The Mathematical Association of New South Wales (MANSW)

The Mathematical Association of New South Wales appreciates the opportunity to respond to the NSW Government response to the NSW Curriculum Review final report. The board submission is below.

That NSW Legislative Council Portfolio Committee No. 3 - Education inquire into and report on the contents of and proposed changes to the NSW school curriculum, and in particular:

The extent to which the Masters' Curriculum Review addresses its terms of reference, including:

(a) Curriculum content, flexibility, and pedagogy

MANSW agrees that there should a syllabus restructure where attainment levels could inform learning progression for students. Reasons include, some students are not ready to learn concepts at the same age as their peers; some may not have the prerequisite knowledge from previous years to engage effectively with content; because of the large number of syllabus dot points, teachers feel they have to teach every dot point leading to surface teaching and learning to ensure everything is covered, which often means that children do not have enough time to process what they have been taught. Mandatory content should be clearly named and additional (optional) content to explore and extend a deeper understanding of topics identified. Mandatory items are items which are fundamental for the next level of learning.

(b) Quality and relevance of the evidence-base underpinning the recommendations (compared to CESE findings)

The quality teaching practices outlined in What works best update: 2020 (CESE, 2020), aligns with the recommendations in the Masters' curriculum review.

(c) Recommendations for student-centred 'progression points' and 'differentiated learning' in schools and whether such initiatives are research-based and proven to be effective

As stated, MANSW believes a restructure of the syllabus into progression points has merit. However, we have concerns that restructuring or reorganising syllabuses into levels of increasing knowledge, skills and understanding would increase streaming of students into levelled classes. Teachers from both Primary and Secondary may require professional development in how to teach students working at many different levels. The intention to guide students along progression points with differentiated practices targeted to their learning is commendable. However, there is concern that differentiating for every student based on the numerous progression points in every lesson, will be problematic from an organisational and workload perspective. Concerns are around the amount of planning, preparation, assessment, and programming required to support students, even for very experienced teachers. Reduction in syllabus content may allow teachers to be more creative, which comes back to what content is mandated and what content is additional (optional).

(d) Relationship with the national schools' curriculum

The current NSW Curriculum, while aligned with the Australian Curriculum has many differences to other states in Australia, especially in the senior years. With the introduction of the 2009 Australian Curriculum Framing paper, there were expectations of student learning - based on age not on where individuals were at in their learning progression. However, the connection to the Australian Curriculum in the senior years is very different across states and territories with different end-of-school examinations that are measured in one national ATAR. With significant differences in technology across states and territories and the ability to bring individual reference notes to examinations in some states, there are differences in the types of questions that are asked in mathematics. Given the review and update of the F-10 Australian Curriculum being undertaken at the same time as the NSW curriculum update, MANSW would like to know how the NSW syllabus review and syllabus updating will remain aligned with the AC?

2. The extent to which the Masters' Review meets key Government policy objectives, including:

(a) Addressing concerns about the overcrowding of the curriculum

In general, the intentions of Masters' recommendations have MANSW's support, but they will not be achieved unless we learn from past failures in curriculum reform. The intentions of past syllabus development in the late 1980s had similar goals in relation to student learning outcomes – “Stages not ages”, “Learning sequences”, “Assessment for Learning”, “Applying learning”, “lifelong learning”.

What derailed earlier attempts at reforming curriculum in NSW, was the introduction of several external student assessment practices that were not closely aligned with the aims of the NSW syllabus. First there was Basic Skills Testing which morphed into NAPLAN.

While overcrowding has always been a concern, there have been few attempts to reduce content throughout the past ten years of curriculum reform. A syllabus that is overcrowded often does not lend itself to discovery and investigation methods that would make completing the course more engaging. Because teachers are concerned about completing the work, interesting methods of delivery are often left out making it difficult to incorporate real life applications or problem solve. However, exploring topics more deeply will require stronger pedagogical content knowledge and additional professional development for some if not all teachers. This is an area that requires significant discussion and is unlikely to be addressed in the timeframe provided.

There needs to be greater emphasis on the ‘working mathematically’ proficiencies. Their connection to content should be made explicit within the syllabus content and integrated where possible. For example, measurement could be combined with the addition, subtraction and multiplication for Area and Perimeter so that these skills can be developed and consolidated purposefully and authentically.

MANSW suggests that mandatory content is clearly identified in the syllabus with flexibility around additional (optional) content that could be used to explore topics more deeply. Mandatory content should include prerequisite knowledge with explicit examples included. Additional (optional) items may include fringe topics that are interesting and might provide supplementary learning but are not a requirement for the next level of maths. Or they may take students deeper into investigations or extend their understanding of concepts at a deeper level.

On Page 6 of the government response we read in relation to “A New Curriculum”

- Learning with understanding - New curriculum focused on essential learning and structured to clearly show how deep learning develops from early to senior years`
- Skills in applying knowledge - Provide opportunities for students to develop and demonstrate skills in applying knowledge`
- Excellent ongoing progress - Students progress to new learning when they have mastered current learning

The third strategy listed on page 6 in the column headed “Making the Change” is:

An aligned learning ‘system’ **Make sure assessment and reporting**, support for teachers, and other system improvements **best support what the new curriculum aims to achieve.**

MANSW believes that the highlighted words - Make sure assessment and reporting, best support what the new curriculum aims to achieve – is critical to the successful implementation of the reforms. So, it is extremely disappointing to note that this is NOT included as a priority in the government’s delivery timetable outlined on page 8 in *The NSW Government is prioritising reform with an ambitious delivery timeframe*. All MANSW members who responded to the government response are deeply concerned about this timeframe.

However, it is encouraging to read on page 11 in NSW Government Response (middle column) *A priority in the development of new syllabuses is to work with teachers and parents to determine the most appropriate ways to monitor and report on student progress.*

(b) Ensuring students’ acquisition of excellence in literacy and numeracy, as well as deep knowledge of key subjects

To ensure students acquire excellent literacy and numeracy skills, we must first acknowledge that we must have quality educators. Research has shown that quality teachers are the key to making differences to student learning. This requires primary educators who are experienced in supporting students to develop literacy and numeracy skills, and high school teachers who recognise that literacy and numeracy is everyone’s responsibility, not just the Mathematics or the English faculties.

Some preservice teachers commence their teacher education programs with poor attitudes towards mathematics because of their own school experiences. LANTITE has gone some way to addressing teachers’ deficits in literacy and numeracy before they graduate, but this is not the panacea. Commencing preservice teachers should demonstrate high levels of numeracy and literacy before they start their teacher education programs rather than the current system where they must demonstrate competency in LANTITE before their final semester. If they are already competent in literacy and numeracy, they can focus on developing teaching proficiencies and refining their own pedagogical practices to better serve their students’ learning.

When considering deep knowledge of key subjects, these would need to be defined. There are very important aspects of learning that can be taught alongside ‘subject’ matter that are fundamental for society and the future, these include, critical thinking, problem solving, abstract thinking, statistical and analytical reasoning all of which are recommended by Masters. These would need to be clearly outlined in a syllabus but would also require strategies about how to incorporate them into practice.

(c) Professor Masters' explanation for NSW declining school results and the role a revised curriculum can play in reversing this decline

Declining school results have been influenced by “pen and paper” testing with time limits on students in BST and NAPLAN skewed the actual curriculum away from a focus on understanding, communications and applications to those curriculum aspects more easily tested on paper – that is instant recall. Teachers felt and continue to feel pressure to cover as much content as possible before the external test and HSC. In many cases students are ‘studying’ for NAPLAN. The original purpose for NAPLAN was to ascertain the literacy and numeracy levels of students at a point in time to inform teaching and guide practice. However, NAPLAN has morphed into a high stakes test, mainly since results were reported on the My Schools Website.

The skewed importance that the community places on the results of NAPLAN testing and the way in which it is interpreted, communicated, and valued by the media, detrimentally influence the emphasis schools and teachers place on these assessments. This artificial importance placed on one test on one day is far from the original origins and intent of the assessment. The Loudon report (2019) has seen some changes introduced around how NAPLAN is reported.

3. Other matters of public concern and interest in the development of the NSW curriculum:

(a) To what extent, if any, ‘cross-curriculum priorities’ are needed to guide classroom content and teaching

In theory they are an excellent way for students to see the connections in and between subjects. They are well implemented in most primary school settings, but less so in high school. This is likely because of the way timetables are constructed and because there are teacher specialists in high school. MANSW suggests that a syllabus could provide more focused information for maths teachers in Stages 4/5/6 about how they could realistically integrate some of these priorities in the maths classroom.

(b) To what extent, if any, knowledge, and the curriculum are ‘socially constructed’, requiring the teaching of source verification and fluidity principles

(c) Whether and to what extent schools should be involved in the ‘social and emotional development’ of students, as per the Melbourne/Alice Springs Declarations, and growing popularity of ‘wellbeing programs’ in NSW schools

(d) Adequacy of the content and depth of teaching of Australian history, pre- and post-1788

(e) Given the importance of English literacy across the curriculum, adopting the most effective evidence-based approaches to language acquisition, especially for reading and writing

Literacy is fundamental to all aspects of learning and should begin being addressed in the early years of primary school. The learning of English literacy should continue throughout a

student's schooling. Children with learning difficulties need to be identified and supported. This should be the same for numeracy.

(f) Role and effectiveness of vocational education syllabuses in NSW schools

The NSW Syllabus claimed to have made HSC courses to make them “more rigorous”. However, “more rigour” resulted in less numeracy for those students who needed it most. Many of them chose no mathematics beyond Year 10 and we lost courses such as Maths in Practice, Maths in Society, Applied Maths at a time when the leaving age for students was increased to 17. With the introduction of industry aptitude tests, there is a need for Years 11 and 12 to have a numeracy pathway which may be addressed by the Senior Numeracy Curriculum, currently being piloted. The resources and professional development provided to teachers in this curriculum is excellent. The pedagogy modelled is engaging for students and encourages deeper understanding of concepts. These types of resources should be included in all years of the syllabus so that we can address the learning deficits and engage students in the learning earlier than Year 11. This will require ongoing teacher professional development.

Vocational courses provide a relevant and alternative pathway for students to succeed in their learning and prepare them for the workforce. Syllabus demands, including literacy and numeracy, should be relevant and aligned to the knowledge, skills and understandings required of students to achieve their vocational studies. Assessment practices should reflect the demands of this pathway with students seeing a direct linkage to their career path.

(g) Effectiveness of NESA in curriculum development and supervision

MANSW has a good working relationship with NESA but recognises that they are working within their limitations and the scope offered to them. They attempt to address concerns from stakeholders and seek our advice on many aspects of curriculum development. MANSW wishes to work with, and support NESA where possible. While MANSW may not always agree on every decision that NESA makes, or NESA agrees with every suggestion that MANSW makes, we both recognise that we have a collective responsibility to teachers and students in NSW. With the publicised short timeframe of this review MANSW recognises that this may place a significant burden on the resources of NESA and as such offers to support the process in any way within the bounds of our association.

Additional comments

On page 13 in section headed “Requirements needed to drive change“, the government response does not address the listed Review recommendation on conditions for success in curriculum reform related to assessment and reporting - *“making sure that all parts of the education system – such as assessment and reporting, and professional capacity building – are consistent with the new curriculum arrangements”*. Nor is this recommendation addressed in the Timeline on page 14.

It is extremely disappointing that the following Review recommendations (see pages 16-21) did not receive the full support of the government

- 3.1 Make new syllabuses untimed, with students progressing to the next syllabus once they have mastered the prior syllabus. Students who require more time should have it; students ready to advance should be able to do so.

6.4 Establish a taskforce comprising representatives of the higher education sector, the school sector and the Universities Admissions Centre, to investigate the feasibility of not calculating and reporting the Australian Tertiary Admission Rank (ATAR).

9.3 Develop, implement and promote assessment and reporting practices to establish the points individuals have reached in their learning, to provide diagnostic feedback to support further learning, and to monitor students' long-term learning progress.

10.1 Promote an understanding of teaching as the process of first establishing where students are in their learning and then providing stretch learning challenges appropriate to individuals' current levels of attainment.

In behalf of the Mathematical Association of New South Wales, I thank the NSW Legislative Council Portfolio Committee No. 3 for the opportunity to provide this response.

Kind regards

Karen McDaid

President MANSW