Submission No 43

INQUIRY INTO REVIEW OF THE NEW SOUTH WALES SCHOOL CURRICULUM

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1. I am a retired academic, but previously I have served on many NSW Govt bodies involved with the school curriculum, including the K-6,7-10 and 11-12 Mathematics Syllabus Committees, the HSC Mathematics Examinations Committee, the NSW HSC Consultative Committee and the former NSW Board of Studies (as nominee of the NSW Vice-Chancellors' Committee). I was involved in the development of the national mathematics curriculum and in many other related activities at national and international levels over the past 50 years. I was, for some 20 years, a member of the NSW VCC's Technical Committee on Scaling, which oversees the annual production of the NSW ATAR based on HSC results, and oversaw its predecessors, the UAI and the TER. I retain an active interest in school mathematics and especially in the transition between school mathematics and university level mathematics. This is a personal submission.
2. With regard to your ToR 2(b) and 3(d), which make clear that achievement of an acceptable level of competence in English literacy is a necessary curriculum requirement, I do not think that any evidence exists to show that the rules for the award of a NSW HSC, prior to 2019, actually required this. The introduction of HSC minimum standards for literacy and numeracy are so recent that it is probably too early for useful data on their effectiveness to be available, nevertheless I urge the Select Committee to assure itself that any future literacy requirement will be at a satisfactory standard and preferably achievable within the school curriculum rather than via add-on tests.
3. Another very recent addition to the NSW HSC course portfolio is the Mathematics Numeracy Pilot course, apparently introduced to assist some students in reaching a satisfactory standard in numeracy. The fact that this course and its associated HSC minimum standard in numeracy requirement exist in the current NSW curriculum, suggests to me that there was, until very recently, no real expectation that even a typical student completing the then Years 7-10 curriculum would in fact be numerate, nor could it be assumed that even the recipient of an HSC award was numerate. This does not surprise me, because my surveys of the entire suite of HSC examination papers at various times over the period 1990 to 2010 showed clearly that one could easily choose an appropriate number of units of study in Years 11-12 that would qualify one for an HSC and demand at most a primary school level of numeracy. If, during 12 years of schooling, a student can observe that it is really only in Mathematics that a high level of numeracy is required, then why should that student understand its potential value? I urge the Select Committee to seek evidence that the new curriculum will enable all students to

appreciate that numeracy skills pervade their future lives. A positive indicator here is the new Design and Technology strand in the current curriculum, where the range of coverage of its knowledge, skills and ideas is most impressive from the perspective of achievement of general capabilities.

4. With regard to your ToR 1(e), I recall that in the late 20th century, the NSW Department of Education trialled a 'vertically integrated' curriculum implementation in several high schools. This meant that, for example, all years of Mathematics were programmed into the same slots in the timetable, so that a student who was performing at a level better than/less well than others in a given age cohort would be able to move to a class appropriate to that level. The trial did not last long and I was unable to find any report on it. Of more interest to the Select Committee is the fact that, in 2020, the Department's Lindfield Learning Village, a new K-12 school, took in its first intake and one of its publicised features was that the design of the school and its planned implementation of the curriculum were both intended to facilitate individual student learning progression. Again, it is probably too early for any meaningful data to be drawn from this school's activity to date, but the Select Committee should be able to obtain from it very good information on the material and personnel resources required to set up a school and operate it in accordance with this stated objective. (I fear that the challenge to provide similar facilities and staffing across the whole NSW public school system will be a major barrier to achieving equitable implementation of this Review objective.)
5. As Covid-19 constraints have amplified so well, I trust there will be no hesitation in the Select Committee's endorsement of the importance of children's social and emotional development as an important aspect of schooling. Children need peer group socialisation in order to develop emotionally and schools are often the only source for it. In fact, many years of research into the behaviour of children who exhibit extraordinary ability in Mathematics have shown that such children are often at peer group level in other subjects and also need to retain their cohort relationships in order to develop normal socialisation capabilities.
6. Your ToR 2 (a) and (b) are addressed in the Review via a commitment to distinguishing 'deep learning' aspects of a subject area and focusing learning on the gaining of a well-grounded understanding of them. In particular, the identification of important conceptual ideas as a major component here is significant, as is recognition of the power of using a conceptual development sequencing model as a design basis for pedagogy, with existing examples in English and Mathematics cited for reference. I wish to emphasise that, in Mathematics at least, the separate understanding of each concept in a sequence will not necessarily lead to deeper coherent understanding of the knowledge (and may well prove a barrier to learning)

unless a student's internal representation of what is being learnt is able to be reprocessed so that previous concepts are integrated into a new representation in which the new concept is seamlessly connected. This simplifies the demand on memory and understanding and helps facilitate the way in which a new concept and its associated knowledge may well change the skill sets associated with previous knowledge. I would like the Select Committee to seek to ensure that this important learning outcome is explicitly recognised in the final version of a new NSW K-12 curriculum.

8th August 2020.