# The Education of Gifted students in NSW - An Appraisal

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Over the past couple of years, a comprehensive high school in a small, rural, relatively isolated, economically depressed community has carried out a review of the curriculum which it offers to its students. Part of this review concerned the curriculum which was offered to gifted students. In order to set this review within its educational context, an appraisal was conducted of the NSW Department of Education's current policies and practices in the education of gifted students, and the programmes and provisions available for gifted students attending NSW public schools.

After outlining the way in which education is structured in NSW, it is apropos to begin with Braggett's outstanding report to the Commonwealth Schools Commission in 1985, and to detail the developments which have occurred specifically in NSW since then. This discussion is reinforced, by way of example, with an examination of the way in which gifted students are dealt with in the subject of Mathematics in this state.

An interesting but broad overview of changes and challenges in national policy and attitude is presented by Wilson (1996).

## The NSW education system

In NSW, two mutually independent government bodies, both answerable to the state Minister for Education, have responsibility for school education.

The Office of the Board of Studies is responsible for the development of syllabuses, external examinations such as the Higher School Certificate (HSC), and ensuring that all schools follow approved syllabuses.

The NSW Department of Education has, over the past decade or so, also been known variously as the NSW Department of School Education, the NSW Department of School Education and Youth Affairs, the NSW Department of Education and Training, and the NSW Department of Training and Education. It is a state government department, and is responsible for the delivery components of public school education. (Nix, 2002, personal communication.)

In NSW, schooling is divided into six Stages and thirteen school Grades or school Years, Kindergarten to Year Twelve. Stages are generally equivalent to two years of schooling, so, for example, the outcomes of Stage Six are usually attained by a student during Years Eleven and Twelve. The concept of Stage Seven, or post HSC, courses has been introduced, and could be provided through Distinction Courses or through Extension Courses. Students usually progress sequentially through Years K to Twelve, and transition usually takes place at the end of each year. Under special circumstances, a student may skip a grade by progressing from one Year to the next during the course of a school year, or, during transition, from one Year to a Year two or more years ahead.

In most NSW schools, groups of students are "streamed" in school Years. Streaming also refers to the grouping of students within a school Year, usually in ability groups, for example, the placing of students from Years Nine or Ten into Advanced, Intermediate or Standard Mathematics classes. Vertical streaming therefore means to place students from more than one school Year together in classes or ability groups, as, for example, is the case at The High School for Years Eight, Nine and Ten in the Vertical Semester Organisation (VSO).

In the USA, streaming is called tracking. I use tracking to refer to maintaining administrative detail concerning the courses completed by a student, particularly necessary in a VSO or when a student has academically accelerated.

**Braggett's report, 1985**

In 1985, Braggett reported on the status of education of gifted children in Australia for the Commonwealth Schools Commission (Braggett, 1985). For his understanding of giftedness,

he takes the twin premises of “superior intellect and its correlate, high academic ability” (Braggett, 1985, p. 28).

Braggett (1985, p. 5) observed that previously the education of gifted children had been afforded low priority. He noted that it was firmly believed, or hoped, that the needs of outstanding students could and would be catered for within the existing curriculum. Almost total responsibility was placed on the classroom teacher to provide for all levels of ability and talent with a minimum of resources and support.

Gifted students were seen by most people not to be disadvantaged (Braggett, 1985, p. 5), yet Braggett believed that they “are possibly the most disadvantaged group ... for they generally have not received sufficient stimulation to achieve their full potential” (Braggett, 1985, p. 5; cf. p. 259).

Commenting on the general lack of policy, narrow curricula, and poor organisational structure, Braggett (1985, p. 6) suggested the need for flexible forms of school organisation, pointing out that “system organisational patterns generally constitute the most effective barrier to the development of giftedness within Australia” (Braggett, 1985, p. 316).

Braggett concluded his important study:

> Because social grouping and the lock-step method of promotion may constitute barriers to the development of outstanding talent, there is an urgent need for systems to develop more flexible organisational patterns to permit student progression based on individual development and performance. ... More flexible procedures need to be developed, permitting early entry to school in appropriate cases and allowing continuity of experience based on criteria other than age or years of attendance (Braggett, 1985, p. 317, recommendations 4 and 5).

Braggett’s research was reinforced by the Senate Select Committee on the Education of Gifted and Talented Children, which also outlines the policies, practices and attitudes of the 1980s (Commonwealth of Australia, 1988). For many people, the concepts of gifted and of talented were somewhat confused (cf. Gross, 1993, p. 49).

**Developments since 1985**

Since 1985, considerable changes have occurred in attitude towards the education of gifted children in Australia, and in policy for the education of gifted students in NSW.

In 1991, the NSW Board of Studies responded to *Excellence and Equity*, the *Carrick Report*, and the *Education Reform Act 1990* (New South Wales) with the implementation of progressive curriculum initiatives (NSW Board of Studies, 1991a).

Starting with the premise that *each child has a right to realise their potential*, the aim was to provide all students with a broad, balanced, quality, contemporary curriculum, taking into account the needs of students of differing abilities and backgrounds, whilst seeking to provide for all students an enriching school experience (NSW Board of Studies, 1991a, p. 1). Some students would be able to progress to a range of new high-level courses to be offered beyond current HSC courses (NSW Board of Studies, 1991a, p. 7).

By redefining its course requirements in terms of objectives, content and expected outcomes for students of various ages and levels of ability, and defining outcomes as "the specific, observable indications of learning to be expected of students at the end of a particular stage of a course" (NSW Board of Studies, 1991a, p. 14), student progression through curriculum structures could then be based upon successful achievement of syllabus objectives and experiences. " 'Time' should be regarded in all schooling as a flexible factor in learning rather than as a determining factor" (NSW Board of Studies, 1991a, p. 13).

With some equivocation, the Board of Studies stated that able students could be provided with extension work within the stage of the syllabus they are undertaking. However, it also made the bold step of allowing, at the discretion of the school, "accelerated progression into the next stage of work" (NSW Board of Studies, 1991a, p. 16), in terms of providing flexible progression "for all students within the context of social growth and peer interaction" (NSW Board of Studies, 1991a, p. 17; cf. p. 18).

Accelerated progression is possible across the years of formal schooling Kindergarten to Year Twelve. Accelerated progression is to be based on attainment of defined outcomes and

all-round readiness of the student. The basis of any accelerated progression will be compression rather than omitting sections of work. Accelerated progression in any subject requires students to achieve the outcomes of all stages in that subject (NSW Board of Studies, 1991a, pp. 18f.).

In an important development, the Board of Studies introduced the concept of "Stage Seven courses". These could be provided in two ways: through Board-developed "Distinction" courses; and by enrolment in a first year university course (NSW Board of Studies, 1991a, pp. 20f.).

**State government policy**

At the same time, the NSW Government released its policy for the education of gifted and talented students. The terms "gifted" and "talented" were applied to students "with the potential to exhibit superior performance across a range of areas of endeavour" and "in one area of endeavour" respectively (NSW Department of School Education, 1991a, p. 3).

Within the policy document, it is clearly expressed that acceleration is an appropriate response to students who are accelerated learners (NSW Department of School Education, 1991a, p. 14), and admits that acceleration "involves changes in school organisation and in the curriculum" (NSW Department of School Education, 1991a, p. 14). Radical in Australia for its time, there follow ten pages suggesting how academic acceleration may be implemented (NSW Department of School Education, 1991a, pp. 14-23).

In a companion document, outlining the government's strategy for the education of gifted children, the onus is placed directly on schools to implement various interventions. These include: classroom teaching strategies, flexible progression, vertical grouping, enrichment, specialist classes, mentor programmes, and camps (sic) (NSW Minister for School Education and Youth Affairs, 1991, pp. 6f.). It was anticipated that after 1995, each school would "employ at least one teacher who has training in the education of gifted and talented students" (NSW Minister for School Education and Youth Affairs, 1991, p. 11).

**Accelerated progression**

Accompanying the policy and strategy documents to schools came a handbook from the NSW Board of Studies setting out the guidelines for accelerated progression (NSW Board of Studies, 1991b, pp. 3-19) and some ideas on organisational changes which would facilitate flexible progression (NSW Board of Studies, 1991b, pp. 25-29). Some reticence is expressed concerning acceleration and affective development (NSW Board of Studies, 1991b, p. 16). Interestingly, the NSW Government policy definition is translated into the "more precise definition" of Gagné's differentiated model of giftedness and talent (NSW Board of Studies, 1991b, p. 3; cf. Gagné, 1985, p. 108). Gross (1993, p. 40) emphasises that:

> an education system which adopts the Gagné definition commits itself to identifying high potential in students - real potential, not imagined potential proposed for political reasons! - and creating an educational and social environment which will develop that potential into high performance.

A thorough and well-researched revision of these guidelines was released in 1997. This time, Gagné's distinction between potential and performance is unambiguously presented (NSW Board of Studies, 1997, p. 7), and an important section, on flexible progression and suggestions for organisational change, is placed more prominently within the document (NSW Board of Studies, 1997, pp. 12-16). Accelerated progression is viewed very positively since it is a readily available educational alternative, and since it "should provide a challenging and satisfying educational environment without disadvantaging the student educationally, emotionally or socially" (NSW Board of Studies, 1997, p. 17). It is emphasised equivocally that acceleration is to be based on the principle of compression or compacting of study and not omission, but that not every outcome need be attained (NSW Board of Studies, 1997, p. 27, p. 35).

The "new" philosophy of an outcomes-approach accepts that students "can be working towards syllabus outcomes anywhere along the learning continuum" (Assessment and Reporting Directorate, 1996, p. 3). Effective and informative reporting acknowledges that students can be demonstrating progress and achievement of syllabus outcomes across stages, whilst helping to identify students for targeted intervention and to inform school improvement programmes (Assessment and Reporting Directorate, 1996, p. 5).

**Distinction courses**

Since 1994, the NSW Board of Studies has provided an exciting and major curriculum initiative for gifted students in the form of Distinction Courses. These courses, in Philosophy, Comparative Literature, and Cosmology, are high-level HSC courses which approximate first year university study, and are designed "to encourage excellence and to provide additional academic opportunities" for gifted students (NSW Board of Studies, 1995, p. 106). Although Distinction Courses are studied externally through distance education mode, residential schools do allow students to "study and socialise with like-minded highly talented students" in a university setting (NSW Board of Studies, 1995, p. 7). Appropriately, to be eligible for consideration to participate in this programme, "students must be accelerants" who have completed HSC units at the highest level (NSW Board of Studies, 1995, p. 8).

It was hoped that Distinction courses would attract recognition from universities (NSW Board of Studies, 1996c, OHT 8m(i) and (ii)), but the response has been somewhat equivocal with only the possible offer of advanced standing or consideration of credit from most institutions in NSW (Harrison, 1997). Following the McGaw Report, "the Government's HSC White Paper determined that the Distinction Course Program would be deleted" (Stanley, 2000, personal communication). It is now proposed that gifted students be supported to gain access to a greater range of tertiary courses while still at school (McGaw, 1997, pp. 27f.; Aquilina, 1997, p. 9); however, there is still a lot to be done with respect to curriculum negotiations, delivery, and credit transfer. Such arrangements would "cater for the needs of a greater number of high ability students than is the case with Distinction Courses" (Stanley, 2000, personal communication).

**Selective schools**

The NSW Department of Education boasts specialist classes and specialist schools among its programmes and initiatives for the education of gifted students. Currently, there are twenty three selective and agricultural high schools, and one hundred and six primary Opportunity 'C' (OC) classes in sixty seven primary schools (NSW Department of Education and Training, 2001).

In his report on the independent inquiry into public education in NSW, Vinson (2002) analysed the case for and against the existence of such schools and classes. Arguments, for example, in support of selective schools included: the view that academically talented students need to be educated together; the contribution of selective schools to the performance of their students; and the accessibility of selective schools on the basis of intellectual merit alone. On the other hand, arguments against selective schools comprised: 'moral principle'; concern for the practical impact of the number of selective schools; concerns about self-esteem and affective development; disputation of the validity of a once-only allocation of students to a segregated setting. (Vinson, 2002, Chap. 4).

Despite many observers having concerns about them, it is evident that selective high schools are meeting a demand among both students and parents. Vinson was impressed by aspects of their ethos and operation:

> In all the schools visited, students and parents spoke enthusiastically about the opportunities and advantages that they were experiencing. This included not just exposure to academic challenge, and what one student called 'a culture of excellence', but the opportunities for extra-curricular activities as well. (Vinson, 2002, Chap. 4).

Nevertheless, the Inquiry did recommend that: the number of opportunity classes in New South Wales be halved; only the seven longest established academically selective high schools, along with the four rural agricultural high schools, remain fully selective schools; the Selective High Schools Test should be amended to test a wider range of talents than are currently assessed; and there be academic extension programs in all comprehensive primary and high schools. (Vinson, 2002, Recommendations 4.1-4.6).

Here, the Vinson Inquiry's governing principle is that the most talented students need support to develop to the fullest extent possible, and that opportunities should be provided for them to learn together in appropriate contexts in all schools. To this end, the Inquiry noted that there is a range of generally accepted ways of structuring special extension programs that can be undertaken in comprehensive schools. These include: ability grouped classes, subject-specific groupings, withdrawal, the clustering of several gifted students in an otherwise comprehensive classroom, mentor programs, after-school or vacation enrichment and extension programs, early entry to school and acceleration. The view was expressed that with

adequate resourcing, including the appropriate training of teachers, many of these strategies can be used in all schools and will meet the needs of the majority of students. (Vinson, 2002, Chap. 4).

**Other programmes and provisions**

In what it calls an "exciting" initiative (NSW Department of Education and Training, 2001), the NSW Department of Education has given grants to each school district to support gifted and talented students and their teachers. The grant for the year 2000 was $5000, which was spent by one district on an OC class excursion and staff development at one school. In 2001, the grant was $1600, which in the same district was spent on staff development at one primary school, which covered Bloom's Taxonomy and Gardner's Multiple Intelligences. (Brown, 2002, personal communication.)

To date, the needs of disadvantaged gifted students have only been recognised in the policy for Aboriginal education. It is stated that it is a central theme of the policy to promote educational achievements by Aboriginal students (Aboriginal Education Unit, 1996, p. 1 and p. 2), the goal being to make curriculum, teaching and assessment programmes "challenging and culturally appropriate" (Aboriginal Education Unit, 1996, p. 8 and p. 9). A policy strategy is to expand "opportunities for Gifted and Talented Aboriginal students through developing criteria to identify these students and developing and implementing specific programs designed for them" (Aboriginal Education Unit, 1996, p. 10).

**Professional training and development**

There is an enormous lacuna in the training of teachers in the education of gifted students. The majority of teacher training bodies have at most an optional and minor component of pre-service course work concerned directly with the education of gifted children, so that most newly qualified teachers receive no such training (Vasilevska, reported in The Sydney Morning Herald, 17/7/2001, p. 4).

I believe that, since 1991, provision for the professional training and development of teachers in the education of gifted children has been, at best, minimal. According to Vasilevska

(1998, personal communication), during 1992 and 1993, a total of $300,000 was spent on in-service courses for classroom teachers, and on a special course at Charles Sturt University for Cluster Directors, a position which no longer exists. Many regions produced resource handbooks intended as part of a professional development programme (for example, Funnell *et alia*, undated). Whilst there is some mention of acceleration (Funnell *et alia*, undated, Module 6), the emphasis is decidedly on the provision for gifted students within the confines of the regular classroom (Funnell *et alia*, undated, modules 3 to 5). It is unclear to what extent these initiatives filtered down to classroom teachers.

Following an industrial agreement in 1996, there has been essentially zero funding for professional training and development (Leete, 2001). Professional development and training in the education of gifted students has suffered, for, since 1996, there have been very few (in some regions, not any) in-service courses concerned with this issue. A recent initiative, however, does provide professional training and development for teachers at all selective high schools (Vasilevska, 2001, personal communication).

Courses in the education of gifted children are offered by several tertiary institutions. A programme of studies leading to a Certificate in Gifted Education has been developed by GERRIC within the University of New South Wales, and costs $2,450 (brochure available from GERRIC; <http://www.arts.unsw.edu.au/gerric>). As part of an Australian Mathematics Teacher Enrichment Project, a course in Enrichment Mathematics leading to the award of the Graduate Certificate in Education has been developed by the Australian Mathematics Trust and the University of Canberra. There is an up-front fee of $600 per unit (Thornton, 1999, personal communication; brochure available from the Australian Mathematics Trust, University of Canberra; <http://www.amt.canberra. edu.au/~sjt/amtep.htm>).

Studies are carried out during vacations and on weekends, costs are met by individual teachers, and the successful completion of a course leads to neither promotion nor increase in salary.

There are national and state conferences concerned with gifted and talented children and the education of gifted students. "The 5th Annual Gifted Education (sic) Conference", for example, cost $495 plus GST plus travel plus accommodation (brochure from IES Conferences Australia). Teaching resources for the education of gifted students are available, usually promoted by companies with a vested interest in any sales.

There is a quickly growing number of web sites which are concerned with the education of gifted students (for example, TalentEd, <http://scs.une.edu.au/ talented/>), and which provide enrichment material for gifted children. Most of the gifted students with whom I work closely do not have regular access to the Internet.

**Mentor Links**

Mentor was an old friend of King Odusseus. When the king set sail for Troy, he entrusted his whole household to Mentor, who became the guide and adviser of Telemachus, the young son of Odusseus (Homer, *Odusseias*, B 224-227). A mentor is an experienced and trusted counsellor who fulfils a similar office (Onions, 1978).

An example of NSW Department of Education policy in action is seen in the Mentor Links Program.

Responding to policy statement two, "School communities have a responsibility to provide a range of opportunities for their gifted and talented students" (NSW Department of School Education, 1991a, p. 7), mentor programmes are suggested as one way of whole-school provision for gifted students (NSW Department of School Education, 1991a, p. 8; NSW Minister for School Education and Youth Affairs, 1991, p. 7; Forster, 1994, p. 24; Vasilevska, undated). The Mentor Links Program was therefore designed with the aim of increasing chances of a gifted student to develop potential and satisfy learning needs (Forster, 1994) by allowing the student "to direct and extend their learning under the guidance of an adult with a high degree of expertise in a particular area" (Forster, 1994, p. 24; cf. Vasilevska, undated).

In setting up the programme, a particular issue which caused concern was the question of liability. "Legal advice was sought from the Department's legal service and risk management group to be sure that the program was operating with all due precaution" (Forster, 1994, p. 27). People involved in the Mentor Links Program give their time and expertise voluntarily, are known or recommended by other sources, and are subject to a police security check. The mentor and student are to meet outside of school hours and away from the school, parents are to stay with the student during meetings, and personal security is the parents' responsibility. Parents are to plan with the mentor appropriate activities, and all costs are to be met by parents. (Forster, 1994, p. 27; Vasilevska, 1997, personal communication.)

The first step in establishing the Mentor Links Program was to compile registers which identified people who were available to act as mentors (Forster, 1994, p. 24; NSW Department of School Education, 1991b, p. 2). However, "some enthusiasm was shown for the program by potential mentors but actual participation was another point" (Forster, 1994, p. 24). Therefore, it would seem advisable that the first step should rather be to establish the needs of students who might be involved in such a programme (cf. Clasen & Clasen, 1997, p. 224).

One way of assessing how implementation of the policy has been facilitated at the regional level is to consider the "various constraints and activities involved" in the Mentor Links initiative (Forster, 1994, p. 25). I believe that, at least on the north coast of NSW, the programme has met with only limited success. Considerable time and energy were expended (for example, by the Southern Cross Gifted and Talented Education Association, Geake, 1997, personal communication) in setting up a data base of potential mentors, but not one of these people has actually acted as a mentor for a gifted student within the Mentor Links programme. Interviews with gifted students who expressed a keen interest in being linked with a mentor have proved to be very time consuming. The restrictive guidelines for running Mentor Links have precluded most of these students from involvement in the programme (Merrotsy, written reports to NSW Department of Education, 1997, 1998, 1999).

If Mentor Links is to have an impact, at least on the north coast of NSW, there will need to be some major changes made to how it is organised and run. The NSW Department of Education would need to accept some responsibility for what happens within the programme, even though any learning outcomes may not necessarily satisfy formal curricula requirements (House, 1987 p. 28; cf. VanTassel-Baska, 1989, p. 184; Feldhusen, 1994, p. 370). The contribution of the mentor would need to be formally recognised, perhaps financially. The coordinator of the programme would need much more support in terms of time, space and resources. Money should be made available for incidental costs (Merrotsy, written reports to NSW Department of Education, 1997, 1998, 1999; cf. Clasen & Clasen, 1997, p. 226).

As Clasen and Clasen (1997, p. 222) appropriately point out, "Although mentorships frequently are recommended as a component of gifted programming, … mentorships involving gifted students actually are not common."

**Mathematics**

An examination of the NSW Board of Studies syllabi for Mathematics gives an instructive example of how formal courses approach the education of gifted students.

Mathematics is "a dynamic and process-oriented subject" which has "an important body of knowledge and skills" (NSW Board of Studies, 1996a, p. 7). To support the teaching and learning of this core subject, the NSW Board of Studies has produced syllabus documents for K-6, 7-10, and for HSC courses. Of these documents, it is claimed:

> K-10 syllabuses and curriculum requirements are designed to provide educational opportunities that engage and challenge *all* students to maximise their individual talents and capabilities for lifelong learning. (NSW Board of Studies, 2002, p. 5, my emphasis.)

In primary school, a student gifted in Mathematics has been seen to be an exceptional student whose needs are considered along with the needs of students with a disability or learning difficulty (NSW Department of Education, 1989, p. 40). The new syllabus, to be implemented in 2004, no longer identifies gifted students as students with special education needs (NSW Board of Studies, 2002, p. 7). No provision beyond the regular classroom is

outlined by the Kindergarten to Year Six Mathematics syllabus. "The talented student will respond to teaching strategies that focus on enquiry, problem solving and critical thinking. Appropriate extension and enrichment activities ensure that favourable attitudes towards Mathematics are maintained. ... Technology can assist all exceptional students." (NSW Department of Education, 1989, p. 40.)

For students in Years Seven and Eight, the syllabus emphasises the processes and the content of Mathematics. "Students are to be actively involved in learning, doing and using mathematics to solve problems." (NSW Board of Secondary Education, 1988, p. xii.) Individual differences should be taken into account, with consideration given to each student's current stage of development (NSW Board of Secondary Education, 1988, p. v).

The NSW Board of Studies boasts that for Years Nine to Twelve there is a variety of Mathematics courses "which cater for the needs and abilities of *all* students" (NSW Board of Studies, 1991a, p. 41, my emphasis).

Advanced Mathematics is an abstract course for Years Nine and Ten, designed for those students who have achieved all of the outcomes of the Stage Four syllabus. "The course emphasises algebraic processes, graphical techniques, interpretation, justification of solutions, advanced applications and reasoning, which arise in more sophisticated problems from realistic applications." (NSW Board of Studies, 1996a, p. 9.) It is advised that students intending to study Extension 1 (3 unit) Mathematics should study Further Geometry, Curve Sketching and Polynomials, and Functions and Logarithms, which are options (NSW Board of Studies, 1996a, p. 23). Circle Geometry is an option; Matrices are introduced only in the Network option. Set Theory is not included.

Throughout the syllabus, and in particular under the heading "Equity Principles and Issues" (NSW Board of Studies, 1996a, pp. 11-13), and throughout the new syllabus to be implemented over the next few years, there is no mention of students gifted in Mathematics.

The Extension 1 (3 unit) Mathematics course, for students in Years Eleven and Twelve, is designed for those who "have demonstrated achievement of the outcomes in the Core of the

Advanced Mathematics course ... along with the recommended options" (NSW Board of Studies, 1996b, p. 21).

The Extension 2 (4 unit) Mathematics course is designed for year 12 students with a special interest in Mathematics who have shown that they possess special aptitude for the subject. It represents "a distinctly high level in school mathematics" which involves the development of "considerable manipulative skill and a high degree of understanding" of the fundamental concepts of algebra and calculus, and thus offers appropriate preparation for the study of Mathematics at university. While the general aim of the course is to present Mathematics as "a living art which is intellectually exciting, aesthetically satisfying, and relevant", a specific aim is "to offer a programme which will be of interest and value to students with the highest levels of mathematical ability ... and which will present some challenge to such students" (NSW Board of Secondary Education, 1989, p. 7). The objectives of the Extension 2 Syllabus are addressed through eight topics: Graphs, Complex Numbers, Conics, Integration, Volumes, Mechanics, Polynomials, and Harder Extension 1 Topics. Topics which are suitable for students gifted in Mathematics, and which are notable by their absence, include Matrices, Vectors, Number Theory, Group Theory, Further Calculus (mean-value theorem), and Sequences and Series (convergence). In 2003, approximately 2600 students attempted the Extension 2 Mathematics HSC examination, which constituted over one quarter of the candidates for the Extension 1 Mathematics HSC examination. Forty five percent of these students demonstrated achievement in the top performance band (E4) for this subject (Yager, 2003, personal communication).

The NSW Board of Studies syllabi for Mathematics are clearly strong documents, and meet the needs of a broad range of students. However, throughout these documents there is no mention of students who are gifted in Mathematics. It is quite feasible that, given the restrictions within which many schools must operate, there may be a significant number of students who are gifted in Mathematics and whose needs are not being met by the current syllabi.

**Other provisions in Mathematics**

There are a large number of competitions in which students may enter, and many enrichment programmes are run by schools and tertiary institutions.

The Tournament of Minds is a problem solving event for teams of primary and secondary students in the disciplines of "Language Literature, Maths Engineering, and Social Sciences (sic)" (brochure from Tournament of Minds; <http://www. tom.edu.au>). The University of New South Wales offers a Scientia Challenge Program for Gifted and Talented Students, with workshops in a broad range of subjects which usually does not include a specific Mathematics topic. This programme is sponsored by McDonald's Australia Limited and runs at a cost to the student of $200 plus transport plus accommodation for a two day workshop. In conjunction with the Scientia Challenge Program, GERRIC also presents a Career Development Day for Academically Gifted Students (brochures from GERRIC; <http://www.arts.unsw.edu.au/gerric>).

The best known Mathematics competition is the Australian Mathematics Competition, organised for secondary school students by the Australian Mathematics Trust at the University of Canberra. It attracts over 500,000 entries from around the world (Thornton, 2001, personal communication; <http://www.amt.canberra.edu. au>). The University of New South Wales runs the School Mathematics Competition, which is an unconventional examination seeking to acknowledge insight and ingenuity in senior secondary school students (brochure from UNSW). The Mathematics Association of NSW offers an extended problem solving project with the J.L. Williams Competition, which is used to select Year Eleven students for the prestigious National Mathematics Summer School (brochure from Mathematics Association of NSW, "Mathsearch").

The University of New South Wales publishes the Mathematics magazine "Parabola" aimed at secondary school students (<http://www.maths.unsw.edu.au/Parabola>).

The Australian Mathematical Olympiad Committee has developed a world-class problem solving programme, which is organised for secondary school students by the Australian Mathematics Trust at the University of Canberra. This consists of : the Maths Challenge

Stage, a three-week problem solving project; the Euler, Gauss, Noether and Polya series of the Maths Enrichment Stage, a systematic, structured, comprehensive extension and problem solving course; the AMOC Intermediate Contest; the AMOC Senior Extension Program I; the AMOC Senior Maths Contest; the AMOC Senior Extension Program II; the AMOC Australian Mathematics School of Excellence; the Australian Mathematical Olympiad; the Asian Pacific Mathematics Olympiad; the AMOC 1:1 Mentor Program; the Olympiad Selection School; and the AMOC International Mathematical Olympiad Preparation School (<http://www.amt. canberra.edu.au/amtamoc.html>).

Many of these other provisions in Mathematics are fine programmes, and provide excellent learning opportunities and many hours of enjoyment for a significant number of students. In implementing these programmes, it must be ensured that they meet the requirements for a defensible differentiated curriculum as outlined, for example, by Borland (1989, pp. 176f.) concerning consensus, scope and sequence, and planned articulation with the core curriculum. Indeed, it may be appropriate for some form of central coordination of extra curricula enrichment and extension programmes in Mathematics, so that they complement rather than compete with the core curriculum. This would have the added benefit of facilitating equity of access to worthwhile programmes for students who are gifted in Mathematics.

**National inquiries**

It is noteworthy that recently there have been two national inquiries which have the potential to impact, in a positive sense, on the education of gifted students in NSW. The Evaluations and Investigations Programme of the Commonwealth Department of Education, Training and Youth Affairs has undertaken the project of examining the different arrangements which allow secondary school students to gain university credit while still at school (McDonald, 2001, personal communication). Two years later, the report does not appear to be available (<www.detya.gov.au>).

The Senate Employment, Workplace Relations, Small Business and Education References Committee has accepted submissions to a Senate inquiry into the Education of Gifted and Talented Children. The terms of reference for the inquiry were : to review the developments

since the previous report (Commonwealth of Australia, 1988); to consider whether current policies and programmes are suitable and sufficient to meet the special educational needs of gifted students; and to consider the proper role of the Commonwealth in supporting the education of gifted students (Commonwealth of Australia, 2000).

Responses to the senate inquiry from education unions have been quite negative, and, I feel, unproductive if not counterproductive to meeting the educational needs of gifted students. Guided by the philosophy that "every kid is special", the Australian Education Union believes that "the most effective way of maximising the potential of all students is in a heterogeneous learning environment" and "is therefore opposed to programs for gifted and talented students when they involve the bulk of in-school time, streaming, or other forms of segregated and selective education" (Martin, 2001, p. 6). In an amorphous submission from the NSW Teachers Federation, reference was made to "the research" to conclude that "the most appropriate form of education for all is the comprehensive public school, where the full range of abilities is catered for. For this to occur, schools and teachers need resources and support commensurate with the task," which includes smaller class sizes, pre-service training, and improved funding (Currie, 2001, p. 7).

The Senate Committee handed down its report on October 2001, and indeed found that there is a problem with education of gifted students. "These children have special needs in the education system; for many their needs are not being met; and many suffer underachievement, boredom, frustration and psychological distress as a result" (Senate Employment, Workplace Relations, Small Business and Education References Committee, 2001, Paragraph 1.1).

It is therefore opportune to reflect on a conclusion handed down by the Senate Select Committee thirteen years ago.

> If the Commonwealth Government does not accept a leadership role in this area, the education of gifted children could continue to receive little attention in some areas of Australia. … Therefore to allow the gifted in this country to reach their full potential the Committee recommends that the Commonwealth Government make a clear statement that special educational strategies should be provided for gifted children throughout Australia (Commonwealth of Australia, 1988, p. 142).

**The status of education of gifted students in NSW public schools**

As Gross (1993, p. 29) says, there are "some fine programmes for gifted students" in NSW, at least in mathematics! However, it is also fair to say that there is much more that can be done. The eighteen years, which have passed since Braggett's important and far-sighted report on the status of education of gifted children, have not witnessed the community enthusiastically embracing Braggett's recommendations (Bailey, 1998).

Gifted students and teachers of gifted students need appropriate support. Systemic changes to the structure of teacher training courses, to school organisation, and to continued training and development of professional teachers, are all warranted. Proposals for school organisation changes, which facilitate flexible progression and acceleration, need to be translated into effective practice. Curricula, syllabi and programmes which specifically address the needs of gifted students, and which are informed by research, are still in great need of development, evaluation, and refinement.

It is important to note that accelerated progression and access to more demanding, higher level courses are readily available educational options. They are options which are little used in Australia (Bailey, 1998).

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