Submission to the Australian Senate Employment, Workplace and Education Committee: *Inquiry into the Academic Standards of School Education*

Australian Council for Educational Research

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ACER welcomes the opportunity to make this written submission to the Senate Committee. The document starts by briefly reviewing evidence on how well Australian school students are performing, the extent to which they are being equipped with core knowledge and skills, and how standards compare among states and territories. It then discusses some policy priorities in regard to the specification of curriculum content, teaching and assessment practices, and teaching standards.

Current Performance Levels

The OECD has ranked Australia highly in terms of the current attainments of 15 year-olds. The Programme for International Student Assessment (OECD, 2004), which provides the only reliable international data on attainment levels at this age, has concluded that, among 41 participating countries, Australia is significantly outperformed only by Finland in reading literacy; Hong Kong SAR, Finland, Korea and Netherlands in mathematical literacy; and Finland, Japan and Korea in scientific literacy.

While Australian 15 year olds perform well on average, there is significant variability in students' levels of achievement – at the individual, school and state/territory level, even after allowing for differences in terms of socioeconomic status, the proportion of Indigenous students, the rural-urban mix and differences in the relationships between students' age and year levels (Marks & Cresswell, 2005; Rowe, 2006). In reading, 7 per cent of Australian girls and 17 per cent of boys perform at the lowest international standard, meaning that they are likely to be able to locate specific details in text, but to be unable to connect ideas or to draw conclusions from a piece of writing (Thomson, Cresswell & De Bortoli, 2004). In some areas, few Australian students perform at very high levels. For example, in international tests of Year 8 mathematics knowledge, only 7 per cent of Australian students perform at an 'advanced' level, compared with 44 per cent of Singaporean students (Martin *et al.*, 2004).

There is considerable evidence that earlier school performances are good predictors of later school performances. Prior achievements tend to be correlated not only with later achievements, but also with attitudes to learning and, ultimately, with school completion and labour market outcomes. Mastery of the basics, especially reading, but also numeracy, is a particularly good predictor of subsequent success and engagement in lifelong learning.

Throughout the years of school there are wide variations in students' levels of achievement. Children begin school with markedly different levels of individual development and school readiness. By Year 5, the top 10 per cent of children in reading are at least five years ahead of the bottom 10 per cent of readers (Masters & Forster, 1997).

Students from low socio-economic and Indigenous backgrounds tend to be over-represented in the tail of the achievement distribution. This means that increasing variability across the years of school sometimes is reflected in growing gaps between students from lower and higher socio-economic backgrounds and between Indigenous and non-Indigenous students.

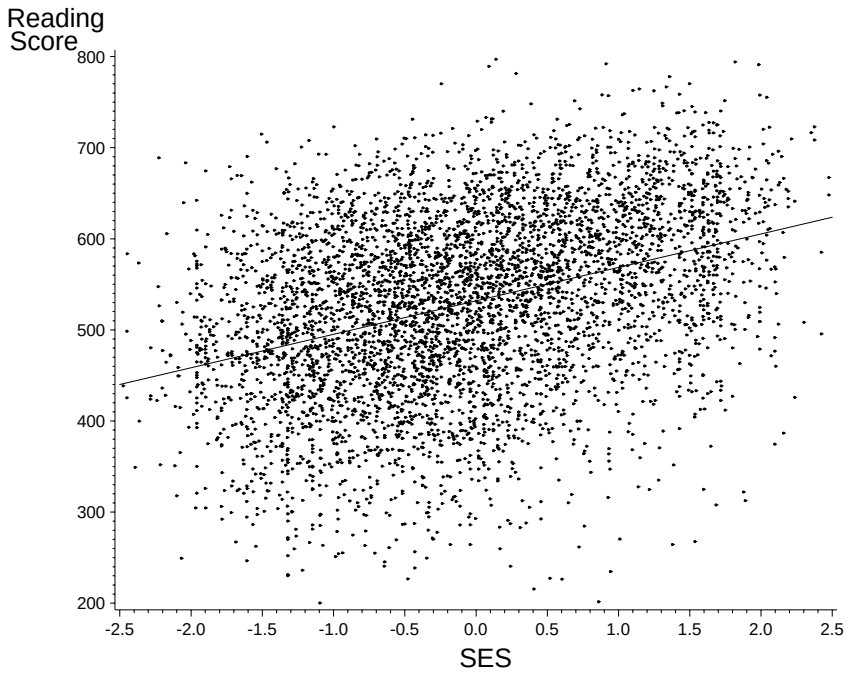

Figure 1: Reading levels and socioeconomic status of 15 year olds (PISA 2000)

It is important to note that although students' socioeconomic background is correlated with school achievement, the correlation is not high (generally <0.3). This is illustrated by the international PISA reading results for 15 year-olds shown in Figure 1, where each dot represents 20,000 students in the OECD area. Among students from low SES backgrounds, there are students with relatively high reading scores, and students with low reading scores can be found at almost all SES levels. It seems likely that interventions targeted on low SES students (e.g., students in 'disadvantaged' schools) are likely to be less effective than interventions targeted on individuals with low reading levels, regardless of SES.

In the basic skills of literacy and numeracy, up to 10 per cent of Australian students achieve only minimal levels by Year 7 (MCEETYA, 2007). A further 20 per cent have levels below those required for effective functioning in adult society (Rothman, 2002). The 2004-2005 Australian Government National Inquiry into the Teaching of Literacy raised serious concerns about the proportion of school students who do not acquire basic literacy skills, and the pressing need to improve teachers' knowledge and use of evidence-based approaches to teaching literacy (Rowe, 2005).

Despite generally increasing levels of educational qualifications in the community, Australia has one of the lowest secondary school completion rates, behind East Asia, North America, Scandinavia and much of Continental Europe. Among 20-24 year olds, 17 per cent of Australians have neither completed secondary school nor are in education. For Norway, the corresponding figure is only 4 per cent (Productivity Commission, 2006). Between 1986 and 1996 the apparent retention rate of secondary students to Year 12 jumped from 49 per cent to 71 per cent (Australian Bureau of Statistics, 2007). By 2006 the rate was only 4 percentage points higher (75 per cent) than in 1996 and had actually declined slightly from 2004 (76 per cent).

Many young people leave school in Australia with only minimal standards of education. A significant number of students appear to become disenchanted with, and disengaged from, schooling during their secondary years. Young people whose literacy and numeracy are in the lowest quarter or who do not complete a Year 12 certificate are more likely to experience multiple periods of time outside the workforce and are less likely to engage in further education or training after leaving school (Hillman, 2005).

A serious skills shortage exists in the sciences and mathematics, with the Commonwealth Department of Education, Science and Training (2006) estimating a shortfall of almost 20 000 scientists and engineers by 2012. Despite the looming shortage, there has been a steady decline in the proportions of Australian senior school students studying advanced mathematics, chemistry, physics and biology over recent decades. There have been similar declines in the proportions of students choosing to study mathematics and science at university level. Surveys of students consistently show that they cannot see the relevance of school science to their lives. Science curricula have been designed to prepare students for the future study of science, but current courses not only are failing to engage the majority of students, they also are not attracting sufficient students to the study of science (Ainley & Underwood, 2003).

National Standards and Consistency

Some clarification of the areas in which national standards and national consistency are desirable could be a useful step in improving school education in Australia.

Currently there is considerable duplication of education services across the Australian states and territories. This duplication is well illustrated in the senior years of secondary school where seven government authorities currently provide nine different senior certificates. Analysis of the curricula for these certificates shows that 95 per cent of chemistry content, 90 per cent of advanced mathematics content, and 85 per cent of physics content is common to all states and territories (Masters *et al*., 2006; Matters & Masters, 2007). However the seven authorities maintain seven different sets of assessments/examinations of this common content, and seven different ways of reporting student results, making it impossible to compare subject results between any two states. Some priority should now be given to minimising unnecessary differences and duplication of effort across state government bodies.

Standards-based Curriculum Provision

Future school curricula should begin with an analysis of the kinds of learning likely to be required for the future, make clear what students are expected to learn, promote deep understanding of subject matter and provide flexibility to enable teachers to respond to individual needs and local contexts.

Standards-based school curricula should make clear what teachers are expected to teach and what students are expected to learn and do as a result of schooling, as well as specifying minimally acceptable standards for skills in areas such as literacy, numeracy and science. This focus on the desired outcomes of schooling is in welcome contrast to an earlier preoccupation with inputs and processes.

School curricula need to promote the development of students' higher-order skills and deep understanding of subject matter. That is, the development of basic skills is an essential but not sufficient objective of a national curriculum. For example, the ability to read and understand a newspaper opinion column depends first on basic skills in recognising and decoding words. But a deeper understanding requires skills of critical analysis: an ability to 'read between the lines'; an understanding of the nature of opinion; and an understanding of the connections and motivations of the writer(s).

Research into human learning has made clear the importance of deep understanding of concepts and principles (Bransford *et al*. 2000). Knowledge of facts and procedures is crucial, but deep understanding allows knowledge to be organised and conclusions to be reached about what knowledge is relevant to a problem.

The school curriculum should be flexible enough to allow teachers to address individual needs and local contexts. Children begin school with very different levels of development and readiness, and increasingly large differences between students are found in each subsequent year of school. For example, in mathematics, these differences appear to increase over time, so that, by the end of primary schooling, the highest achieving students can be as

much as six years ahead of the lowest achieving students in their year level. Under these circumstances, treating all students as though they are equally ready for the same syllabus content can lead to frustration for less advanced students, and boredom for the more advanced.

Equally important are efforts to identify children who are experiencing learning difficulties and to diagnose, understand and address those difficulties before they become an impediment to success at school. Learning difficulties can take many forms, including attentional difficulties, dyslexia, specific learning difficulties, language/speech disorders, social/emotional difficulties and behavioural difficulties (Purdie & Ellis, 2005; Rowe, Pollard & Rowe, 2005; Westwood, 2006).

The ability to customise learning to meet the needs of individual learners depends on good information about those needs. Regular monitoring is required to establish current levels of attainment and to diagnose obstacles to further progress.

Standards-based Assessment and Monitoring of Student Progress

For diagnostic, intervention, monitoring and reporting purposes, it is vital that teachers are provided with standards-based assessment instruments. Such instruments need to be constructed and calibrated on nationally consistent, common measurement scales that are qualitatively described (Masters, Meiers & Rowe, 2003).

No concept is more central to the work of teachers than the concept of *growth*. The concept of individual growth lies at the heart of educators' work as a profession: it underpins efforts to assist learners to move from where they are to where they could be, and to develop higher levels of reading ability, broader social skills, deeper scientific understanding, more advanced problem solving skills, and greater respect for the rights of others.

Closely linked to the concept of individual growth is the fundamental belief that *all* learners are capable of progressing beyond their current levels of attainment – including those with learning difficulties (Louden *et al*., 2000). The challenge is to understand each learner's current level of progress and to provide opportunities likely to facilitate further growth. An understanding of typical patterns of learning facilitates the identification and appreciation of individuals who learn in uniquely different ways, including those with learning difficulties.

Monitoring individual learners and their progress over time requires assessments of students' progress on well-constructed, common, empirical scales (or quantitative 'maps') that are qualitatively described. The use of such maps enables the monitoring of both individuals and groups across the years of schooling (and sometimes beyond school). As illustrated in Figure 2, this approach enables a deeper understanding of learning progress than can be obtained from 'cross-sectional snap-shots' that merely assess the achievements of different students at different times.

The data summarised in Figure 2 are drawn from ACER's Longitudinal Literacy and Numeracy Study (Meiers *et al*., 2006). In this case, growth in numeracy is described on the left of the map, from early skills at the bottom to more advanced competencies at the top. These summary descriptions are valuable in that they provide a window that opens-up to more detailed information about what students have achieved – as documented in portfolio records, class/school-based assessments, and so on.

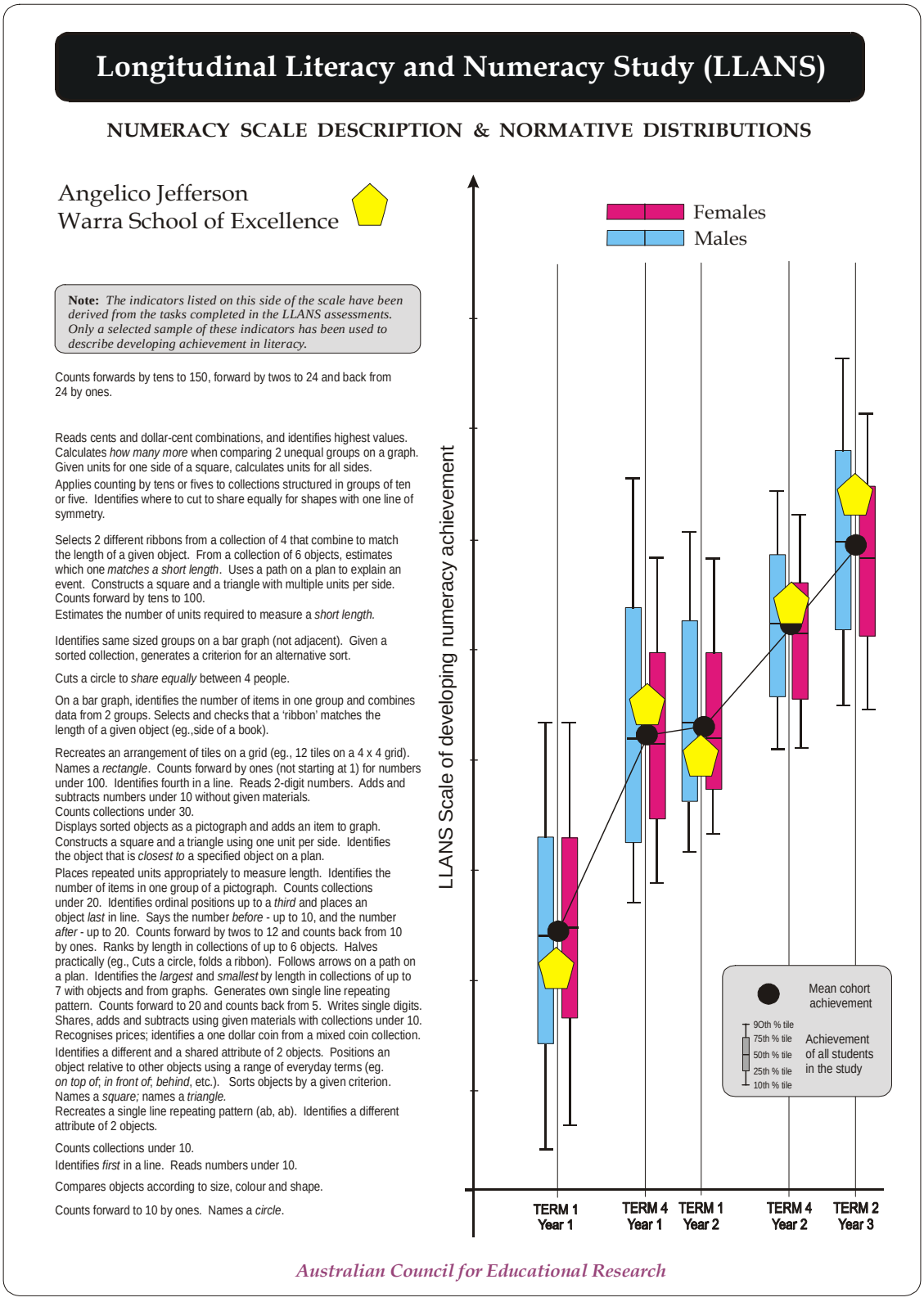

Figure 2: A growth map of achievement progress in numeracy showing individual, group and norm-referenced growth against descriptions of domain-referenced criteria

The type of assessment and reporting in Figure 2 provides educators with a number of insights that may not be otherwise available. On average, children's numeracy skills developed most rapidly during their first year of school but developed little between November of that year and March of the following year (a period that included the summer

holidays). Despite a decline in the achievement progress of the illustrative student concerned during this same period, she made better-than-expected progress in numeracy during the second and third years of school. There is great variability among students in their rate of progress in numeracy, which raises questions about the factors and teaching strategies associated with successful learning and rapid progress, as well as those that impede student growth.

Teaching Standards and Teacher Quality

Research consistently shows that the single greatest influence on levels of school achievement is the quality of teaching (Hattie, 2003; Ingvarson & Rowe, 2007). Excellent teaching is the key to increased student engagement and higher levels of achievement, regardless of students' backgrounds. For this reason, high priority must be given to attracting very able people into teaching, keeping excellent teachers in classrooms, and supporting all teachers to work as professionals. Of critical importance is improving the capacity of the teaching profession to define, evaluate and certify high quality teaching.

The typical salary scale for teachers in Australia does not place high value on evidence of teacher quality. Consequently, it is a weak instrument for improving student achievement. It does not provide incentives for professional development nor reward evidence of attaining high standards of performance. Thirteen of 30 OECD countries report that they adjust the base salary of teachers on the basis of outstanding performance in teaching, or successful completion of professional development activities (OECD, 2005). Australia is not one of them.

While progression to the top of the salary ladder is rapid in Australia – it takes only 9-10 years for most Australian teachers to reach the top of the scale compared with 24 years on average in OECD countries – there are no further career stages based on evidence of attaining higher levels of teaching standards. The implicit message in most Australian salary scales is that teachers are not expected to improve their performance after nine years.

The profession needs to develop clearer guidelines as to what it expects its members to get better at with experience. Guarantees of quality teaching, however, will be meaningless without valid methods of measuring teacher performance. A review of research in this area by ACER, commissioned by DEST, indicates that the reason for so many failed 'performance pay' schemes over the past 30 years has been the lack of understanding about the complexity of developing valid and professionally credible methods for gathering data about teaching and assessing teacher performance (Ingvarson, Kleinhenz & Wilkinson, 2007).

Unlike most other professions, the teaching profession has found it difficult to create a strong market for highly accomplished practitioners. There are many highly accomplished teachers, but no profession-wide system by which they can gain a highly respected and portable certification of their accomplishments. Consequently, incentives for teachers to provide evidence of skills via professional development through stages of increasing expertise are weak.

Despite the paucity of incentives, there are strong indications that many in the profession wish to move down this path. The Australian Science Teachers Association and the Australian Association of Mathematics Teachers have developed their own standards for highly accomplished teachers in recent years (Brinkworth, 2004; Semple & Ingvarson, 2006). Several other subject associations are undertaking similar initiatives. School systems within Australia are also looking for better ways to recognise and retain good teachers, such as Western Australia with its Level 3 Classroom Teacher scheme.

Effective teacher education is essential to quality teaching (e.g., Louden *et al*., 2005). A recent ACER study conducted for Teaching Australia (Ingvarson *et al*., 2006) examined current procedures for the assessment and accreditation of teacher education courses. The findings indicated that these procedures are generally weak as quality assurance mechanisms.

None is based on outcome measures of the quality of graduates or their competencies. There is a need to develop much better measures of the outcomes of teacher education courses in order to understand the characteristics of courses that are more effective in producing competent teachers.

Registration of new teachers is another important mechanism for ensuring teacher quality. Ideally, registration provides an assurance that new teachers are not only qualified but competent, but this is not the case in most Australian jurisdictions. In most Australian States and Territories, registration follows automatically from completing an approved university qualification, despite the fact that this qualification alone is an uncertain guide to a teacher's capacity to promote learning in real school contexts (Parliament of Victoria, Education and Training Committee, 2005). Most professions delay registration until a period of internship in workplace settings has been completed satisfactorily (Ingvarson *et al*., 2006).

The Victorian Institute of Teaching has introduced new standards-based assessment procedures for provisional registration, which means that registration for teachers in Victorian schools now depends on successful completion of a period of provisional registration supported by a mentor. By the end of this period, graduate teachers are expected to provide evidence that their practice has met standards of performance established by the VIT before gaining full entry to the profession. These new procedures are perceived as valid assessments against the VIT standards (Ingvarson *et al*., 2007). Other states such as NSW are developing similar procedures. However, the success of these new procedures in promoting better teacher education and professional learning during induction will depend on the development of valid measures and standards of teacher performance.

To maximise their impact on student learning and achievement, teachers also require the forms of support normally available to professionals. These include access to paraprofessional assistance, ready access to current research and knowledge about effective teaching and learning practices, attractive and well-equipped classrooms and preparation areas, and access to high quality materials and resources (OECD, 2005).

New initiatives and programs in education often are based on personal beliefs about what should work, political or philosophical stances, or attempts to recapture some imagined past. In general, more attention needs to be paid to what is known about effective teaching practices—for example, the importance of direct instruction in early literacy learning (Rowe, 2005). Teachers require dependable evidence about what works, for whom and under what conditions as part of their pre-service preparation, and on-going professional development. As in other professions, practising teachers require regular information about new developments and research findings, as well as the opportunity to engage in research themselves.

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