

NSW Department of
Education and
Communities
Discussion Paper:
Australian School
Funding
Arrangements



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LIST OF ACRONYMS

ABS	AUSTRALIAN BUREAU OF STATISTICS
ACARA	AUSTRALIAN CURRICULUM, ASSESSMENT AND REPORTING AUTHORITY
ACSSO	AUSTRALIAN COUNCIL FOR STATE SCHOOL ORGANISATIONS
AEDI	AUSTRALIAN EARLY DEVELOPMENT INDEX
AGSRC	AUSTRALIAN GOVERNMENT STUDENT RECURRENT COSTS
APC	AUSTRALIAN PARENTS COUNCIL
ATSI	ABORIGINAL AND TORRES STRAIT ISLANDER
CD	COLLECTION DISTRICT
COAG	COUNCIL OF AUSTRALIAN GOVERNMENTS
DEEWR	DEPARTMENT OF EDUCATION, EMPLOYMENT AND WORKPLACE RELATIONS
DETYA	DEPARTMENT OF EDUCATION, TRAINING AND YOUTH AFFAIRS (NOW DEEWR)
ESL	ENGLISH AS A SECOND LANGUAGE
FOEI	FAMILY OCCUPATION AND EDUCATION INDEX
GDP	GROSS DOMESTIC PRODUCT
ICSEA	INDEX OF COMMUNITY SOCIO-EDUCATIONAL ADVANTAGE
IGA	INTER-GOVERNMENTAL AGREEMENT
LBOTE	LANGUAGE BACKGROUND OTHER THAN ENGLISH
MCEECDYA	MINISTERIAL COUNCIL FOR EDUCATION, EARLY CHILDHOOD DEVELOPMENT AND YOUTH AFFAIRS
MCEETYA	MINISTERIAL COUNCIL FOR EDUCATION, EMPLOYMENT, TRAINING AND YOUTH AFFAIRS (NOW MCEECDYA)
NAPLAN	NATIONAL ASSESSMENT PROGRAM: LITERACY AND NUMERACY
NEA	NATIONAL EDUCATION AGREEMENT
NSSC	NATIONAL SCHOOLS STATISTICS COLLECTION
NSW	NEW SOUTH WALES

NSW DEC	NEW SOUTH WALES DEPARTMENT OF EDUCATION AND COMMUNITIES
OECD	ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT
SES	SOCIO-ECONOMIC STATUS
SRT	SCHOOLS RESOURCING TASKFORCE
SWD	STUDENTS WITH A DISABILITY
US	UNITED STATES
VET	VOCATIONAL EDUCATION AND TRAINING

EXECUTIVE SUMMARY

On 16th December 2010, the Commonwealth Government released an ‘Emerging Issues Paper’ that summarised key themes of growing importance to its national *Review of Funding for Schooling* (the Review). This ‘discussion paper’ aims to obtain community feedback on the NSW Department of Education and Community’s (NSW DEC’s) response to the Commonwealth Government’s key themes.

An adequately resourced system of schooling available to every child is fundamental to the economic future of the country as well as the wellbeing of each individual and family.

The Commonwealth’s Review is a significant step in achieving the high ambitions that all Australian Governments have articulated for schooling. The Review is comprehensive in that it is considering all resources available to educate a child.

The Commonwealth Government’s role in funding for school education is, by itself, significant in scale and importance. The Commonwealth Government is the principal funder of non-government schools and a key contributor to Government schools. The Commonwealth Government is also a major provider of funding for the most educationally disadvantaged students (such as through the National Partnership for Low Socioeconomic Status Students).

Governments now have available to them a considerable array of data and evidence to assist in targeting funding to areas of highest educational need.

This discussion paper provides new evidence and data to explore two examples of how greater analytical clarity can be achieved in identifying educational need. The first is evidence of the wide variation in need that exists in current equity categories such as students from a Language Background Other Than English. The second is substantial evidence that individual student disadvantage is increased by concentrations of disadvantage at the school level.

The NSW DEC welcomes feedback on these and related issues, such as:

- What measures of need should the Commonwealth Government consider in assessing the resource needs of schools?
- Do school sectors and systems have unique costs of provision and how can these be estimated?
- What other evidence can be used to refine our understanding of the resourcing needs of students?
- What factors should be included in indices that assess individual student or family educational disadvantage?

Any feedback can be directed to (email: funding.review@det.nsw.edu.au) by **Friday 25th March 2011**.

1. EQUITY OF EDUCATIONAL OUTCOMES

1.1 The importance of high standards in school education

Countries continue to invest in school education to maintain their competitive advantage in a global economy and significant consequences flow from a country's decision to invest in school education. Yet the relationship between school funding and student performance is complex and often not easily measured.

There are obviously benefits to individuals that flow from increased levels of education. However, there are also social benefits; e.g. lower crime rates, a healthier population living more rewarding and productive lives, and the additional economic activity that individuals bring as a consequence of increased education.

A nation's productivity levels are enhanced by technological advances, population skill levels, innovation and capital investment. School education plays a key role by developing fundamental skills and providing the platform for tertiary education. A highly qualified workforce is important for jobs not only in the high-end skills sector but throughout a nation's workforce, as the demand for non-skilled labour declines and greater levels of technical expertise will be required in all sectors (OECD 2010, 170).

Australia has responded to this global phenomenon of increased schooling by identifying core objectives for schools, vocational education and training (VET), and universities. The Commonwealth Government has committed to a target of 40 per cent of all 25 to 34 year olds holding a qualification at bachelor level or above by 2025, leading to around 217,000 additional graduates during this period (DEEWR 2009). NSW has endorsed this approach, setting a target of 44 per cent in the same period.

Ambitious reform is also envisaged for schools, including:

- The National Goals for Schooling in the Twenty-First Century¹;
- The Council of Australian Government (COAG) objective that 'all Australian school students acquire the knowledge and skills to participate effectively in society and employment in a globalised economy' (IGA, Schedule F 'National Education Agreement'); and COAG targets to meet this objective, such as lifting the Year 12 or equivalent attainment rate to 90 per cent by 2020.

The Commonwealth Government's *Review of Funding for Schooling* (the review) provides an opportunity to appropriately identify the resources required to meet Australia's substantive objectives in school education. The review has adopted 'a world class education' as the standard to be reached. This standard may need further definition but whatever the objective, it is important to fully understand the resources required to achieve our objectives and targets.

¹ <http://www.curriculum.edu.au/mceetya/nationalgoals/natgoals.htm> (Accessed 29 Oct 2010).

1.2 The need for good evidence

Adequately resourcing our commitment to school education requires a funding model that is based on sound evidence of school and student need and an expectation that all students should have the opportunity to achieve the same outcomes.

A number of measures have been used by Governments to assess the relative needs of students for funding purposes. These include student characteristics, school location and existing resource levels. The purpose of these measures is to determine the level of resources needed to bring students with varying levels of need to the same educational standards. However, these current proxy measures for educational need are relatively blunt instruments. Student performance in assessments can, for example, be used to develop more precise measures for understanding the resource needs of individual students, schools and school systems.

Precise identification of need through a sophisticated proxy would lead to more accurate targeting of funding, which should result in funding having a greater impact on student performance.

1.3 More accurate measures of student need

A key factor currently used to determine resourcing is a student's membership of a defined 'equity' group. Equity groups are groups of students with a specified background such as Language Background Other Than English (LBOTE), or those students identifying as Aboriginal. However, increasingly sophisticated assessment and outcomes data demonstrate that not all members of a defined equity group are equally disadvantaged in an educational sense. For example, there are large variations in student outcomes within existing categories. There are also complex interactions between variables at the school level, such as the effect of concentrations of disadvantaged students (discussed further in this discussion paper).

A lack of specificity often exists in our understanding of equity students and their needs. Due to a lack of precision, funding a student on the basis of their affiliation to a traditional equity category can in some instances be a poor targeting of resources.

It is important that these differences within equity groups be accurately identified and accounted for so that the impact of demographic challenges can be fully understood, and resources directed appropriately.

In order to do this, a range of individual student performance data is now available to assist us in discovering where true educational need exists. This is further examined in section 3 of this paper, on 'Targeting and Needs-Based Funding.'

When developing a funding approach it must be noted that not all measures of student need can be readily estimated by a student performance proxy. For example, students with a disability can have a very wide range of additional resource needs, often unrelated to a level of performance on a student assessment.

1.4 The unique costs of government education

Within Australia, most parents have a choice between a range of Government and non-Government schools, all of which are supported by Commonwealth and State funding. Within this mix of schooling provision, there are unique costs that accrue to the public sector due to its legislative responsibility as the ‘universal’ service provider.

When considering the adequacy of school funds, the cost drivers that particularly impact on public schooling are:

- 1) *Scale*. Government schools are required to be the ‘first in’ and ‘last out’ of any community and this legislative requirement for a large reach imposes its own costs. For example, low student: staff ratios are a major cost driver that is often mandated in government schools due to the need to operate small, low density schools in relatively isolated areas.
- 2) *Selection*. Government schools are required to be available to all local students which can have a range of cost impacts. For example the ability to ‘optimise’ class sizes is limited, and a school cannot refuse enrolment to a student because of their greater educational needs.
- 3) *Magnification of cost pressures*. Cost pressures faced by all schools can be magnified due to the universal provision required of government systems. For example, teacher shortages in mathematics, science, and technology are not unique to the government sector nor to Australia but the problems are most acute in schools serving disadvantaged or isolated communities (see MCEETYA, 2005). The costs of attracting and retaining teachers in ‘hard-to-staff’ locations are more acute in the government sector as it is required to serve all locations regardless of the complexity or cost of doing so.
- 4) *Regulation*. Regulatory frameworks can also impose additional costs on government schools. Generally, all schools in Australia are subject to the same laws and regulations (except for anti-discrimination legislation which in some cases do not cover non-government schools). However, it is only Government schools that are required by legislation to take students and there is little discretion to refuse enrolment. This involves Government schools in particular in a regulatory framework concerning compulsory school attendance to a different degree than in other sectors.

Some non-government schools also choose to serve isolated and disadvantaged communities. How can our resourcing system best support all schools serving isolated communities and recognise the unique role of public schooling? And what other factors might present unique costs to public education?

2. RECURRENT FUNDING

State and Federal Governments have developed a number of ways of targeting resources to students and schools. These include:

- Area-based measures (e.g. disadvantage measured by the area in which individuals live);
- Individual based from surveys (e.g. NSW ‘Priority Schools Funding Program’);
- Student characteristics (e.g. NSW ‘English as a Second Language – New Arrivals Program’);
- School characteristics (e.g. ‘Schools in Partnership,’ an Aboriginal education initiative in NSW).

There is much debate about what type of data should be used to determine where true educational need exists and which will subsequently inform the calculation and allocation of recurrent funding to schools. In terms of recurrent funding, it has been argued that a more direct measure of need should be used that is less reliant on broad geographic measures or census data, and which instead relies on data which more directly measures the characteristics of school populations.

Measurement of student need within the Australian schooling context often involves the use of area-based measures of need. Use of area-based indicators with regard to the measurement of student need typically involves reference to Census Collection Districts (CDs). CDs are the second smallest² geographical unit currently used by the Australian Bureau of Statistics (ABS), and comprise about 220 dwellings (roughly equivalent to a small group of suburban blocks in an urban area).

There are benefits to the use of area-based measures, as they are cheap and relatively impervious to individual manipulation. It was also the case that until recently, a paucity of reliable individual student-level SES data meant that the construction of an individual-based measure was untenable. However, area-based measures have often been criticised for being trapped in the ecological fallacy; the false assumption that what is true for an area (an ‘ecology’) is also true for individuals who live there.

The Australian Curriculum, Assessment and Reporting Authority (ACARA) has recently conducted an analysis of NAPLAN data against both area-based and an individual measure of disadvantage and found that an individual measure is a better predictor of educational performance. Since the purpose of deriving a measure of disadvantage is to direct funds to the most educationally needy students, such a finding demonstrates that a direct measure of disadvantage would better target students with higher levels of educational need. Analysis conducted by the NSW DEC using performance data from NSW government schools also

² The smallest geographical area measure in the Australian Standard Geographical Classification (ASGC) is actually the Mesh Block, but CDs are generally understood to be the basic building block in the ASGC and are the units used in most area-based measures of socio-economic and socio-educational status.

demonstrates that area-based measures provide a lower level of accuracy than individual measures.

Using such individual based measures in the determination of funding allocation would require the creation of a reliable, robust measure of student and school socioeconomic disadvantage. Currently ACARA uses the Index of Community Socio-Educational Advantage (ICSEA) as the measure of relative advantage or disadvantage of a school's population. While ACARA have found that in general an individual based measure of ICSEA has a greater level of predictive power than a proxy measure, more work is needed in this area.

3. TARGETING AND NEEDS-BASED FUNDING

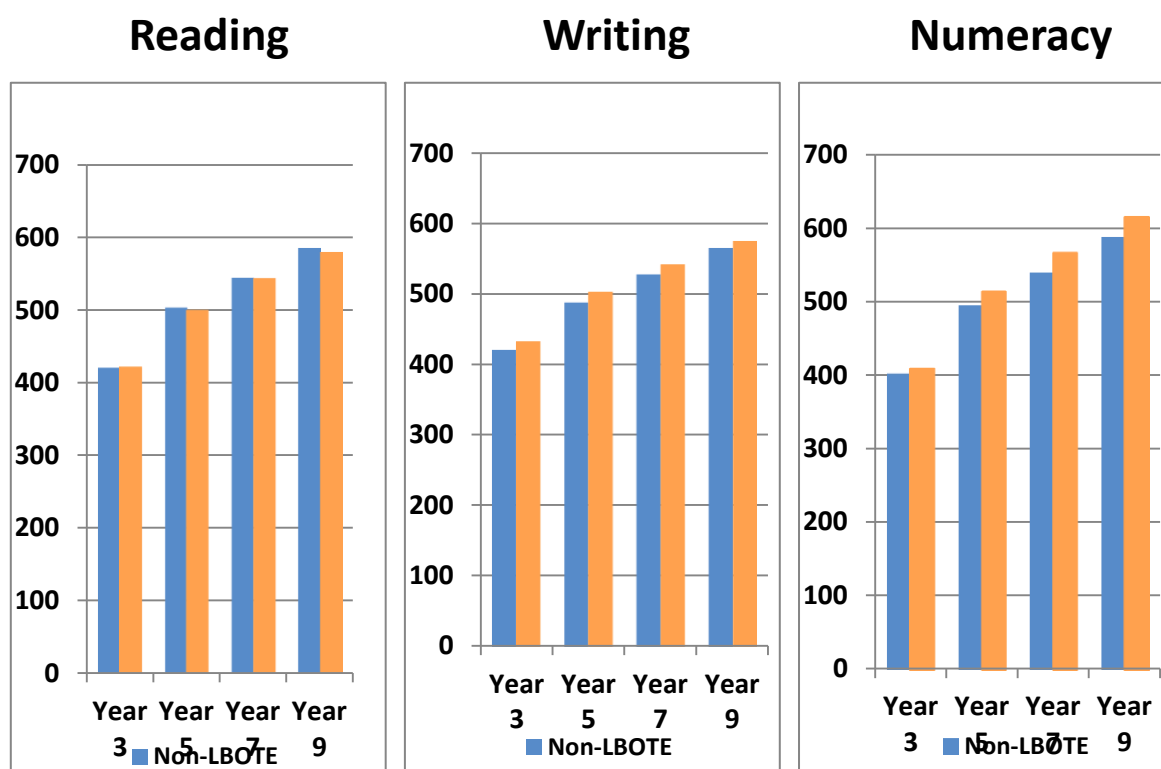
The mechanism by which funding is targeted must capture variation in individual student performance. This may not be best achieved by relying on all of the traditional equity categories. This is because a significant amount of variation can, and does, exist within these traditional equity categories, as is evidenced by recent NSW DEC analysis of NSW Government schools 2009 NAPLAN data involving the categories of Language Background other than English (LBOTE), low Socioeconomic Status (SES), and Aboriginality.

3.1 A more sophisticated understanding of student need

3.1.1 Example: Variation within the LBOTE variable

Analysis has shown that LBOTE status does not, by itself, constitute a measure of educational disadvantage. 2009 NAPLAN results for Reading, Writing and Numeracy, across all testing cohorts, showed that students from a language background other than English in all schools, on average, performed as well as, or better than, students whose language background is English (Figure 1).

Figure 1: Performance of LBOTE and non-LBOTE students across testing domains and scholastic years.



Source: 2009 NAPLAN results of NSW government schools students

3.1.2 Refining LBOTE: Language proficiency, refugee status and length of time in Australia

LBOTE status is not empirically linked to students' educational disadvantage. However, analysis conducted by the NSW DEC investigated the following three key LBOTE indicators:

1. LBOTE Student's level of English proficiency - English proficiency is broken down into three distinct phases, namely:

Phase 1: Limited in all social and educational circumstances

Phase 2: Limited to familiar social and educational circumstances

Phase 3: Occasionally need assistance in specific educational situations

2. Refugee status – as determined by residency status and visa subclass as declared on the enrolment form; and,
3. Length of time in an Australian school – determined by the first entry date in an Australian school, as entered on the enrolment form.

Students' 2009 NAPLAN results (combined reading and numeracy reported scores, standardised within the same cohort year) were used as values for the dependent variable, whilst student background data from the enrolment system and ESL Annual Survey were used as values for the independent variable.

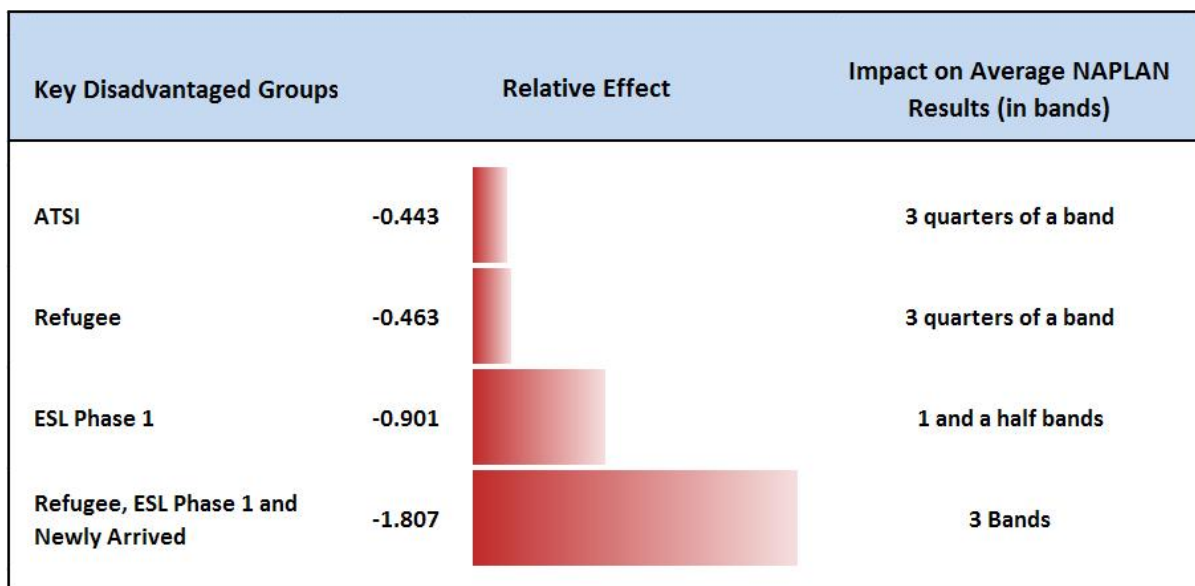
3.1.3 Analysis of results

After controlling for the effect of students' parental background and allowing for school-level effects to vary across schools, it was found that:

- Students who are assessed as having limited English proficiency (ESL phase 1) have twice the level of disadvantage as that associated with students who are refugees or who are Aboriginal;
- The most disadvantaged group of LBOTE students are those who fall into all three of these LBOTE indicator groups, namely: refugees who have limited English proficiency (Phase 1) and have been in an Australian school for less than one year.

Figure 2 illustrates these results with respect to the NAPLAN reporting scale.

Figure 2: Impact of LBOTE-related measures on NAPLAN results.



Source: Data sourced from 2009 NAPLAN data, and 2009 enrolment data. Note that multi-level analysis adjusted for school-level effects and student parental education and occupation status.

LBOTE by itself does not indicate educational disadvantage; however, English proficiency and refugee status (and a combination of these factors) does.

3.2 Impact of concentrations of disadvantage

3.2.1 Example 1: SES

A student’s socioeconomic background is known to be a strong factor in their level of educational need. Many school funding streams and programs are rightly predicated on this known association.

To date there has been less clear evidence on the effect of many individual students with the same level of disadvantage concentrated in a single school. It is important that the interactions between student and school level variables are adequately explored and understood when constructing a model of school funding.

The NSW DEC has undertaken an analysis of this interaction between an individual student’s SES and school level SES. To do this, a scale of family socio-educational advantage was constructed by using student data collected via each student’s enrolment form. An SES value for each NSW DEC school was then calculated by averaging the family SES score of each student at that school (see Appendix A)³.

³ Only NSW DEC NAPLAN and parent information data was available for this analysis.

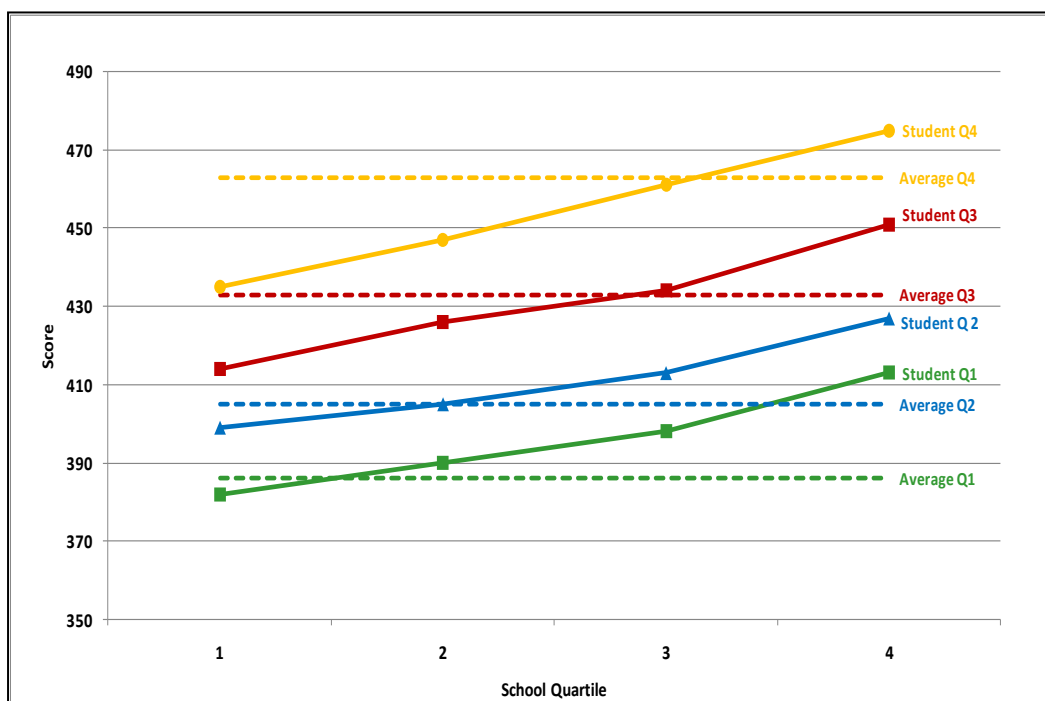
For analysis purposes, the range of SES scores at both a student and school level were divided into four equal quartiles, where Quartile 1 (Q1) represented the 25 percent of students/schools with the lowest SES scores, and Quartile 4 (Q4) represented the top 25 percent of students/schools SES scores⁴.

The NSW DEC analysis clearly demonstrates that not only is the well understood link between individual student SES and performance evident, but that concentrations of disadvantage at the school level have a powerful additional impact on student performance.

The neighbourhood effect of low SES on performance

Figure 3 shows the performance of Year 3 students from each of four student SES quartiles and the impact that school SES has on that performance.

Figure 3: Year 3 DEC students – average performance in literacy and numeracy by student and school SES quartiles



Source: Internal NSW DEC data

In this diagram the green lines represent the most disadvantaged schools and students; the yellow lines the most advantaged students and schools.

The results confirm the often found link between a school’s average SES and educational outcomes.

⁴ As a school’s SES is an average of the students SES, it is natural that the number of Q1 students is highest in Q 1 schools and lowest in Q 4 schools (and the same applies in reverse for Q4 students). However, using the full DEC data set there are enough enrolments across each quartile to make accurate comparisons. For example in Year 3, there are over 6,000 Q1 students in Q1 schools, but still nearly 1,000 Q1 students in Q 4 schools.

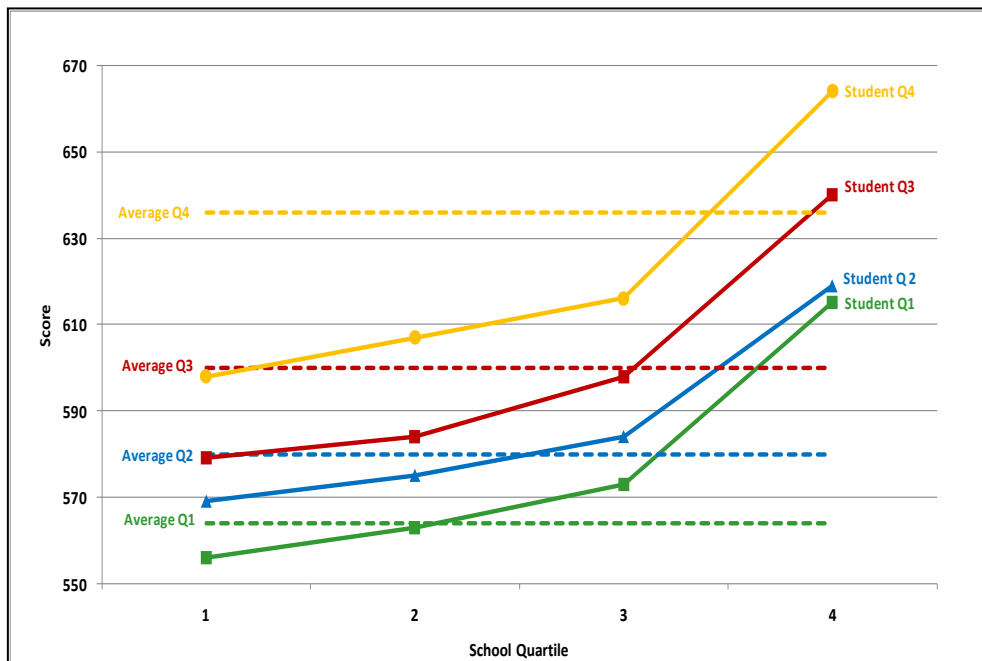
The dashed, straight lines show the average Year 3 NAPLAN score (literacy and numeracy combined) for schools in each SES quartile. They clearly show that schools with the highest average SES (yellow dotted line) on average score much more highly than schools with the lowest average SES (green dotted line). The difference in average NAPLAN scores is 77 points, which is a substantial difference (almost equivalent to one standard deviation).

What this analysis also finds is that while an individual student's SES has an impact on their outcomes, this varies depending on the average SES of the other students in the school. For example, a student with the highest level of disadvantage (the solid green line) has a higher average score the higher the average score of the school. The analysis demonstrates that:

- Irrespective of which SES quartile a student belongs to, their score (on average) improves if they enrol in a higher SES school.
- A low SES student (Q1) will, on average, achieve a higher score than the average of all Q2 students if the Q1 students are enrolled in a Q4 school.
- Students' scores improve by between one-third and one-half of a standard deviation if they are enrolled in a high SES school (Q4) rather than a low SES school (Q1).
- The highest SES students (Q4 students) show the largest improvement in performance depending on whether they were enrolled in a Q1 school or a Q4 school; 435 for a Q1 school compared to 475 for a Q4 school; which is a difference of 40, or half a standard deviation.

The effect of school SES on student performance is profound and exists across the SES spectrum. The effect also grows stronger from Year 3 to 5 to 7 to 9. The graph below demonstrates the dramatic difference in average performance for students in Year 9 at the same individual level of SES at schools with different overall populations.

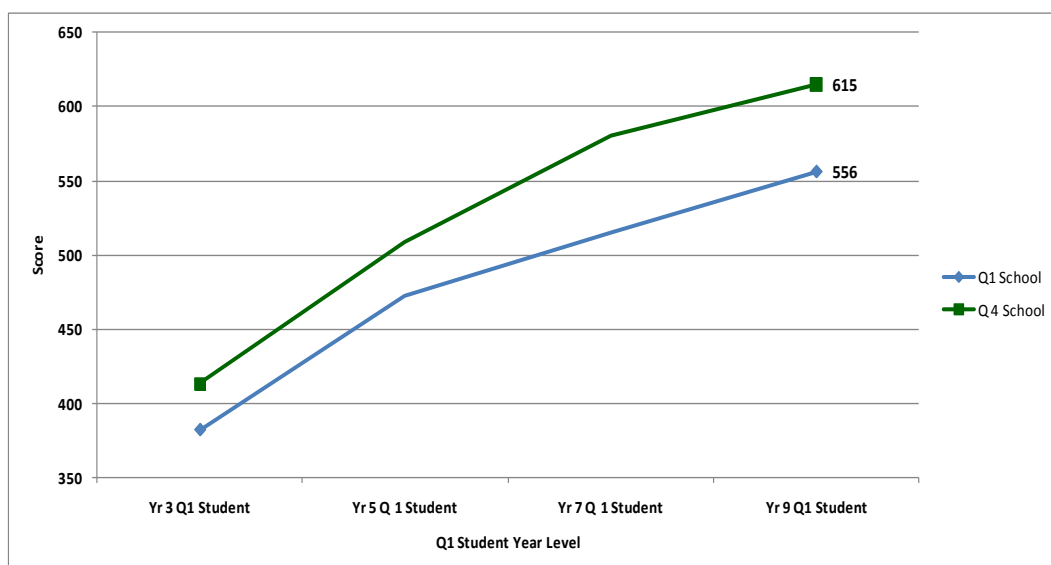
Figure 4: Year 9 DEC students – average performance in literacy and numeracy by student and school SES quartiles



Source: Internal NSW DEC data

The graph below shows how the gap in performance for students in the most disadvantaged schools grows over time if they are in a school with a higher concentration of other disadvantaged students.

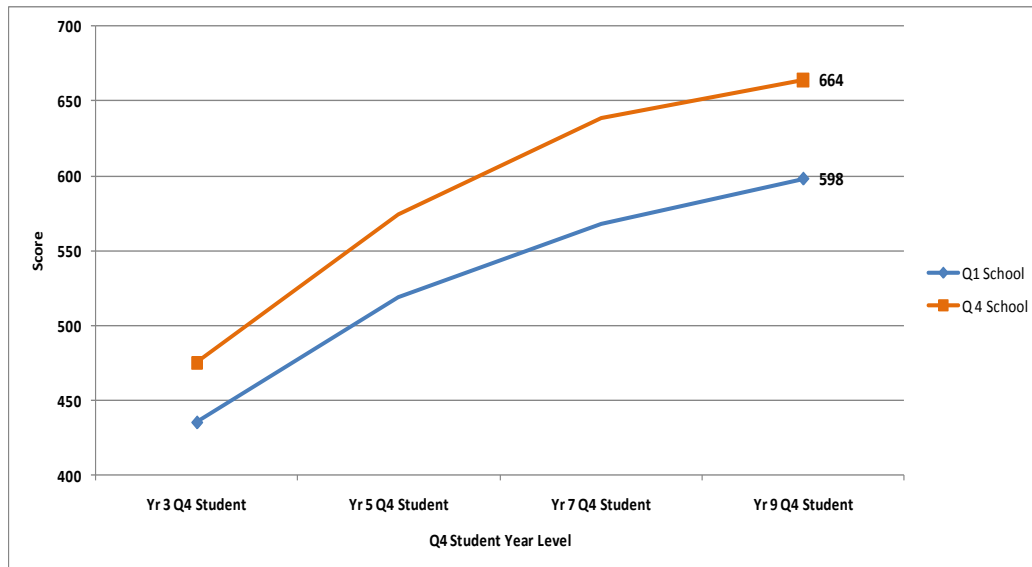
Figure 5: Comparison of average results of low SES students (Q1) in Q1 and Q4 School - from Year 3 to Year 9



Source: Internal NSW DEC data

The data also clearly demonstrate that relatively high SES students experience an even greater impact of attending a school with higher levels of average disadvantage.

Figure 6: Comparison of average results of high SES students (Q4) in Q1 and Q4 School - from Year 3 to Year 9



Source: Internal NSW DEC data

Both graphs illustrate that:

- Irrespective of which SES quartile a student belongs to, their score improves if they are enrolled in a higher SES school.
- The highest SES students (Q4 students) show the largest change in performance depending on whether they are enrolled in a low SES school (Q1) compared to a high SES school (Q4). In other words, the gap between Q1 and Q4 schools is greater for Q4 students (Figure 6) than for Q1 students (Figure 5).
- Relatively high SES students are particularly negatively impacted upon by attending a school with higher levels of average disadvantage.
- Secondary students show the greatest improvement from being enrolled in a high SES school (i.e. the gap between Q1 and Q4 schools progressively expands from Year 3 to Year 9, and is widest at Years 7 and 9, for both Q1 and Q4 students).

These findings point to the strong, independent effect of concentrations of disadvantage at the school-level, over and above the SES of an individual student.

Summary of SES analysis

What these graphs show is that there is a considerable ‘neighbourhood effect’ with regard to SES which impacts on student performance in government schools in NSW. That is, the SES

of the other students in a school impacts on the performance of any other student, adding to the already significant impact of the student's own SES on their performance.

The performance of students with low SES scores will, on average, be lower if they also attend a school with a large number of other low SES students. Conversely, the performance of students with high SES scores will, on average, be higher if they attend a school with a large number of other high SES students. Irrespective of a student's SES, their performance will, on average, improve if they attend higher SES schools.

This finding supports earlier work conducted in Victoria in 2004 by Lamb et al. which found that '[I]ike physical resources, pupils provide a resource that helps some schools organise their teaching and other programs in ways which raise levels of achievement', and that 'high concentrations of middle class students and high achieving students provide certain schools with a platform on which they can build successful outcomes' (2004). It also confirms a national study conducted by Philip Holmes-Smith in 2006 which found that:

- As a school's average SES profile drops so too does its average performance; and
- The predictive power of concentrations of SES students on average school performance increases with the year level of schooling (Holmes-Smith 2006).

Individual, unit record-level SES data was largely unavailable for Holmes-Smith's national study, which consequently under-estimated the significant impact that family SES has on individual student performance. But Holmes-Smith's major finding remains valid; i.e., that a concentration of disadvantage at the school-level plays a major role in determining average student performance.

This evidence demonstrates that in building an effective and well targeted school funding model, it appears from this data that it would need to account for the impact of concentrations of students with particular characteristics. It also demonstrates one of the weaknesses of a 'voucher' system attached to individual students as their relative level of need (as indicated by performance) varies according to the school context.

3.2.2 Example 2: Analysis of the Aboriginal status variable

The NSW DEC also undertook an analysis of the concentrations and educational outcomes of Aboriginal students to see if the same effect held for student characteristics such as Aboriginality⁵.

Consistent with the analysis of disadvantaged students, Aboriginal student performance was found to be directly influenced by the level of concentrations of Aboriginal students in the school. Although it is important to note that data indicates that being Aboriginal and being

⁵ For the purposes of this analysis, students were considered to be Aboriginal if they identified themselves to be Aboriginal on their enrolment form.

disadvantaged are highly correlated, some of the effect may be due to data relating to Aboriginal students being recorded as ‘proxy data’ for disadvantage.

For this study, the same NAPLAN results from NSW government schools were used as for the SES study above but schools were divided into quartiles based on the number of Aboriginal students they enrolled. For example, the results for Year 3 Aboriginal students were as follows (see Table 1):

Table 1: Average performance of Year 3 Aboriginal students by quartiles

Aboriginal enrolment percentage quartile (percentage enrolment range)	Average Performance score (number of students)
Q1 (> 6.71%)	340 (4,746)
Q2 (2.38% to 6.71%)	364 (1,250)
Q3 (0.45% to 2.38%)	370 (377)
Q4 (< 0.45%)	356 (10)

Source: Internal NSW DEC data

Table 1 shows that 25 per cent of NSW government schools (Q4) had Aboriginal enrolments less than 0.45 per cent of their total school population and these Aboriginal students, of which there were ten in total, achieved an average mark of 356 in NAPLAN reading and numeracy. This contrasts with the 25 per cent of NSW government schools (Q1) that had Aboriginal enrolments greater than 6.71 per cent of their total school population whose Aboriginal students, of whom there were 4,746 in total, achieved an average mark of 340 in NAPLAN reading and numeracy.

The very small number of Aboriginal students in the lowest Aboriginal density schools is an expected result of the methodology, but does introduce a note of caution in the precision of the average performance scores (particularly as to the exact degree of an effect, or its stability over time).

Summary of analysis

With regard to the relationship between concentrations of being Aboriginal and performance, the analysis shows that:

- Most Aboriginal students are enrolled where there is a high concentration of other Aboriginal students in the school (i.e. Q1 schools).
- A high concentration of other Aboriginal students in a school is usually correlated with lower educational outcomes for Aboriginal students.
- The performance impact of concentrations is highest in Year 5 and lowest in Year 3.
- Year 5 shows the greatest difference in whole student performance where there is a high number of Aboriginal students as opposed to a low concentration of Aboriginal students in a school (one full standard deviation difference).

- Non-Aboriginal students achieve higher average NAPLAN results than Aboriginal students, regardless of the concentration of Aboriginal students.

3.3 Conclusion

This chapter illustrates that while equity characteristics have a profound impact on student performance (and must be central to any funding mechanism), a simplistic approach to traditional equity categories is likely to not be adequate.

A well targeted funding system needs to be able to differentiate those schools with ‘equity’ students who perform well with little additional assistance and those who require significant additional resources for the same level of performance. This requires a sophisticated use of individual student performance data as well as aggregated school level data to understanding the specific impact of equity students in all schools.

This chapter has also demonstrated the profound impact that school concentrations of disadvantage can have on student outcomes. The chapter has shown, for example, that school-level concentrations of low SES students require additional educational need than individual low SES by itself and that likewise, school-level concentrations of Aboriginal students require additional educational need than individual Aboriginal status by itself. Concentrations of disadvantage are a school variable that appears to be a cost driver and an important determinant of student performance.

Australia has spent considerable time and effort in obtaining nationally consistent equity categories. It would now appear timely to further refine these equity categories in the light of nationally consistent performance measures, so as to obtain greater specificity in school funding and better targeting of education need.

4. SUPPORT FOR STUDENTS WITH SPECIAL NEEDS AND STUDENTS WITH DISABILITY

Funding for students with a disability (SWD) is complex. These complexities include the oft-noted definitional issues, complex mix of Commonwealth, State and private funding streams and the large fixed costs. Yet the numbers of SWD are expanding in both government and non-government schools at a high rate and a new response is needed to adequately support these students.

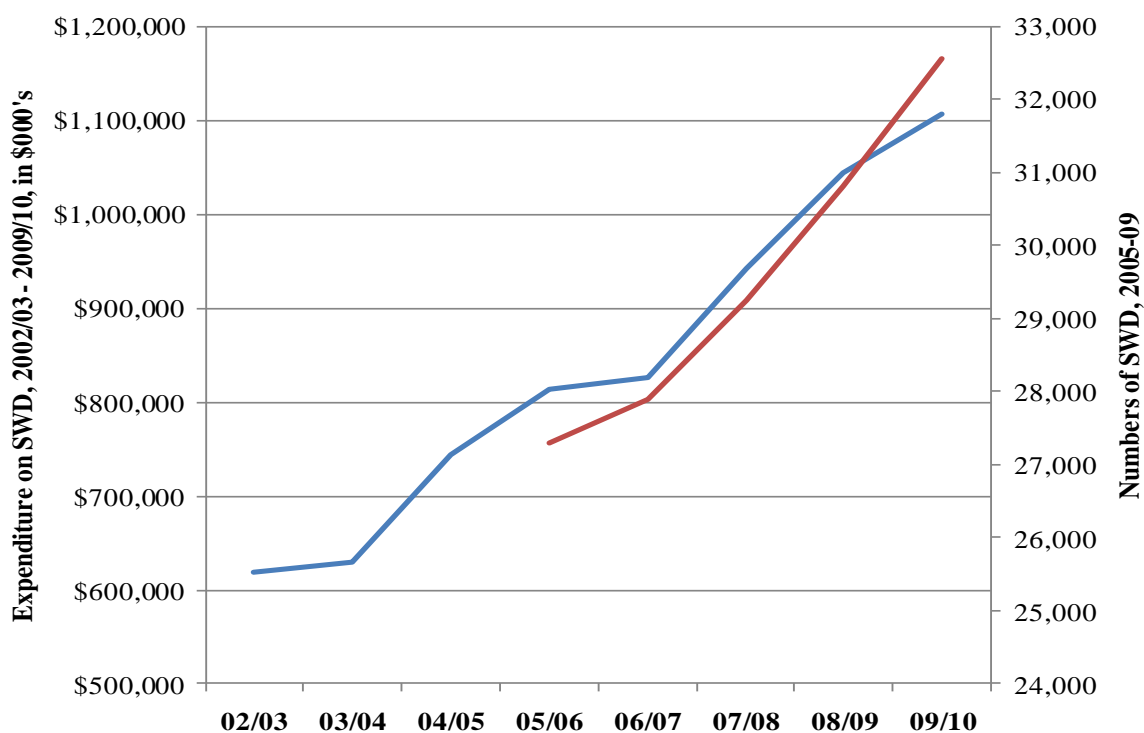
Higher level skills are vital for students with a disability (SWD), yet these students are over-represented amongst those not completing school or going on to higher level skills. A new resourcing settlement that increases these students' prospects of employment and greater engagement in society is therefore required.

All schools in Australia are experiencing a trend of increasing enrolments by students with a disability. The National Catholic Education Commission (NCEC) has reported that the fastest growing category of students in Catholic schools from 1985 to 2008 has been those with a disability and that this has occurred in every State and Territory (NCEC 2009, 21). Independent schools are also experiencing the same phenomenon. In 2007, there was more than double the number of SWD enrolled in independent schools than in 1997 (ISCA 2008).

4.1 The NSW Government school environment

The NSW Department of Education and Communities (DEC) educates approximately 750,000 students, of which about four per cent meet formal disability criteria. In seven years, there has been a 79 per cent increase in NSW government expenditure on students with a disability or additional learning needs, from just over \$600 million in 2002/03 to just over \$1.1 billion in 2009/10 (see Figure 7).

Figure 7: Expenditure on, and numbers of, SWD in NSW government schools



Source: NSW DEC internal data

Note: 'Numbers of SWD' represents the four per cent of the student population who meet formal disability criteria, while the left axis, 'expenditure on SWD,' includes a larger group of students with additional learning needs.

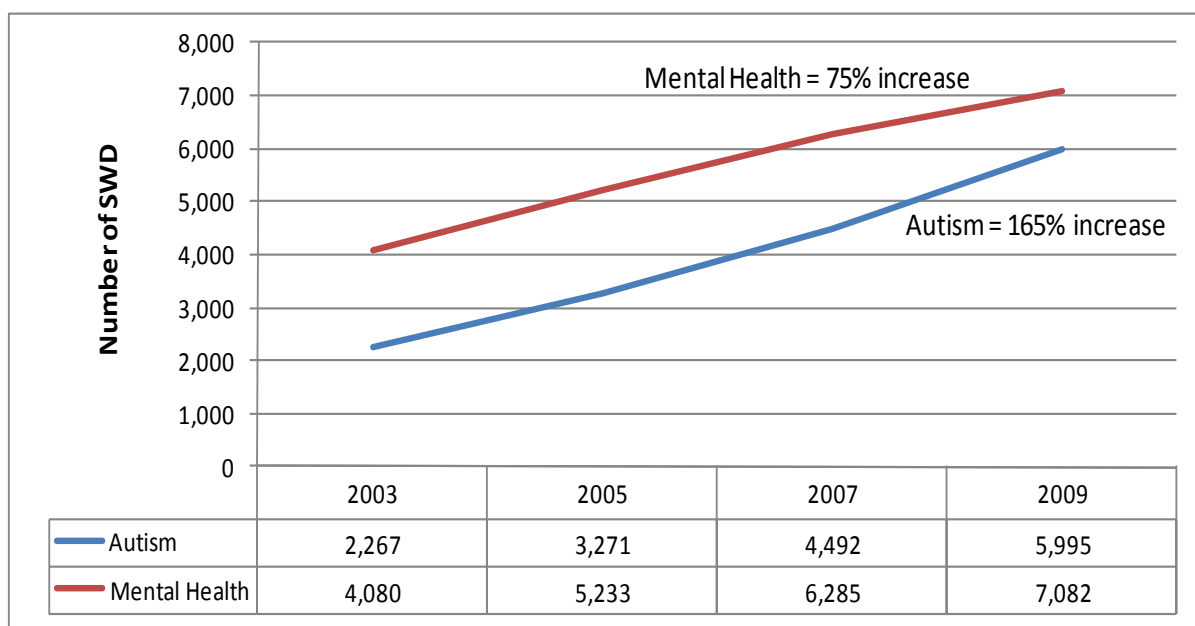
Total expenditure has increased nine per cent on average every year over the seven years represented. A key reason for this increase has been the rising numbers and identification of SWD attending NSW government schools (see right axis of Figure 7)

4.2 The changing face of SWD

While the total number of SWD in NSW government schools has increased by almost 20 per cent from 2005-09 (see Figure 7), an even more dramatic change lies in the types of disabilities that are now appearing in schools.

Intellectual disabilities are the major type of disability in NSW government schools but their incidence has remained fairly constant from 2005-09, as has physical disabilities. Sensory disabilities (which includes vision and hearing impairment) has actually fallen by eight per cent. However, mental health and autism has increased by 36 per cent and 88 per cent respectively. Expanding the time frame to seven years, from 2003-09, shows a more dramatic increase in mental (or 'non-normative') disabilities (see Figure 8):

Figure 8: Number of mental health and autism students in NSW government schools, 2003-09.



Source: NSW DEC internal data

Corresponding to this change is a changing pedagogic environment for SWD, where from 2005 to 2009:

- The number of SWD integrated into mainstream classes (known as ‘Funding Support’) increased from 11,000 to 15,000, or by about 35%;
- The number of SWD in support classes in regular and special schools combined increased by only 8% from 16,000 to 17,500.

The shift from ‘normative’ to ‘non-normative’ disabilities appears to be a world-wide phenomenon. When referring to the rising prevalence of autism spectrum disorders in the United Kingdom (estimated to be 116.1 cases per 10,000 children, or just over one per cent) the OECD has observed the following:

Although it is not yet clear whether this increase is due to broader diagnostic criteria, better identification procedures or a true rise in incidence, similar increases in prevalence rates have been reported in several studies recently and our data seem to support this trend (OECD 2007, 153).

Autism spectrum disorders are a lifelong developmental disorder that affects the way a person communicates, relates to people and to the world around them. There is general agreement that the prevalence of autism spectrum disorders is increasing, is disproportionate to the general growth in the population and is overrepresented amongst males with a male to female ratio of 4:1 (Autism Advisory Board 2007, 55).

In Australia, the estimated prevalence of autism spectrum disorder is 62.5 per 10,000 for 6-12 year old children (Autism Advisory Board 2007). In NSW government schools, the increase in these disorders has been dramatic.

The explanation of growth being driven by ‘bounty’ funding also does not explain the growth in the ‘severe’ or ‘moderate’ bands, rather than the ‘mild’ band, which would likely occur in any gaming of the system. More severe and moderate, rather than mild cases of autism and mental health students are emerging in NSW government schools. The greatest rise in autism classifications in regular classes from 2003-09, both in terms of numbers of students classified and amount of funds provided, was in the ‘severe’ range. All categories have witnessed dramatic growth but it is the ‘severe’ range of autism that is the stand-out area of growth, witnessing a 318 per cent increase in numbers and a 342 per cent increase in funding from 2003-09.

With mental health, it is the ‘moderate’ range that is the stand-out area of growth, experiencing a 248 per cent increase in numbers of students and a 273 per cent increase in funding from 2003-09.

4.3 Conclusion

There has been a pronounced shift in NSW government schools from physical (‘normative’) disabilities to mental (‘non-normative’) disabilities. The reasons for this growth are complex but it is a world-wide phenomenon.

In 2009-10, NSW DEC spent more than \$1.1 billion, or more than one-tenth of its entire budget, on students with special needs. If current trends continue, by 2020 more than one in ten students in a government school in NSW will be formally classified with a disability. Also if current trends continue, from 2002-20, SWDs will have increased by approximately 120 percent in NSW government schools and by nearly 200 percent in NSW non-government schools.

Funding students with a disability faces many challenges, including:

- a) A mix of State, Commonwealth and private funding;
- b) Enormous cost variation depending on type of disability and setting;
- c) Parents navigating across services (e.g., health, community services and schooling), which can be complex and not always timely;
- d) The significant fixed costs associated with this type of funding and the need to assess individual requirements.

Funding arrangements involving students with a disability are complex, and there is undoubtedly a deep sense of frustration felt by some parents, and indeed students, at encountering such a complex funding system. There is merit in a simplified funding system that addresses the needs of students with a disability or special needs, regardless of which

school they attend. It is important to support the right of students with special educational needs to a quality education and recognise parents' right to choose the educational setting they believe is best suited to their children. In support of that right, the government should continue to provide financial assistance to non-government schools, and encourage an examination of a strengthened system of funding with specific reference to students with a disability, so as to improve the educational choice for these students.

5. COMMUNITY AND FAMILY ENGAGEMENT

There is extensive literature on the benefits of community and family engagement with regards to student achievement, especially for those from low SES communities. For example, it has been observed that ‘parental engagement is a powerful lever for raising student achievement in schools. Where parents and teachers work together to improve learning, the gains in student achievement are significant’ (Harris and Goodall, 2007).

There are many national policy settings that recognise the importance of community and family engagement in schooling. For example, the Melbourne Declaration on Educational Goals for Young Australians states that,

‘Australian governments commit to working with all school sectors to ensure that schools engage young Australian, parents, carers, families, other education and training providers, business and the broader community to support students’ progress through schooling, and to provide them with rich learning, personal development and citizenship opportunities’ (MCEETYA, 2008).

The Participation and Productivity Agenda agreed to by the Council of Australian Governments in 2008 also refers to ‘boosting parental engagement’ as an important policy direction. Further, there is also a commitment to improve parental engagement within the National Education Agreement and the National Partnership on Low Socio-Economic Status School Communities.

Reform 6 of the National Partnership on Low SES School Communities in particular focuses on this issue: ‘External partnerships with parents, other schools, businesses and communities and the provision of access to extended services.’ Through this particular National Partnership, NSW is actively promoting increased parental engagement as a strategy to support student learning, engagement and aspirations in all school sectors.

Within government schools, the NSW DEC actively supports the formation of strong community school partnerships as one element of its longstanding Priority Schools Program, which currently supports 580 NSW government schools (25% of government schools). This program is designed to improve student outcomes in schools serving low SES communities. One stated objective is to ‘enhance partnerships among schools, parents and caregivers and community agencies’ (NSW DEC, 2003).

The notion of community should also be extended beyond the family to include local businesses, universities and other institutions. For example, in NSW, a number of schools have formed successful partnerships with local universities to increase the aspirations and attainment of students to give them clear pathways into higher education.

Community and parental participation in the education process is acknowledged to be particularly important for indigenous students. As discussed in previous sections of this paper, Aboriginal students are particularly at risk of low educational achievement. Ensuring

the family and community support fundamental steps such as school attendance can be an effective first step in improving achievement.

There appears clear evidence that strong family and community partnerships are important in influencing educational outcomes for students from low SES communities. Whilst the current policy environment recognises the importance of this relationship, there needs to be greater consideration of how such partnerships can be adequately and sustainably resourced.

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7. APPENDICES

7.1 Appendix A: Methodology Analysis of the SES variable

Calculating individual student SES is relatively complex. This study drew on student enrolment data to determine ‘family’ SES based on three parental background features (see Table 2):

Table 2: Calculation of SES for the purposes of this study

Data Element	Description of element
<p>1. Parental Occupation Category</p>	<p>Whilst the specific occupation of a child’s parent may change over the course of the child’s enrolment at school, the occupation category is less likely to change, and thus provides a relatively stable variable for analysis. Broadly speaking, these categories are defined as:</p> <ul style="list-style-type: none"> i. Unskilled office, hospitality, labourer and related workers; ii. Skilled office or trade workers; iii. Other managers/associate professionals; and iv. Senior managers/qualified professionals. <p>The fifth category, ‘Not in paid work in last 12 months’, was removed from the analysis due to its transitory, and thus unstable, nature. Also, in 96 per cent of cases (according to DEC research), the ‘first parent,’ the parent filling out the enrolment form, is female. These parents (usually mothers) may have left the workforce but their SES often does not align with that denoted by the lowest occupation category.</p> <p>This left four parental occupation categories which were coded (1, 2, 3, or 4) so as to construct a four-level Parental Occupation variable, with a minimum value of 1 (unskilled) and a maximum value of 4 (senior manager).</p>
<p>2. Parental School Education</p>	<p>The highest level of school education attained by a child’s parent is extremely unlikely to change over the course of the child’s enrolment in primary or secondary school, thus making it a very stable variable. The four possible categories are:</p> <ul style="list-style-type: none"> i. Year 9 (or equivalent) and below; ii. Year 10 (or equivalent); iii. Year 11 (or equivalent); and iv. Year 12 (or equivalent). <p>These categories were again assigned a code (1, 2, 3, or 4) where ‘1’ represented the lowest level of school education and 4 the highest.</p>

Data Element	Description of element
3. Parental non-school education	<p>Despite the fact that a parent may attain additional post-school educational qualifications over the course of their child’s enrolment in primary or secondary school, analysis has shown that this variable is stable enough for use in a child’s family SES calculation. In fact, NSW DEC analysis shows that, as a single indicator, it explains more variation in performance than any other individual variable regarding parental background. Again, this variable was split into four possible categories:</p> <ul style="list-style-type: none"> i. No non-school qualification; ii. Certificate I to IV (including trade certificate); iii. Advanced diploma/Diploma; and iv. Bachelor degree or above. <p>Codes (1, 2, 3 or 4) were again assigned to each category, where ‘1’ represented the attainment of no non-school qualification and ‘4’ represented the attainment of a Bachelor degree or above.</p>

For each parent, a scale of socio-educational advantage was constructed by adding the three scales together (occupation category, school education, and non-school education). This produced a measure with a minimum score of three (where the parent was an unskilled worker, had completed Year 9 or below, and had no non-school qualification), and a maximum score of 12 (where the parent was a qualified professional, had completed Year 12, and had attained a Bachelor degree or above).

A scale of *family* socio-educational advantage was then constructed by averaging the scores for both parents.⁶ An SES value for each NSW DEC school was then calculated by averaging the family SES score of each student at that school. For analysis purposes, the range of SES scores at both a student and school level were divided into four equal quartiles, where Quartile 1 (Q1) represented the 25 percent of students/schools with the lowest SES scores, and Quartile 4 (Q4) represented the top 25 percent of students/schools with respect to SES scores.

It is important to note that the SES analyses in this study were restricted to students in NSW DEC schools with a minimum of 50 per cent response rates, by at least one parent, to all questions on the enrolment form. Previous DEC research shows that non-response rates are highest amongst low SES parents, suggesting the study’s conclusions about low SES students are, if anything, underestimated. The percentages of students in schools meeting the 50 per cent response rate criterion are presented in Table 3:

⁶ Previous analysis (ACARA 2010) has shown that such a combined parent measure (i.e. taking an average of the two parents’ scores) is more robust than an optimal parent model (where the higher of the two parents’ results is taken).

Table 3: Percentage of students in schools included in analysis

Year level	Percentage of students in schools with minimum response rate
Year 3	74.2%
Year 5	52.1%
Year 7	73.0%
Year 9	70.4%

With regard to performance data, these analyses used NAPLAN data which was combined from both the 2009 and 2010 assessments. Data was combined from both years so as to provide a greater number of results for analysis. Combining results in this way is made possible by the fact that NAPLAN scores are linked across years using the same measurement scale so that results from one year are directly comparable to results from another year.

For these analyses, students' academic performance were analysed by averaging each student's reading and numeracy scores for the NAPLAN assessment. Results from reading and numeracy assessments in particular were used, as it is assumed that these two assessments provide a more reliable indicator of a student's academic ability, and are so best placed for use as a measure of student performance.