Australian Schooling- The Price of Failure and Reward for Success

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An examination of the direct financial costs associated with failing to meet the learning needs of all children and the potential economic benefits of investing for success.

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1. Executive Summary

This report was commissioned by the Australian Education Union to examine the economic case in favour of the full implementation of the school funding reforms outlined by the Review of School Funding (Gonski Review).

The Australian Problem – A strong inequity in learning

Australia has been recognised as consistently outperforming most OECD countries in the standardised *Program for International Student Assessment* (PISA) tests that are run internationally. While this constitutes the good news, there has been another truth that has long been recognised – Australia has inequitable learning outcomes with a 'longer tail' of weaker performing students. As a consequence, Australia has been dropping (relative to other countries) in its PISA tests performance.

This report frames this problem through a targeted analysis of (i) the most recent NAPLAN results, and (ii) a summary of the PISA findings related to equity and Australian schooling.

Some findings that illustrate the depth of the inequity in learning problem are presented below.

NAPLAN Year 9 results –Inequity based on socio-economic background

- The children of the unemployed are ten times more likely to not meet the minimum standards for numeracy and reading than the children of senior managers and professionals.
- Of the children of the unemployed, (i) 13% do not meet minimum standards in Year 9 numeracy and (ii) 15% do not meet minimum standards in literacy.
- Ten percent of all children of 'tradespeople, clerks, skilled office, sales and service staff' do not meet minimum standards for reading in Year 9.

NAPLAN Year 9 results - Large learning gap for indigenous children

- More than 25% of indigenous children do not meet national minimum standards for reading in Year 9, compared to less than 5% for non-indigenous children.
- This means that indigenous children are five times more likely to not meet national minimum standards of reading in Year 9 than other children.

Going Backwards in Reading – Cohort Analysis Year 3 to Year 9

Among the 2015 NAPLAN Year 9 cohort, 8% of children did not meet national minimum standards compared to 6% of the same students that did not meet national minimum standards in Year 3 in 2009. That is a reduction of 2% of those meeting minimum standards in this cohort over 6 years.

The failure to meet the minimum standards is even more dramatic when one looks at which children slipped further behind.

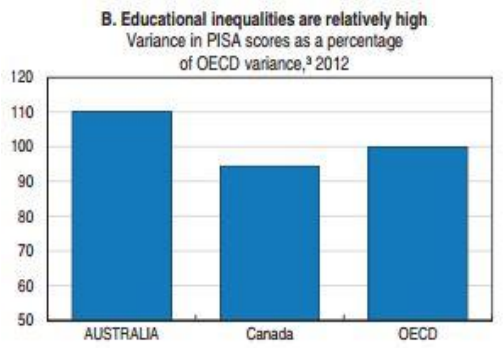
- In Year 3, 14% of the children of the unemployed failed to meet national minimum standards. By Year 9, that proportion of the same group of children failing to meet minimum standards had surpassed 20%.
- Similarly, in 2009, 8% of children of 'machine operators, hospitality staff, assistants and labourers' failed to meet minimum standards in Year 3 rising significantly to 12% of the same group of children by the time they reached Year 9.

Analysis of international PISA 2012 results – Confirms problem with inequity

Australia has experienced falling achievement in PISA tests for some time. This effect can partly be attributed to a decline in the proportion of high performing students in mathematical literacy and an increase in the proportion of low performing students.

Australia is not achieving its goal of providing all students with similar opportunities to benefit from education. Significant gaps in achievement remain between Australian students by gender, indigenous status, location and wealth.

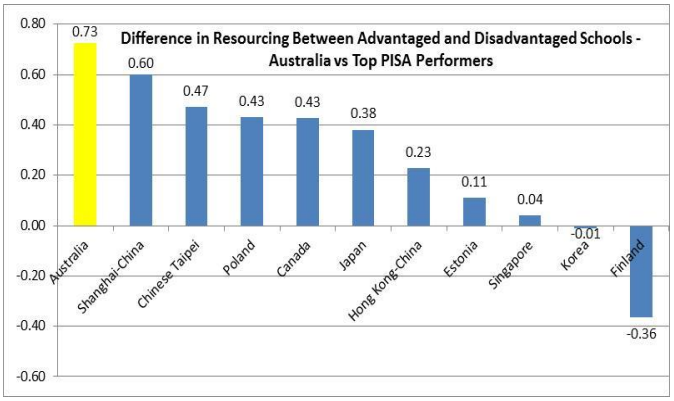
For example, in terms of wealth, a difference equivalent to around two-and-a-half years of schooling separates the mathematical, reading and scientific literacy scores of students from the most advantaged backgrounds and those from the most disadvantaged.



It is important to note the Australian problem with inequity in learning is relatively high when compared with the OECD average and a demographically similar country like Canada. There is nothing normal (or inevitable) about the degree of inequity in Australian learning outcomes.

In Australia – Inequity in learning corresponds with inequity in resource distribution

The Australian problem with inequitable distribution of resources across schools is a key feature of Australian schooling. By international comparisons, Australia is an outlier in the way that it distributes significantly greater amounts of resources to its most advantaged schools.



The most recent data from PISA 2012 graphically shows just how out of step Australia is with other OECD countries as well as most other countries that take part in the PISA tests.

In sharp contrast to Australia, the top 10 PISA performing countries/cities have a significantly smaller resource gap between socially advantaged and disadvantaged schools. Indeed, only four OECD countries have a greater inequity in the allocation of education resources across schools.

Only ten out of 65 countries participating in PISA have greater inequity in the allocation of educational resources across schools than Australia. This club includes developing countries such as Colombia, Costa Rica, and Peru.

Additional Resources to Address Inequity – The evidence shows it works

The PISA 2012 final report concludes that the equity with which resources are distributed across schools has a significant impact on how the system performs overall. Volume 4 of that PISA 2012 analysis (*How Resources, Policies And Practices Are Related To Education Outcomes*) finds that:

Even after accounting for per capita GDP, 30% of the variation in mathematics performance across OECD countries can be explained by the level of similarities in principals' report on schools' educational resources between socio-economically advantaged and disadvantaged schools.

Reducing social segregation of schooling

International research finds high concentrations of socio-economic disadvantage within schools does have an adverse effect on the average performance of schools. This means, for example, that a low SES student is more likely to have a lower mark if they attend a school with a high concentration of students from a low SES background than if they went to a high SES school.

A cost effective response to improving student performance is to reduce the number of schools with high concentrations of low SES. In other words, the desegregation of schools (based on social class) can in itself create the organic in-school conditions that will help drive improvements in overall student performance.

Measuring the Price of Failure and Rewards of Success - The costing approach

The valuation of direct financial costs and future economic benefits in this report are based on (i) cost simulations to estimate the public financial cost that will be carried by the Australian taxpayers as a result of failing to keep students to the end of year 12, and (ii) a summary of the findings from a recent OECD report which captures the economic benefits that will accrue to Australia from meeting minimum learning benchmarks for those students currently being failed.

Direct financial costs of current failure

The failure of the Australian government to retain all students to the end of year 12 schooling will generate ***direct financial costs in excess of $72 billion*** (current prices) by 2070. These are conservative estimates and do not capture the fuller cost of weak learning outcomes (and especially those associated with children failing to meet minimum learning benchmarks.

Specifically, the cost simulations show that by simply failing to keep students active and learning within the education system until year 12, the country will:

- Pay an additional aggregated amount of $60 billion in unemployment benefits by 2070 (2016 constant prices).
- Lose aggregated income tax revenues in excess of $12.2 billion by 2070 as a result of a greater number of people not being employed and therefore not paying income tax

These are very conservative estimates of the losses in income tax and the additional welfare payments associated with unemployment that is driven by lower education learning outcomes. The estimates do not provide any multiplier calculations of lost revenues from income and other tax revenues generated by having additional numbers of employed people.

Unquantified direct financial costs of failure

In addition to these quantified costs, this report suggests there will be a substantial additional public financial cost that has a causal correlation with the poorer health profile of people with lower levels of educational attainment. Similarly, there will be higher aggregate public financial costs associated with crime and its correlation with lower levels of educational attainment. An estimation of these costs is beyond this report, but will undoubtedly run into the billions of dollars based on the cost simulations undertaken for other countries.

The economic benefits of improved learning and greater equity

A major OECD study released in 2015 covering 76 countries presents the economic impact of achieving universal basic skills over a 15-year period ending in 2030. It shows that over time, the knowledge capital of the nation improves as better-educated youth enter the labour force. A skilled workforce leads to increased economic growth and other positive social outcomes. The economic value is calculated as the difference between the GDP expected with the current workforce and the GDP expected with the improved workforce. It is calculated over the expected lifetime of a child born today.

If every student acquired the basic skills specified for 15 year olds (PISA Level 1, Mathematics) then the improved skills will deliver:

- An average **$27.5 billion in economic benefits each year** until 2095
- **A future economic benefit of AUD 2.2 trillion** (discounted for inflation) until 2095.
- This economic benefit is 130% of current GDP.
- A GDP level in the year 2095 that will be 11% higher in 2095 due to the reform

More ambitiously (and of relevance to Australia), an increase in the average PISA score of 25 points, would deliver through improved skills:

- An average **$65 billion in economic benefits each year** until 2095
- **A future economic benefit of AUD 5.2 trillion** (discounted for inflation) until year 2095.
- An economic benefit that is 335% of current GDP.
- A GDP level in the year 2095 that will be 29% higher in 2095 due to the reform.

A clear choice for Australian governments

The Australian governments are faced with a clear choice – they can either position Australia to reap the benefits of a high performance and an equitable education system or they can allow the country to bear the cost of failure.

There is nothing normal (or inevitable) about the degree of inequity in Australian learning outcomes. Indeed, inequity in learning corresponds with an inequity in resources distributed across schools.

Failure to invest in the reinvigoration of the Australian school system will impose long run financial costs spanning the entire working life of today's school students.

On the other hand, by investing in schools, Australia stands to do much better than just avoid these direct financial costs. Through effective and targeted interventions to address the needs of the most needy (as specified by the Gonski Review) Australia stands to gain economic benefits. The scale of the economic benefits will be greater than the current value of Australian GDP and quite possibly more than three times that figure.

Investing in education will provide a healthy dividend whose benefits will spread far and wide across Australia. Most significantly, the benefits will also reach the pockets of some of the poorest and most disadvantaged individuals and communities. Investing in education means economic growth with greater fairness - it now needs the commitment of the Australian government to make it happen.

2. Introduction

Background

This report was commissioned by the Australian Education Union in early 2016 to examine the economic case in favour of the full implementation of the school funding reforms outlined by the Review of School Funding (Gonski Review).

Approach

The report re-examines the extent of the 'learning problem' identified by the Gonski Review and elsewhere. It focuses on the key problem of inequity in learning outcomes as captured by NAPLAN and the PISA tests across numerous years.

This problem with learning (inequitable learning outcomes between advantaged and disadvantaged schools) is correlated with the inequitable distribution of resources across schools. The report draws attention to the expanding body of work that asserts the significance of the relatively even of distribution of resources across schools and its effect on learning outcomes. The study also examines the evidence supporting the contention that additional resourcing can make a difference to learning outcomes.

For the Australian context, the study provides indicative estimates of direct financial costs and possible economic benefits. The direct financial costs would be carried by the Australian government as a result of children being failed by schools in not obtaining minimum learning outcomes. The economic benefits are estimates of GDP growth that would be directly attributable to all children obtaining minimum learning outcomes by age 15. These estimates are taken directly from the recent OECD study that applies the same methodology to all OECD (and other countries) to generate estimates of GDP growth driven by improved learning.

By diverting significant additional resourcing to the poorest schools through transparent needs based funding formulae, these reforms will help reverse the current diversion of greater resources towards schools servicing the more advantaged communities. The additional funding will go directly towards meeting the learning deficit that is concentrated in the more disadvantaged schools. In this way, the potential impact of implementing the outstanding Gonski school funding package is estimated to be the combined total of the direct financial costs and the expected economic benefits.

About the consultant

Adam Rorris is an education economist and policy analyst working extensively in Australia and overseas. For the Gonski review on school funding, he was the lead author of the paper on funding for disadvantaged students. He has worked for the World Bank, UNICEF, UNESCO, Department of Foreign Affairs and Trade (DFAT) and other international agencies to help develop robust funding systems for national school systems throughout Asia and the Pacific. During 2002-2007 Adam worked as the Manager/Principal Analyst of the Schools Resourcing Taskforce for the Ministerial Council of Australian Education Ministers. He has worked with all state and Commonwealth departments of education as well as representatives of the non-government school sector. He also provides commentary on Australian education issues through *The Sydney Morning Herald*.

3. The Australian Problem - Inequity in Learning

Australia has been recognised as consistently outperforming most OECD countries in the standardised PISA tests that are run across countries. While this constitutes the good news, there has been another truth that has long been recognised – Australia has inequitable learning outcomes with a 'longer tail' of weaker performing students. These weaker performing students are more likely to be found in poorer and more disadvantaged communities.

This report examines this problem through a targeted analysis of (i) the most recent NAPLAN results, and (ii) a summary of the PISA findings related to equity and Australian schooling.

The NAPLAN Evidence of Inequity in Learning Outcomes

The National Assessment Program—Literacy and Numeracy (NAPLAN) tests are conducted in May for all students across Australia in Years 3, 5, 7 and 9. Each year, over one million students nationally sit the NAPLAN tests. All students in the same year level are assessed on the same test items in the assessment domains of reading, writing, language conventions (spelling, grammar and punctuation) and numeracy.

NAPLAN tests provide nationally comparable data on the performance of students in the areas of literacy and numeracy. While there are valid criticisms of the NAPLAN results being used for anything other than as an assessment of individual test performance, they do provide another collection of data to inform comparisons of student learning across student groups, between jurisdictions and over time in Australian schools.

This report draws on the results from the recent NAPLAN tests (2015) to examine the extent of inequities in learning as measured by NAPLAN test performance of students. It focuses on results in (i) reading and numeracy in year 9, and (ii) cohort analysis of year 3 student results in 2009 compared with the same group that were in year 9 in 2015.

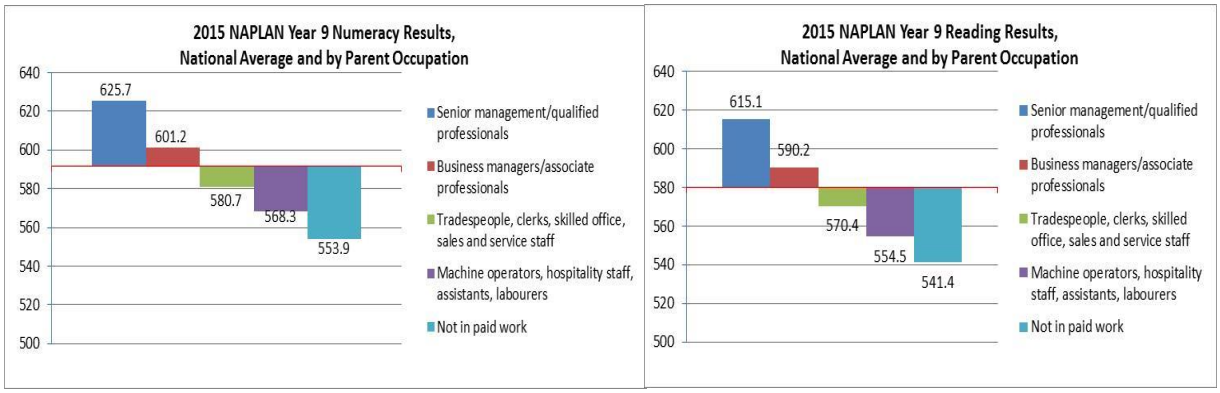
NAPLAN Results from 2015

Inequity Based on Socio-economic Background (Parent Occupation)

Parental occupation represents the occupation group which includes the main work undertaken by the parent/guardian. If a parent/guardian has more than one job, the occupation group which reflects their main job is reported. This provides a proxy indicator for the socio-economic background of students. The NAPLAN tests confirm:

- There is a vast difference in the average performance in numeracy and reading (more than 70 points) between the children of 'senior managers and professionals' and those of the unemployed.
- Children with parents in occupations other than management or professional related, have average scores that fall significantly below the national average.
- There is a linear progression in average scores for both numeracy and reading with 'senior management and professionals' and 'business managers and associate professionals' being above the national average.

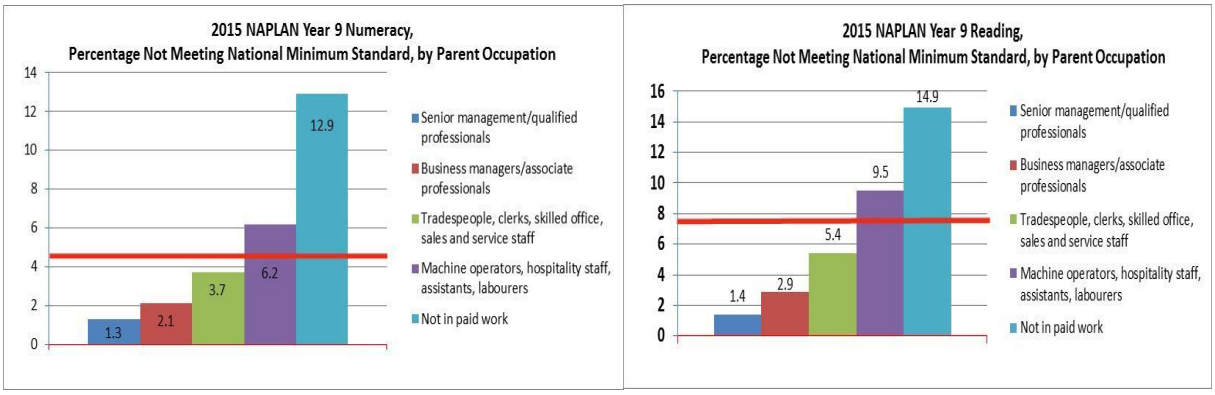
Figure 1. Parent Occupation and NAPLAN Year 9 Literacy and Numeracy, Average Scores



Looking at parental occupation, there is a significant difference in the proportion of children that do not meet the minimum standards of learning. [1]

- The children of the unemployed are ten times more likely to not meet the minimum standards for numeracy and reading than the children of senior managers and professionals.
- Of the children of the unemployed, (i) 13% do not meet minimum standards in Year 9 numeracy and (ii) 15% do not meet minimum standards in literacy.
- Ten percent of all children of 'tradespeople, clerks, skilled office, sales and service staff' do not meet minimum standards for reading in Year 9.
- Of the children whose parents are from the management and professionals categories, less than 5% of students do not meet national minimum standards in numeracy and reading,

Figure 2. Parent Occupation Percentage of Students not Meeting Minimum Standards in Year 9



Large Learning Gap for Indigenous Children

- Indigenous children are approximately 60 marks below the national average for numeracy and reading in Year 9. More than 25% of indigenous children do not meet

[1] Not meeting national minimum standards includes students exempted from the NAPLAN test and those that did not score above the national minimum standard. This follows the same approach taken by ACARA in its national report on NAPLAN 2015

national minimum standards for reading in Year 9, compared to less than 5% for non-indigenous children.

- More than 17% of indigenous children do not meet national minimum standards for numeracy in Year 9, compared to less than 4% for non-indigenous children.
- Indigenous children are five times more likely to not meet national minimum standards of reading in Year 9 than other children.

Figure 3. Indigeneity and NAPLAN Year 9 Literacy and Numeracy, Average Scores

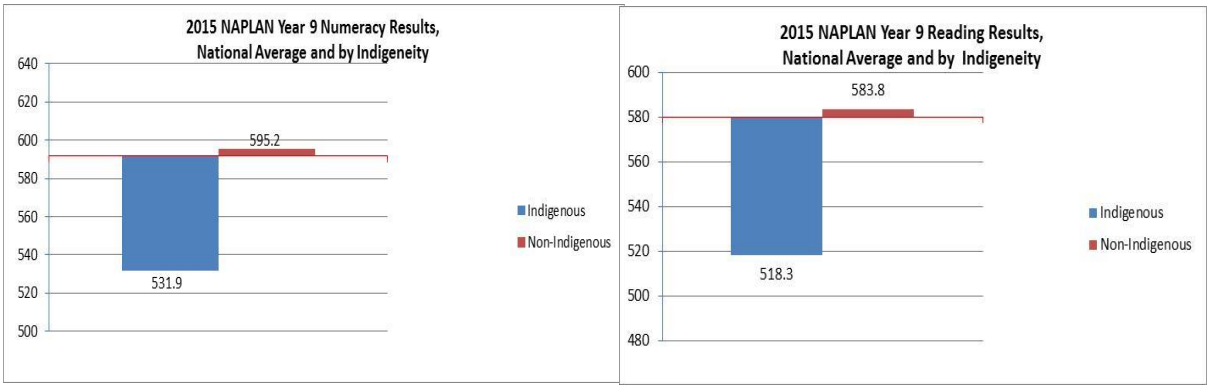
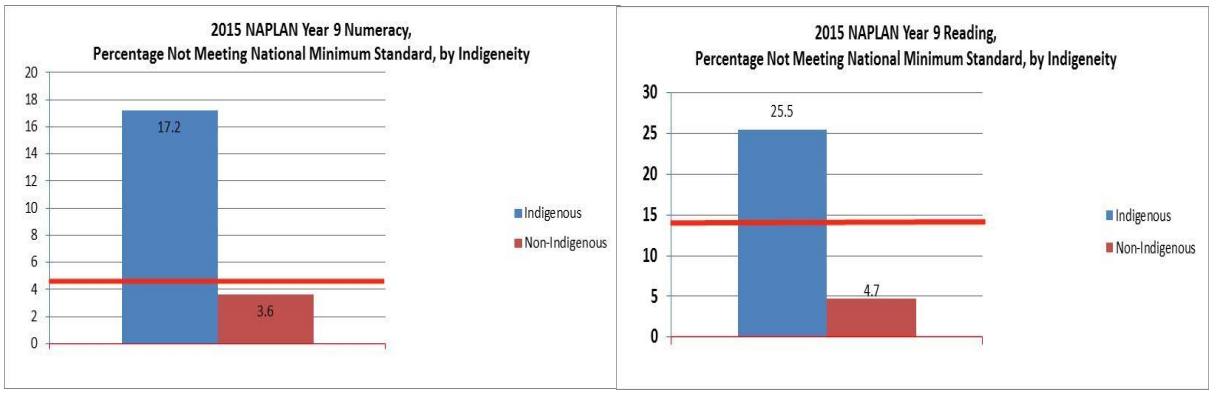


Figure 4. Indigeneity and Percentage of Students not Meeting Minimum Standards in Year 9



Location Makes a Big Difference

The MCEECDYA Schools Geographic Location Classification System is based on the locality of individual schools and is used to disaggregate data according to Metropolitan, Provincial, Remote and Very Remote.

- Children in remote and very remote locations score significantly lower than children in metropolitan and provincial areas.
- Students in very remote locations are eight times more likely to not meet minimum standards in numeracy than the national average.
- More than half of all remote area students do not meet minimum standards in reading and one-third do not meet minimum standards in numeracy.
- Nearly one in ten of all students in provincial areas do not meet even minimum standards in reading by year 9.

Figure 5. Geolocation and NAPLAN Year 9 Literacy and Numeracy, Average Scores

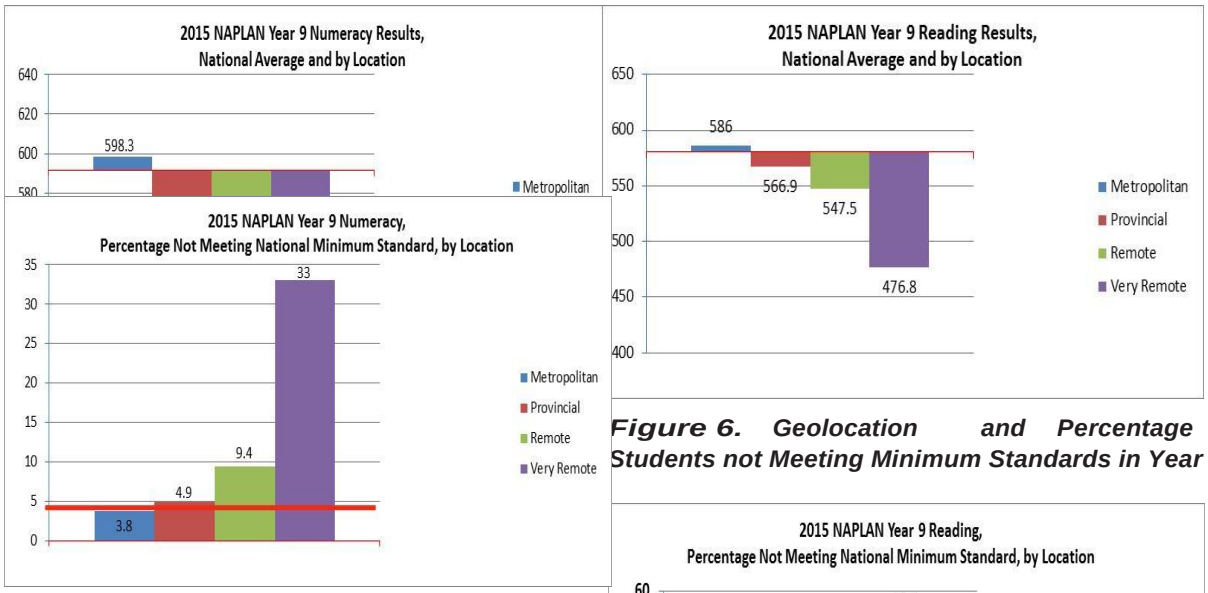
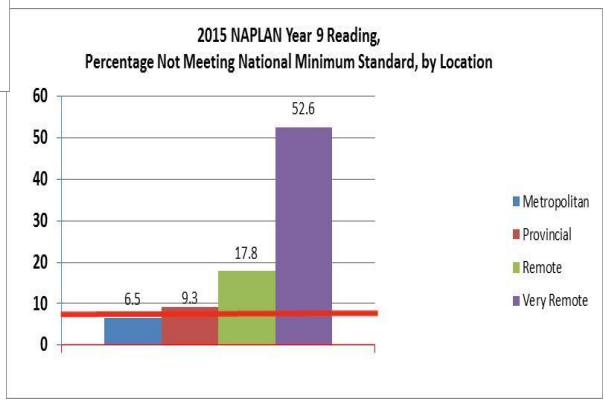


Figure 6. Geolocation and Percentage of Students not Meeting Minimum Standards in Year 9



Cohort Analysis – Percentage of Students Below Minimum Standards (Year3 to Year 9)

As students progress through school they develop greater proficiency in the learning areas they study as a result of the teaching they experience and as a result of their general development. NAPLAN results provide the opportunity to examine these changes in student proficiency because the NAPLAN achievement scales are equated over year levels (the same scales apply to Years 3, 5, 7 and 9) and successive cycles (the same scales apply in 2008 to 2015).

This paper analyses the most recent data from Year 9 students in 2015 and compares the results with their performance in 2009 when these same students were in Year 3. Specifically, it

compares the percentage of children that were not meeting minimum standards in numeracy and reading.[2]

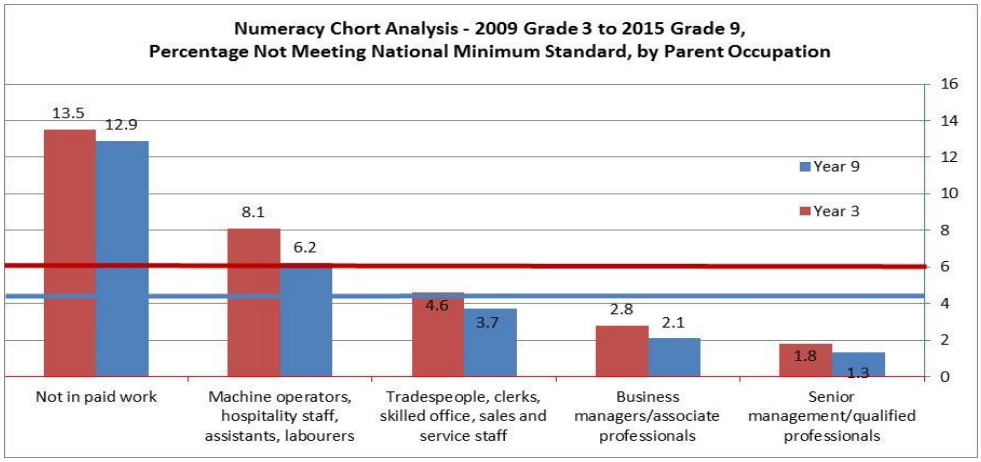
Some Success in Numeracy

The Year 3 cohort of children in 2009, had 6% that did not meet national minimum standards in numeracy. This figure had been reduced to 4.4% for the same cohort of children that were in Year 9 by 2015. This is a marginal aggregate overall improvement.

The reduction in the percentage children not meeting the national minimum standards is observed across all parent occupational groups.

While the year 9 figure remains very high, there has at least been a marginal improvement – including for the children of those that are unemployed.

Figure 7. Numeracy Cohort Analysis, by Parent Occupation

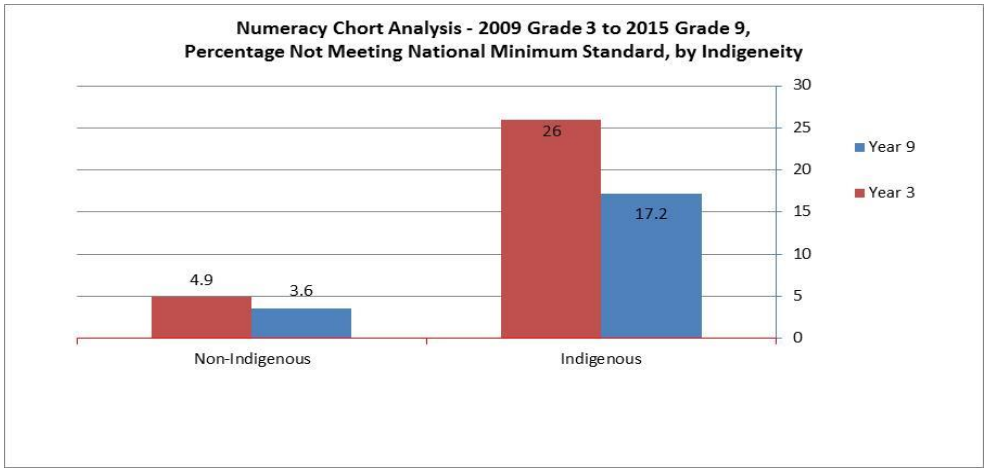


There was a very significant reduction in the percentage of indigenous students that did not meet minimum standards in Year 9 in 2015 (down to 17% from 26% in Year 3 in 2009).

While the final figure of indigenous students not meeting minimum standards in 2015 for Year 9 is still unacceptably high, the trend has been towards improvement as the cohort of children has progressed from Year 3 to Year 9.

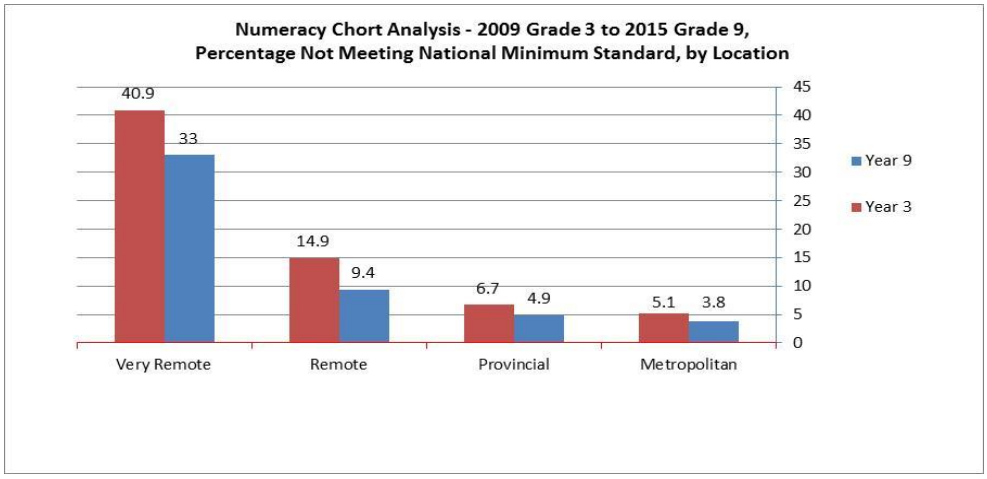
Figure 8. Numeracy Cohort Analysis, by Indigeneity

[2] The data for the analysis was accessed from the ACARA website.



Analysis by geolocation shows that the reduction in percentage of children not meeting minimum standards has occurred across all geolocations. Most dramatic have been the reductions in the very remote locations (from 41% to 33%) and remote locations (from 15% to 9%). Both have come off a very high base.

Figure 9. Numeracy Cohort Analysis, by Geolocation



Going Backwards in Reading

The marginal overall improvement in numeracy does not apply to reading. The 2015 Year 9 cohort of children experienced 8% of their number not meeting national minimum standards. This was an increase on the 6% of the same students that did not meet national minimum standards in Year 3 in 2009.

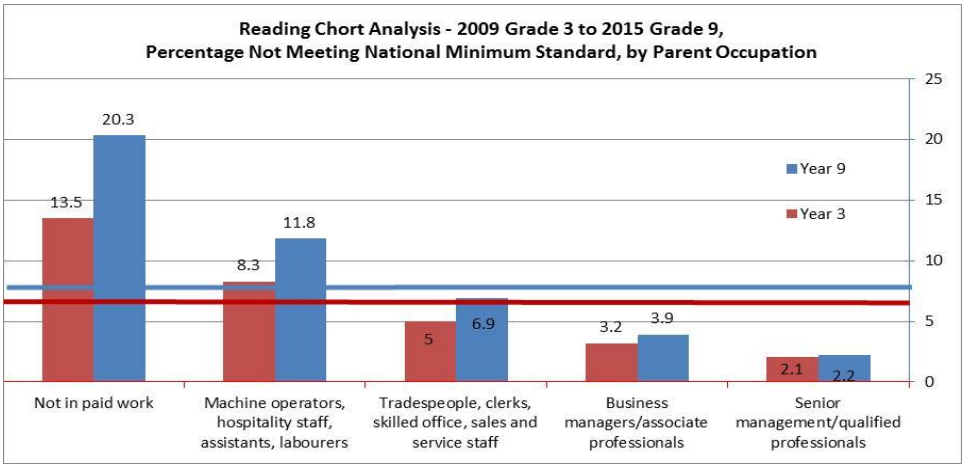
The failure to meet the minimum standards is even more dramatic when one looks at which children slipped further behind.

More than 20% of the children of the unemployed failed to meet national minimum standards in Year 9. Yet of the same group of children this figure was only 14% when they were in Year 3 in 2009.

Twelve percent (12%) of children of 'machine operators, hospitality staff, assistants and labourers' failed to meet minimum standards in Year 9. This is significantly up from the 8% of the same group of children who were in Year 3 in 2009.

In comparison, the proportion of children from managers and professionals stayed the same at 2% not meeting national minimum standards.

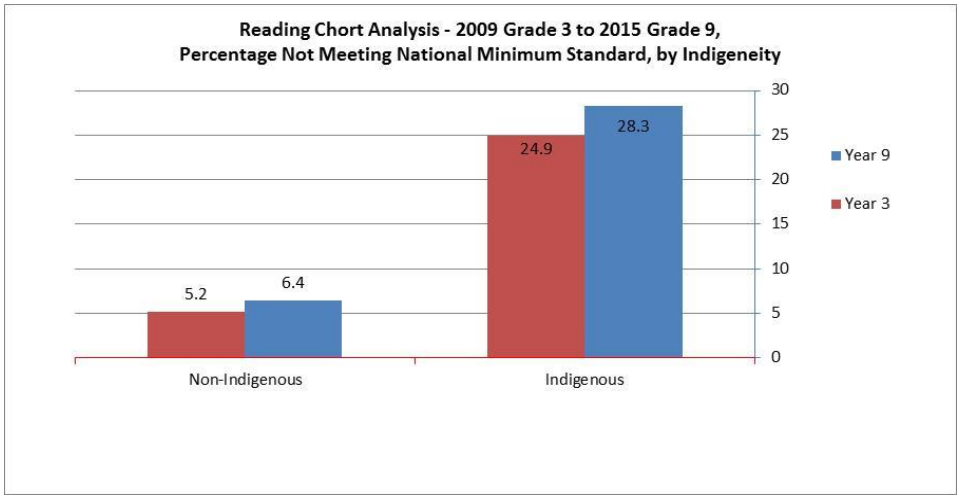
Figure 10. Reading Cohort Analysis, by Parent Occupation



The problem of an increasing percentage of students not meeting minimum standards as they progress from Year 3 to Year 9 is also observed with indigenous children.

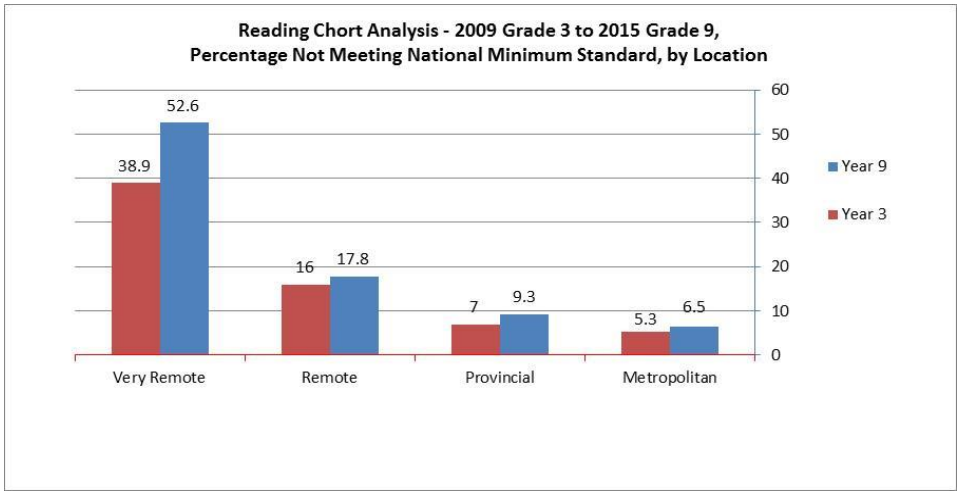
The number of indigenous children not meeting minimum standards in reading increased from 25% in Year 3 in 2009 to 28% in Year by 2015.

Figure 11. Reading Cohort Analysis, by Indigeneity



The going backwards problem in reading from Year 3 to Year 9 is pronounced in very remote locations where the number increases from 39% to 53% (more than half) by Year 9.

Figure 12. Reading Cohort Analysis, by Geolocation



International evidence - a growing problem of inequity in Australian schooling.

PISA is the most widely recognised and respected international assessment system of school based learning. It has measured trends in mathematics, reading and science achievement

every three years since 2000.[3] The PISA results are eagerly awaited across the world as an indication of how school systems are travelling. The consistent application of PISA tests across countries over a number of years has built confidence in their ability to measure performance trends and compare with other countries performance.

At first glance, the 2012 results show that Australia is closer to the top end than the bottom end of performance across the three subject areas. Comparing results internationally, Australia performed equal 17th in mathematics, equal 8th in science and equal 10th in reading, after accounting for insignificant differences between countries and economies. This reveals the underlying solid performance of the Australian school system when compared with other countries

Table 1: Number of countries/economies by performance relative to Australia, 2012 PISA

	Mathematics	Science	Reading
Significantly higher than Australia	16	7	9
At a similar level to Australia	7	11	11
Significantly lower than Australia	41	46	44

ACER on Australia and PISA Tests 2003-2012

"Australia must get the lowest achievers up to an acceptable standard for a wealthy first-world country and extend the higher achievers to lead the country in terms of innovation and development," ACER analyst Dr Thomson said.

"While the maths and reading skills of Australian students have been declining, countries such as Poland and Ireland have improved their performance, enabling them to leapfrog over Australia. Poland has been steadily improving since 2000 and is now ahead of Australia in maths, while Ireland has successfully reversed its own downward trend and now outperforms Australia in reading," she said.

"Australia has slipped backwards to the type of gender disparity that was seen decades ago, and the performance scores of girls coupled with a number of particularly negative motivational attitudes puts Australia further away from providing all students with the same educational opportunities," Dr Thomson said.

"Improving quality and equity requires a long-term view and a broad perspective," Dr Thomson said. "PISA has alerted the Australian school system to a decline in reading literacy achievement and now a significant decline in mathematical literacy achievement – we must act to stop the slide."

From Latest PISA results 'cause for concern', says ACER

[3] The 2012 Programme for International Student Assessment (PISA) measured how well 15-year-olds from across the globe are prepared to use their knowledge and skills in mathematics, reading and science to meet real-life challenges. A combined total of more than half a million students from 65 countries and economies took part in PISA 2012, including a nationally representative sample of around 14,500 Australian students from 775 schools. Australia has now participated in all six cycles of PISA since its inception in 2000, and the results from 2012 are the latest that are publicly available.

The problem for Australian schooling is that it has been slipping relative to other countries. For example, Australia's mean mathematical literacy performance declined significantly between PISA 2003 and PISA 2012 – mathematical literacy declined by the equivalent of more than half a year of schooling during the period 2003-2-12. Twelve other countries, all OECD countries, have also seen a significant decline in their mathematical literacy performance between PISA 2003 and PISA 2012. The largest decline occurred in Sweden, followed by Finland, New Zealand, Iceland then Australia.

The ACER analyst, Dr Sue Thomson has said that Australia's falling achievement can partly be attributed to a decline in the proportion of high performing students in mathematical literacy and an increase in the proportion of low performing students.

According to Dr Thomson, PISA 2012 shows that Australia is not achieving its goal of providing all students with similar opportunities to benefit from education. Significant gaps in achievement remain between Australian students by gender, Indigenous status, location and wealth.

In terms of wealth, a difference equivalent to around two-and-a-half years of schooling separates the mathematical, reading and scientific literacy scores of students in the highest socio-economic quartile and students in the lowest socio-economic quartile.

In terms of gender, between PISA 2003 and PISA 2012 Australia's mathematical literacy performance declined more for girls than it did for boys. While the overall PISA mathematics score for Australia is still higher than the OECD average, the score for girls has dropped so it is equal to the OECD average.

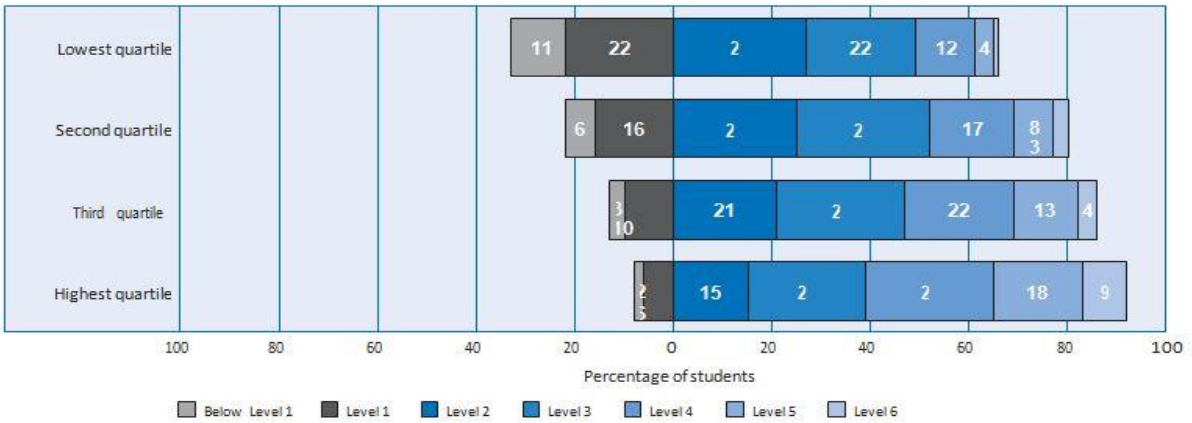
This report summarises the key findings from the most recent analysis of PISA results of 2012.

Mathematics Literacy – PISA Findings on Inequities in learning

Very large inequity based on Socio-Economic Status

- In general, the higher the level of a student's socio-economic background, the better the student's performance in mathematical literacy. This inequity is best captured by the fact that students in the highest socio-economic quartile performed 87 score points on average higher than students in the lowest socio-economic quartile. This difference equates to around two-and-a-half years of schooling.
- Twenty-seven per cent of students in the highest socio-economic quartile were top performers compared to 5% of students in the lowest socio-economic quartile.
- Eight per cent of students in the highest socio-economic quartile were low performers compared to 33% of students in the lowest socio-economic quartile

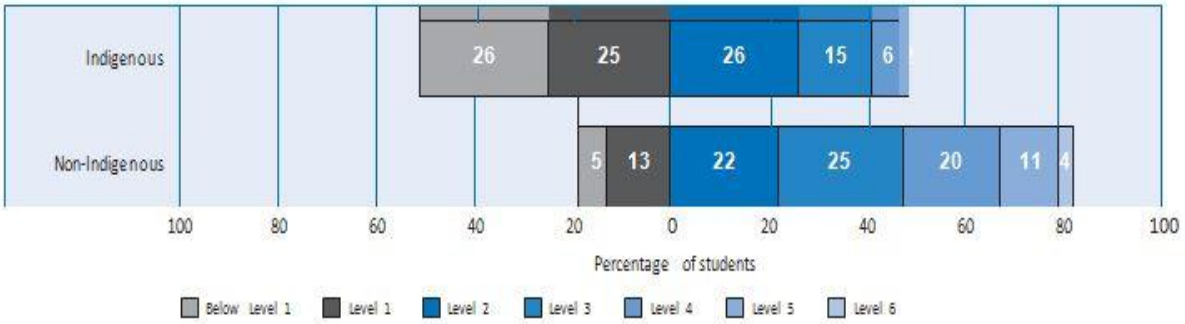
Figure 13. ***Percentage of Australian students across the mathematical literacy proficiency scale, by socio-economic background, 2012 PISA***



Indigenous Students

- Indigenous students performed significantly lower than non-Indigenous students, with a difference of 90 score points on average, equating to more than two-and-a-half years of schooling.
- Two per cent of Indigenous students were top performers in mathematical literacy compared to 15% of non-Indigenous students.
- Half of the Indigenous students were low performers compared to 18% of non-Indigenous students.

Figure 14. ***Percentage of students across the mathematical literacy proficiency scale, by Indigenous background***



Rural – Urban Disparity

- The mathematical literacy performance of students attending metropolitan schools was significantly higher than students in provincial (the difference representing almost three-quarters of a school year) or remote schools (the difference representing almost two years of schooling).
- Students attending schools in provincial areas performed significantly higher than students in remote schools (the difference representing almost one-and-a-quarter years of schooling).
- Thirty Nine percent (39%) of students in remote schools were low performers, compared to 18% of students in metropolitan schools and 23% of students in provincial schools.

Differences between States and Territories

- The Australian Capital Territory, Western Australia, New South Wales and Queensland performed significantly higher than the OECD average.
- Victoria and South Australia achieved at a level not significantly different to the OECD average.
- Tasmania and the Northern Territory performed significantly lower than the OECD average.

Trend in mathematical literacy (2003-2012)

- Australia's mean mathematical literacy performance declined significantly between PISA 2003 and PISA 2012 (by 20 score points on average).
- There has been a significant decline in the performance of top performers, average performers and low performers.
- Between PISA 2003 and PISA 2012, the proportion of low-performing Australian students (those students who failed to reach Level 2) significantly increased (by 5%).
- The proportion of top-performing Australian students (those students who reached Level 5 or above) significantly decreased (by 5%).
- All jurisdictions, except Victoria, showed a significant decline in their mathematical literacy performance. The largest change was in South Australia and the Northern Territory with a decrease of 46 and 45 score points on average respectively, followed by Western Australia, Tasmania and the Australian Capital Territory with decreases of around 30 score points on average.
- New South Wales and Queensland had decreases of around 16 score points on average.

Figure 15. Mean mathematical literacy scores for PISA 2003, PISA 2006, PISA 2009 and PISA 2012, and differences in performance between PISA 2003 and PISA 2012, by jurisdiction

Jurisdiction	PISA 2003		PISA 2006		PISA 2009		PISA 2012		Difference between 2003 and 2012 (PISA 2012 – PISA 2003)	
	Mean score	SE	Mean score	SE	Mean score	SE	Mean score	SE	Score dif.	SE
ACT	548	3.5	539	5.6	528	6.4	518	3.6	**–30**	5.4
NSW	526	4.3	523	5.0	512	5.2	509	3.6	**–17**	5.9
VIC	511	5.1	513	4.0	512	4.9	501	3.7	–10	6.6
QLD	520	6.9	519	4.4	518	7.5	503	2.9	**–16**	7.7
SA	535	4.9	520	4.3	509	5.3	489	3.3	**–46**	6.2
WA	548	4.1	531	6.5	529	7.2	516	3.4	**–32**	5.7
TAS	507	9.4	502	3.8	487	5.1	478	3.4	**–30**	10.2
NT	496	4.9	481	6.2	487	4.9	452	10.4	**–45**	11.6

Notes: Values that are statistically significant are indicated in bold.
The mean score difference (the difference between the average scores for the group) has been calculated without rounding off decimal places, but are presented as whole numbers.

Scientific Literacy – PISA Findings on Inequities in learning

The Impact of Socio-Economic Status

- Students in the highest socio-economic quartile performed 88 score points on average higher than students in the lowest socio-economic quartile. This difference equates to around two-and-a-half years of schooling.
- Twenty-four per cent of students in the highest socio-economic quartile were top performers - compared to 5% of students in the lowest socio-economic quartile.
- Five per cent of students in the highest socio-economic quartile were low performers compared to 23% of students in the lowest socio-economic quartile.

Indigenous Students

- Indigenous students performed significantly lower in scientific literacy than non-Indigenous students. There was an average difference of 84 score points. This equates to about two-and- a-half years of schooling.
- Two per cent of Indigenous students were top performers in scientific literacy compared to 14% of non-Indigenous students.
- Thirty-seven per cent of Indigenous students were low performers in scientific literacy compared to 13% of non-Indigenous students.

Rural – Urban Disparity

- The scientific literacy performance of students attending schools in metropolitan areas was significantly higher than students attending schools in provincial areas (the difference representing around half a school year) and students attending schools in remote areas. The difference represents more than one-and-a-half school years.
- In metropolitan schools, 15% of students were top performers compared to 10% of students in provincial schools and 6% of students in remote schools.
- In metropolitan schools, 13% of students were low performers compared to 15% of students in provincial schools and 27% of students in remote schools.

Differences between States and Territories

- The performance of Tasmania and the Northern Territory was not significantly different to the OECD average, while all other jurisdictions performed at a significantly higher level.

Trend in scientific literacy (2003-2012)

- Australia's mean score in scientific literacy has not changed significantly between PISA 2006 and PISA 2012.
- Between PISA 2006 and PISA 2012, the proportions of top performers and low performers remained stable with no significant change between the cycles.
- Between PISA 2006 and PISA 2012, there was a significant decline in the mean scientific literacy performance for students in the Australian Capital Territory (by 15 score points on average) and in South Australia (by 19 score points on average).

Reading Literacy – PISA Findings on Inequities in learning

The Impact of Socio-Economic Status

- Students in the highest socio-economic quartile performed 86 score points on average higher than students in the lowest socio-economic quartile in reading literacy. This difference equates to two-and-a-half years of schooling.
- Almost one-quarter (23%) of students in the highest socio-economic quartile were top performers in reading literacy compared to 4% of students in the lowest quartile.
- Five per cent of students in the highest socio-economic quartile were low performers in reading literacy compared to 23% of students in the lowest quartile.

Indigenous Students

- Indigenous students performed significantly lower than non-Indigenous students in reading literacy, with a difference of 87 score points on average, which equates to two-and-a-half years of schooling.
- Two per cent of Indigenous students were top performers in reading literacy compared to 12% of non-Indigenous students.
- Thirty-nine per cent of Indigenous students were low performers in reading literacy compared to 14% of non-Indigenous students.

Rural – Urban Disparity

- The performance of students in metropolitan schools was significantly higher than students in provincial schools (the mean difference representing almost one year of schooling) and students in remote schools (the mean difference representing about two years of schooling).
- Thirteen per cent of students in metropolitan schools were top performers in reading literacy compared to 7% of students in provincial schools and 5% in remote schools.
- Thirteen per cent of students in metropolitan schools were low performers in reading literacy compared to 18% of students in provincial schools and 30% of students in remote schools.

Differences between States and Territories

- The Australian Capital Territory, Western Australia, Victoria, New South Wales and Queensland performed significantly higher than the OECD average in reading literacy.
- South Australia's score was similar to the OECD average.
- Tasmania and the Northern Territory achieved at a significantly lower level than the OECD average.

Trend in reading literacy (2003-2012)

- Australia's mean reading literacy performance declined significantly from PISA 2000 to PISA 2012 (by 16 score points on average).
- There was a significant decline in the performance of students at the 75th and 90th percentiles.
- In Australia, the proportion of top performers declined significantly (by 6%) between PISA 2000 and PISA 2012, while the proportion of low performers did not change significantly between PISA 2000 and PISA 2012 in reading literacy.

4. Fixing the Equity Problem

The equity problem in Australian school learning needs to be urgently addressed. The pathways to achieving this are well known. This section identifies three areas which are key to effectively addressing the equity problem – (i) pedagogical factors related to the quality of teaching and school leadership, (ii) additional resourcing to address the needs of disadvantaged students and (iii) the desegregation of schooling based on social class.

Quality of teaching and school leadership

There is a widespread consensus within the Australian education sector that two pedagogical factors are very important - quality of teachers and school leaders. The ACER in its submission to the Senate Inquiry on Teaching and Learning (maximising our investment in Australian schools), identified three areas that are critical to improving the quality of teaching and school leadership.[4] These largely describe an evolving response of governments to improving the quality of teaching in Australia and are summarised below.

Restrict and raise the quality of student intakes to teacher education.

A key strategy available to governments is to raise the status of teaching as a career. A number of countries have recognised the importance of this task and have succeeded – sometimes on relatively short timelines – in making teaching more attractive as a career, increasing competition for entry into teacher education courses and raising the overall quality of new teachers.

There are significant differences across countries in the status of teaching in the community. In Finland, teachers are held in high esteem, competition for entry into teacher education programs is strong and teachers are selected from among the highest-achieving school leavers. Almost all teachers in Finland complete a master's degree. In Australia, teachers tend to be recruited from the middle of the distribution of school leavers and there are increasing concerns about the low cut-off scores for entry into teacher education courses at some universities. Students often enter teaching as a fall-back, having failed to gain entry to their course of first choice.

International comparisons indicate that more rigorous selection processes and greater control over the numbers of students being admitted to teacher education have an impact on the quality of the student intake and on how students and the public perceive teaching as a career.

Set and confirm the achievement of minimum standards for registration

A second characteristic of high-performing education systems is that they place a high priority on ensuring that all teachers receive an excellent preparation to teach – in particular, that they develop high-level knowledge of the subjects they will teach (referred to as 'content knowledge') and high levels of knowledge about how students learn those subjects, including a familiarity with pre-requisite student knowledge and skills and common student errors and misunderstandings (referred to as 'pedagogical content knowledge'). High-performing education systems recognise the vital importance of providing all teachers with an understanding of effective pedagogical practices.

[4] Enhancing the quality of teaching and learning in Australian schools : Submission to the Senate Inquiry on Teaching and Learning (maximising our investment in Australian schools)

Recognise and reward the development of specialist knowledge and skill

Much is now known about highly effective teaching practices. Although there is no single teaching method that is effective in every situation, and expertise as a teacher depends on a repertoire of teaching methods and the ability to tailor teaching to specific situations and student needs, there are some broad characteristics of highly effective teaching.

Thus a third general strategy for improving the quality of teaching and learning in Australian schools is to recognise and reward the development of high-level pedagogical knowledge and skill. This strategy depends on clarity about the nature of highly effective teaching, continual professional development in the implementation of evidence-based practices, and processes for recognising and rewarding expert teaching.

Australia's inequitable resourcing of schools – an international outlier

The Australian problem with inequitable distribution of resources across schools is not minor. By international comparisons, Australia is an outlier in the way that it distributes significantly greater amounts of resources to its most advantaged schools.

The most recent data from PISA 2012 graphically shows just how out of step Australia is with other OECD countries as well as most other countries that take part in the PISA tests.

The gap in educational resources between advantaged and disadvantaged schools in Australia is greater only in Mexico, New Zealand, Turkey and the United States (amongst OECD countries). Only ten out of 65 countries participating in PISA have greater inequity in the allocation of educational resources across schools than Australia. This club includes developing countries such as Colombia, Costa Rica, and Peru.

In sharp contrast to Australia, high performing countries and cities tend to allocate resources more equitably across schools - regardless of their socio-economic profile. Each of 10 OECD countries (including six East Asian countries and cities that have higher mathematics results than Australia) also have a significantly smaller resource gap between socially advantaged and disadvantaged schools.

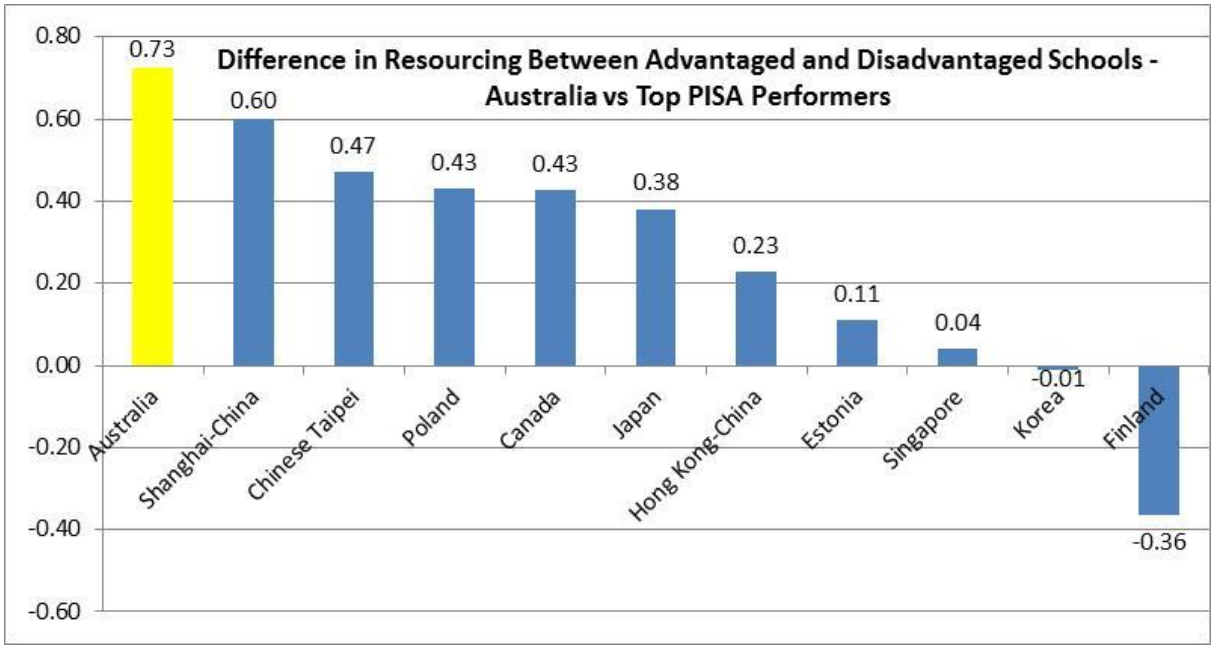
More striking still is to compare Finland – the country with the smallest achievement gap between advantaged and disadvantaged schools. Students in disadvantaged schools in Finland are about one year behind their peers in advantaged schools. In contrast, students in disadvantaged schools in Australia are about two and a half years behind their advantaged counterparts. And the disparity in funding? In Finland, it is entirely in favour of the disadvantaged schools - they receive significantly greater funding than other schools with a higher socio-economic profile.

The figure below displays the difference in resourcing between advantaged and disadvantaged schools across countries. It shows the difference between the amount of educational resources—including physical infrastructure, science laboratory equipment, instructional materials (e.g., textbooks), computers for instruction, Internet connectivity, computer software for instruction, and library materials—directed toward advantaged schools and disadvantaged schools for the top-performing education systems on PISA 2012, and Australia. In Singapore, for example, the difference between resources sent to advantaged schools and disadvantaged schools is almost zero. In Korea slightly more resources are directed toward disadvantaged

schools than advantaged schools. Finland stands out as directing significantly greater resources to its most needy schools.

Australia is not in the top 10 PISA performers and stands out when compared with those top performers as having the most inequitable distribution of resources towards disadvantaged schools.

Figure 16. Difference in Resourcing Between Advantaged and Disadvantaged Schools - Australia vs Top PISA Performers



Source: http://www.oecd.org/pisa/keyfindings/pisa-2012-results-volume-IV.pdf, Table IV.3.17

Additional Resources to Address Inequity – the PISA 2012 evidence shows it works

Analysis of PISA 2012 results offers a powerful global study of the effects that equitable distribution of resources can have on learning and academic performance. The PISA 2012 final report concludes that the equity with which resources are distributed across schools has a significant impact on how the system performs overall.

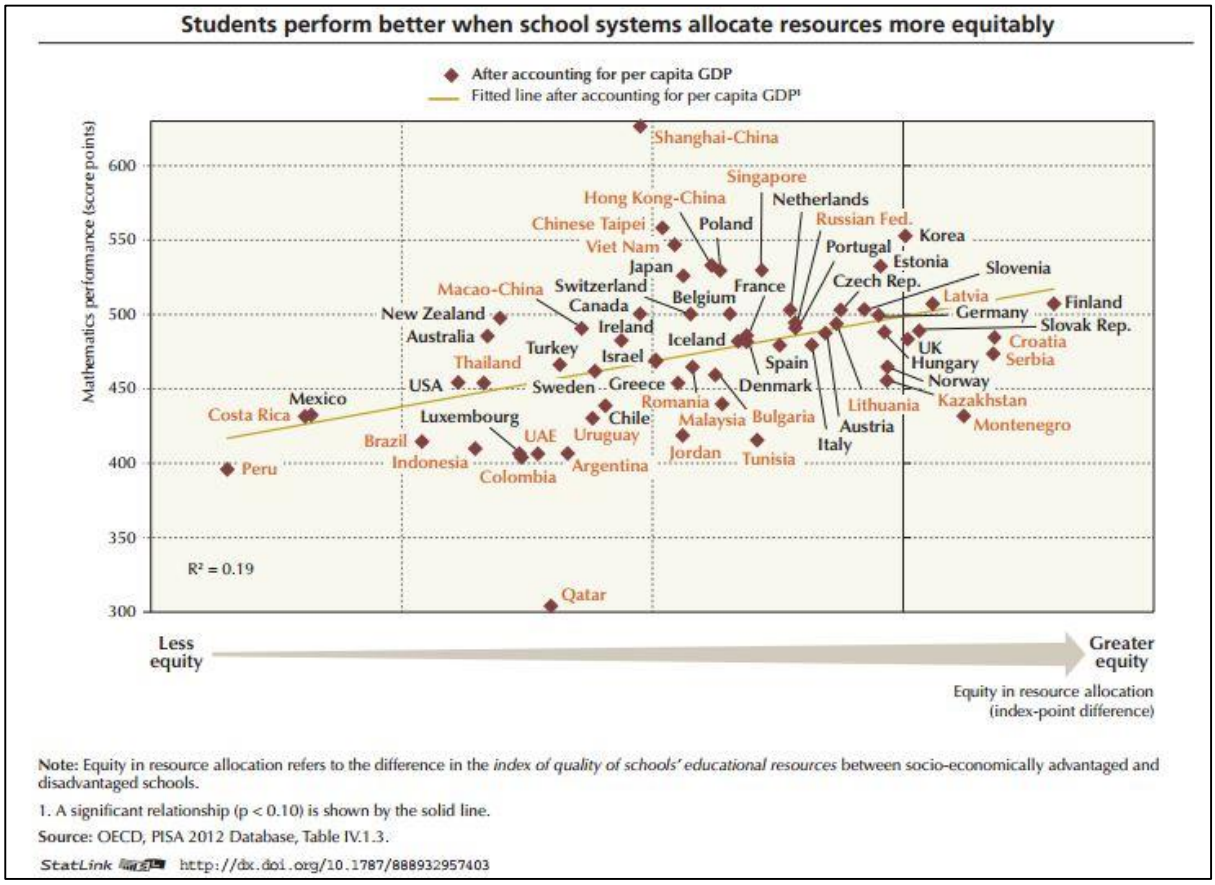
Volume 4 of that PISA 2012 analysis (*How Resources, Policies And Practices Are Related To Education Outcomes*) looks at the degree of equity in distribution of resources across schools. More specifically, it examines the correlation between the equity in distribution of resources and the impact it has on the academic performance of students. Its findings are clear:

Even after accounting for per capita GDP, 30% of the variation in mathematics performance across OECD countries can be explained by the level of similarities in principals' report on schools' educational resources between socio-economically advantaged and disadvantaged schools.

At the school level, in 32 countries and economies, principals' perceptions about the adequacy of the educational resources in their school are positively related to the school's average performance. However, schools with more adequate educational resources are also those that have other characteristics closely related to higher performance. This suggests that much of the

impact of socio-economic status on performance is mediated by the resources invested in schools.[5]

Figure 17. PISA 2012 findings on link between school performance and mathematics test performance



Other international research supports the significance of resourcing for better results

There is considerable international research now that has found a positive correlation between financial resources and student outcomes. The most recent research comes from a very large set of data in the USA. The study examined the effect of school-finance-reform-induced changes in school spending on long-run adult outcomes. It linked school spending and school finance reform data to detailed, nationally-representative data on children born between 1955 and 1985 and followed through to 2011. The study compares the adult outcomes of cohorts that were differentially exposed to school finance reforms, depending on place and year of birth. Its findings are very strong:

Event-study and instrumental variable models reveal that a 10 percent increase in per-pupil spending each year for all twelve years of public school leads to 0.27 more completed years of education, 7.25 percent higher wages, and a 3.67 percentage-point reduction in the annual incidence of adult poverty; effects are much more pronounced for children from low-income families. Exogenous spending increases were associated with sizable improvements in

[5] Vol. 4 PISA Results 2013 p.43

measured school quality, including reductions in student-to-teacher ratios, increases in teacher salaries, and longer school years.[6]

The intuitive idea that such a relationship would exist had been challenged by academic research dating to the 1980s and associated with the economist Eric Hanushek[7]. While this approach gained traction in the USA, it has had far less sway in Australia and other OECD countries where needs based funding formulae have been developed and applied for decades with a concomitant overall increase in expenditure. It would appear nonsensical, for example, in the Australian or UK settings to suggest that the additional resources found and provided to reach children with high needs, have not had any impact on learning outcomes. There is substantial academic research focusing on the educational impacts of spending that does indeed find a positive relationship[8]. This is neatly summarised by Baker (2016):

More recent studies (later 1990s and early 2000s) examining the relationship between financial resources and student outcomes made incremental improvements to production function analyses by (a) adjusting the value of the education dollar for regional cost variation;[25] (b) testing alternative "functional forms" of the relationship between financial inputs and student outcomes; and (c) applying other statistical corrections for the measurement of inputs. These studies have invariably found a positive, statistically significant (though at times small) relationship between student achievement gains and financial inputs.

They also, however, raised new, important issues about the complexities of attempting to identify a direct link between money and student outcomes. These difficulties include equating the value of the dollar across widely varied geographic and economic contexts, as well as accurately separating the role of expenditures from that of students' family backgrounds, which also play some role in determining local funding. Most of the studies included in Hanushek's review suffered from serious data and methodological limitations, which have since been addressed in more recent work.[9]

[6] Jackson, C, Johnson, R, Persico, C (2015)

[7] Hanushek (1986)

[8] As an example of the extensive rebuttal of the initial Hanushek research, and the evidence that points to the positive relationship between spending and learning, see R. Greenwald (1996), H. Wenglinsky (1997), C. Taylor (1998). J. Dewey (2000), Dewey and colleagues explain that many previous studies attempting to distil school resource effects on student outcomes concurrently correct for the economic background of students. However, the economic background measures, such as family income, are also strong determinants of the demand for schooling resources. Thus, including the two simultaneously in regression models violates both conceptual appropriateness (resource levels are endogenous to family characteristics) and statistical properties associated with those conceptual problems (that the error term is correlated with the school input measures, requiring a different statistical approach). Dewey and colleagues review the previous studies summarized by Hanushek, identifying that several suffer from this problem and that those that do tend to understate the influence of resources.

[9] Baker, B.D (2016)

Does Money Matter in Education?

Based on the studies reviewed in this brief, there are a few things we can say with confidence about the relationship between funding, resources and student outcomes.

First, on average, even in large-scale studies across multiple contexts, aggregate measures of per-pupil spending are positively associated with improved and/or higher student outcomes. In some studies, the size of this effect is larger than in others, and, in some cases, additional funding appears to matter more for some students than for others.

Clearly, there are other factors that moderate the influence of funding on student outcomes, such as how that money is spent. But, on balance, in direct tests of the relationship between financial resources and student outcomes, money matters.

Second, schooling resources that cost money, including class size reductions and increased teacher compensation, are positively associated with student outcomes. Again, these effects are larger in some cases and for some populations. On balance, though, there are ways to spend money that have a solid track record of success. Further, while there may exist alternative uses of financial resources that yield comparable or better returns in student outcomes, no clear evidence identifies what these alternatives might be.

Third, sustained improvements to the level and distribution of funding across local public school districts can lead to improvements in the level and distribution of student outcomes. While money alone may not be the answer, adequate and equitable distributions of financial inputs to schooling provide a necessary underlying condition for improving the adequacy and equity of outcomes. That is, if the money isn't there, schools and districts simply don't have a "leverage option" that can support strategies that might improve student outcomes. If the money is there, they can use it productively; if it's not, they can't. But, even if they have the money, there's no guarantee that they will use it productively. Evidence from Massachusetts, in particular, suggests that appropriate combinations of more funding with more accountability may be most promising.

From Baker, B.D (2016) Does Money Matter in Education? Second edition Pge 20

Reducing social segregation of schooling

There is a substantial body of international research that finds concentrations of socio-economic disadvantage within schools does have an adverse effect on the average performance of schools. This means, for example, that a low SES student is more likely to have a lower mark if they attend a school with a high concentration of students from a low SES background than if they went to a high SES school.[10]

The Australian evidence of the heightened impact of concentrations of socio-economic disadvantage has also been well documented. In 2006, the NSW Department of Education and Training engaged a consultant to investigate the relationship between SES density (in a school) and student performance. The researcher used three years of performance data from the Australian Capital Territory (ACT), New South Wales (NSW), Queensland (QLD), South Australia (SA) and the Northern Territory (NT). I

[10] For example, Borman and Dowling (2010) and Dronkers and Levels (2007)

t was a substantial piece of research covering the majority of Australian jurisdictions and school public school populations. Its findings were clear:

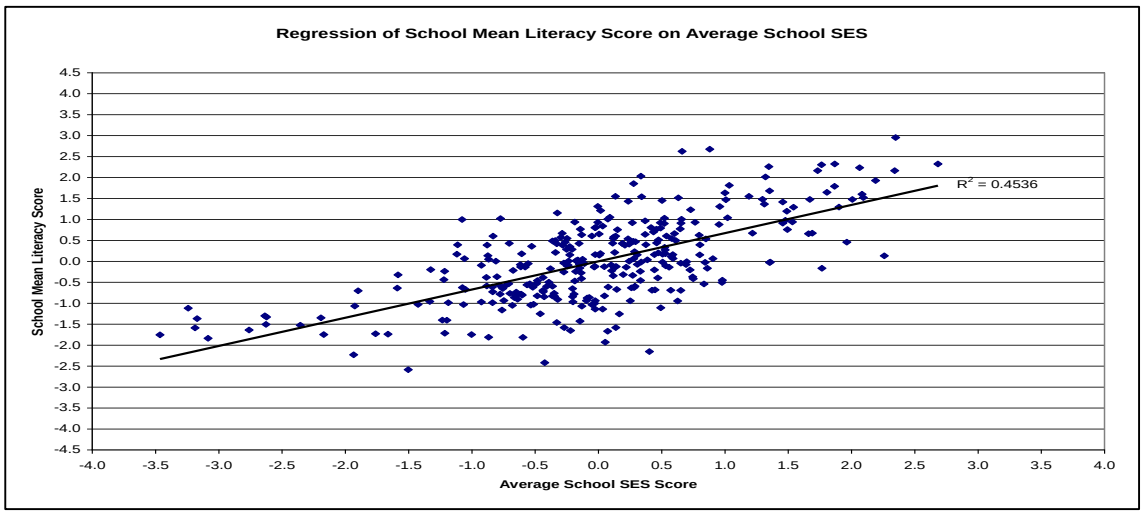
The individual characteristics of any one student (such as sex, LBOTE status ATSI status and, where available, SES status) explain very little of the variation in individual performance scores. In other words, just because a student is male and/or is from a language background other than English and/or is an Aboriginal or Torres Strait Islander and/or is from a low socio-economic background does not accurately predict a lower literacy performance. While, on average, such students are more likely to be underperforming, there will be many such students in the population who are performing at very high levels of achievement…

However, when school-level characteristics such as percentage of girls in a school, percentage of LBOTE students in a school, percentage of ATSI students in a school and density of low socio-economic status students in a school are used to explain average school performance (rather than individual performance) we find much greater explanatory power. ***That is, while individual characteristics are poor predictors of individual performance, school average student characteristics are very strong predictors of school average performance****…*

In summary, even though we should expect to find some high performers in schools with a low average school SES and we should expect to find some low performers in schools with a high average school SES, schools with a low average schools SES are far more likely to also have a low average level of Literacy performance whereas schools with a high average schools SES are far more likely to also have a high average level of Literacy performance.

This has big implications on funding policies directed at improving learning outcomes. ***If school funding was partially based on targeting students most likely to required additional resources and the targeting mechanism was individual SES indicators, then this study suggests we would target the wrong students more often than not.*** *On the other hand, if the targeting mechanism was school average SES indicators, then this study suggests that by funding schools with high densities of socio-economically disadvantaged students a large number of underperforming students would be targeted.*[11]

Figure 18. Regression of School Average Literacy Scores on School Average SES scores



[11] Holmes-Smith, P. (2006) School Socio-Economic Density and its effect on School Performance

There is another very significant policy implication that emerges from these findings of international research and the specific Australian context. A cost effective response to improving student performance is to reduce the number of schools with high concentrations of low SES. In other words, the desegregation of schools (based on social class) can in itself create the organic in-school conditions to help drive improvements in overall student performance.

It is important to recognise the realistic limits of the desegregation that can be achieved. The geographic distribution of social disadvantage across the Australian landscape imposes itself on the student catchment areas of schools. Where an area is very poor, it is likely that the school in that catchment area will also have a very low SES profile. What can be realistically achieved, is to have policies in place that discourage the better-off parents from selecting out of the local school. In practice, this means policies that make it more attractive to keep their children in the local schools and less attractive to send their children to schools outside the area.

There is a wide range of policy and operational interventions that governments can employ to help effect the change towards a less segregated school system in Australia. These include:

- In the first instance, set as a policy and operational objective of public school systems the reduction of social segregation within each jurisdiction. Priority focus could be identified schools with concentrations of low SES students (above their geographic share).
- Investing adequately in local public schools so they have the resources and visible facilities that gain the confidence and trust of local communities. Parents should feel that the local public school is not an inferior option to a private or public school that is outside of the area.
- School investment policies should be targeting those schools where segregation based on social class (after adjusting for geographic composition effects) is an evident factor affecting school enrolment.
- Agreements with post-secondary providers of education that provide recognition and give some priority to enrolling students from schools with high concentrations of low-SES populations.

Figure 19. How Reducing Social Segregation can also Generate Economic Savings[12]

Helping to turn around residualised schools within low SES communities is likely to have important educational and future social benefits. It can also reduce the costs of schooling. The student-teacher ratio is the key driver of the unit cost of schooling. The ratio is a function of policy (for example, class sizes and equity programs) but also effective household demand for school services. In residualised schools with low and falling enrolments, unit costs of schooling begin to rise steeply as a consequence of falling student numbers.

In comparison, popular and successful schools will, typically, cost less. Thus, increasing household demand for school services can have a big impact on the unit cost of schooling in low SES areas. The biggest savings in teacher costs may be attained most easily in secondary schools. This is because the curriculum breadth requirements (coupled with specialised teaching) means that secondary schools have less flexibility in reducing their number of classes which imposes higher inefficiency related costs.

A sustained targeted investment program could target a group of residualised secondary schools in areas with a demographic profile that would support enrolment growth. The program would put in place investments (human and physical), to convert these schools from under-performing and under-enrolled units into successful and popular schools. Funding would be provided as part of a pro-active and front-loaded investment strategy instead of an ongoing recurrent cost bill. An economic return (based on cumulative savings in recurrent costs) of more than $8 million could be generated within 10 years from the start of a successful investment strategy. An investment program of up to $8 million could be fully paid for within 10 years. After the tenth year, the school would be generating (against the status quo unit cost) annual recurrent cost savings (in current prices) of more than $2 million per annum. These savings could be ploughed into other schools that need the additional funding.

Modelling cost savings generated by successful targeted investment strategy

Parameter/Variable	Year 1	Year 2	Year 3	Year 4	Year 8	Year 9	Year 10
Annual FTE teacher cost ($)	110,000	110,000	110,000	110,000	110,000	110,000	110,000
Enrolments	250	275	300	350	600	675	750
Student teacher ratio	10	10	10.5	11	13	13	13
Number of teachers	25	28	29	32	46	52	58
Per student unit cost-salaries	11,000	11,000	10,476	10,000	8,462	8,462	8,462
Annual unit cost benefit	-	-	524	1,000	2,538	2,538	2,538
School annual saving -salaries	-	-	157,143	350,000	1,523,077	1,713,462	1,903,846
Cumulative savings ($)	-	-	157,143	507,143	4,584,133	6,297,594	8,201,441

[12] From Rorris, A. et al (2011) Assessment of current process for targeting of schools funding to disadvantaged students, Table 11

Monitoring and Evaluation of Interventions

Ongoing monitoring and evaluation is the expected norm for programs within the education sector. While it has been undertaken for many years in Australia and other countries, it is now expected to be applied with greater rigour and consistency. This is an important development and needs to be sustained. There will always be the temptation on the part of systems to avoid thorough and rigorous monitoring and evaluation. In part this reflects obvious institutional self-interest. It also reflects the difficulty of capturing value-added change that can be attributed to a particular program or intervention. The multi-variable nature of the education process and the often longer time-frame for impacts to be registered and the measured bedevils the monitoring and evaluation process.

Notwithstanding these methodological challenges encountered in the education sector, it is important that analytical pressure and institutional/community oversight of program effectiveness is retained. While additional expenditure may be required to improve outcomes overall – it is also true in education (as in any other area) that it is possible to spend a great deal extra and get very little in return. So while additional expenditure on a system-wide level is an essential prerequisite, the expenditure on its own (if it doesn't procure the most appropriate products/services) may not deliver the change required.

In Australia, there is evidence that education systems through funding partnerships with the Commonwealth, have been moving towards more sophisticated analyses of the impact of their intervention programs. They are monitoring more carefully what changes and interventions are being applied and what they are delivering in terms of their targets (and other results).

For example, the Commonwealth funded, Low SES National Partnerships Program, was accompanied by some detailed reporting on the processes and reform targets matched with changes in measureable outcomes. For example, the NSW report on the Low SES School Communities National Partnership program (funded by the Commonwealth) undertook an evaluation that applied a detailed and comprehensive examination of learning effects, which included:

- A NAPLAN trend analysis employed an approximation of a multiple error component model using Ordinary Least Squares (OLS) with student level fixed effects, to measure effects of Low SES NP participation on NAPLAN scores. Estimation was performed on approximately one million student scores between 2009 and 2013.
- The analysis also considered a number of extensions, including comparing the effects of the Low SES NP with linked programs such as NP Literacy and Numeracy, NP for teacher quality (TQ), NP for the teacher quality enhanced decision making pilot (TQE), and the NP for teacher quality for schools participating..
- An analysis of achievement gain comparing gain scores against the state average and within school variation in gain.
- The effects of the Low SES NP were also measured using a study of benchmark proficiency in NAPLAN and the proportions of students who remain at or above benchmark standards in NAPLAN from 2011 (Year 3 and Year 7) to 2013 (Year 5 and Year 9). The results are compared to students in schools not participating in the Low SES NP.
- A variance analysis was undertaken using a sequence of multi-level models to estimate within and between school variation in NAPLAN Reading and Numeracy scores. The models were applied to NAPLAN results obtained in 2009 and those obtained in 2013.

> This was to permit comparison of results at the outset of the Low SES NP initiatives and in the final year in a quasi-pre and post-test framework. [13]

The continued application of rigorous monitoring and evaluation frameworks will help education systems better understand what works and what doesn't so as to support their further development in terms of effectiveness and efficiency. It will also help generate the confidence within the broader community that educational spending is being carefully monitored and geared towards generating the best possible returns for children and the community.

[13] NSW Low SES School Communities National Partnership

5. The Price of Failure

The social benefits of schooling have long been recognised. The public provision and public funding of education has long been underpinned by the argument that it delivers a public good of benefit to all of society and not just the recipient individual.

Figure 20. Avoiding the Price of Failure[14]

> The cumulative impact of educational benefits helps individuals to have more options for and to make better decisions about their lives. Improved options and decision-making includes better choices about work, better risk assessment concerning deviant or criminal behaviour, and better personal health choices. Thus, the cognitive-intellectual gains that children and youth make in school contribute to the social and economic benefits derived from education for all members of society.
>
> There are other "spill over" effects from education that transform individual gains into social gains. The personal, individual benefits of a good education have broad benefits for society when improved "human capital" capacity – personal knowledge, skills, and judgment – is taken by the individual into the workplace, the public square, and the home. For example, all of society benefits when more people are able to find adequate and stable employment. A better educated work force not only leads to more research and innovation, but the benefits of this economic innovation are then spread more widely and powerfully throughout a better educated public. Everyone also benefits when fewer citizens experience alienation or general distrust of others and government. And the children of well-educated parents are less likely to seek public assistance, even when eligible. Each of these examples is directly related to receiving a quality education.
>
> In short, effective education improves decision-making abilities that then help individuals stay out of trouble and live better, healthier, and longer lives… Despite the many challenges that public education faces, it is an effective way to prepare large numbers of youth for their own future and for the overall welfare of society.

Implicit in this recognition of the social benefit of schooling, is that without it being provided there would be a social cost to society. In a similar way, there will be a social cost to society if the quality of the schooling doesn't meet the needs of society.

Failing to provide schooling to all children and/or not providing good enough schooling are two sides of the same coin – the price of failure.

The concept of 'the price of failure in schooling' is readily understood - but it is much harder to quantify. For this reason, the valuing or monetisation of these costs is left out of many cost analyses. Estimates are very hard to generate and are open to critique owing to methodological difficulties and a paucity of data to drive the calculations.

However, what is clear from the available research is the immense social cost from the failure of schooling to deliver across all of society.

[14] from, The Social and Economic Benefits of Education

This report summarises the best available international research frameworks and evidence that can be used as a basis to estimate the price of failure of Australian schooling to deliver to all Australian children.

The Cost of Welfare

While not all jobs require vocational or higher education, having such qualifications may provide people with the skills and knowledge that can help them obtain employment. An ABS Job Search Experience Survey (2010) showed that in July 2010, around half of long-term unemployed people (49%) had not attained Year 12 or above as their highest educational attainment. This compared with around two fifths (41%) of people who had been unemployed for less than 12 months and with around one-quarter (24%) of those who had started their current job in the last 12 months.

Contrary also to some popular misconceptions, many long-term unemployed would prefer to be working full-time hours. In July 2010, three-quarters (75%) of long-term unemployed men and half (50%) of long-term unemployed women stated they would have preferred to have been working full-time hours (35 hours or more per week). (ABS 2011)

One way of estimating part of the price of failure of the education system is to estimate the differential welfare cost of paying unemployment benefits for the early school leavers. This can be done by assuming that Australia could have all children complete schooling to year 12. By assuming that the unemployment rate remains at the current level for the population that has completed 12 years of schooling, we can extrapolate the drop in the number of unemployed who are currently leaving before year 12. Multiplied by the annual dollar value of the lowest paid unemployment benefit we can calculate the annual aggregate reduction in cost of unemployment benefits. The assumptions for the cost model and the calculations are presented below.

Figure 21. Unemployment Welfare Benefit - Cost Assumptions

Assumption	Value	Source
Unemployment rate	6.00%	ABS Labour Force 6202.0 January 2016
Unemployment persons ('000)	761.4	ABS Labour Force 6202.0 January 2016
Long term unemployment ratio	0.21	Job Search Experience Survey
Number of short term unemployed	601.506	Pro rata calculation
Number of long term unemployed	159.894	Pro rata calculation
Percentage of long term unemployed less than Year 12	49%	Job Search Experience Survey
Percentage of short term unemployed finished before Year 12	41%	Job Search Experience Survey
Number of long term unemployed finished before Year 12 ('000)	78.34	Calculation
Number of short term unemployed finished before Year 12 ('000)	246.61746	Calculation
Number of unemployed finished before Year 12 ('000)	324.96552	Calculation based on share of unemployed
Number of unemployed completed Year 12 or higher ('000)	436.43448	Calculation based on share of unemployed

The cost simulation outcomes suggest very large savings in the welfare bill if there are no school leavers before Year 12. Based on the unemployment rate of January 2016 (6%) the number of unemployed would be reduced by more than 171,000 people from 760,000 unemployed to approximately 590,000. A drop in unemployment of this magnitude could result in annual savings of up to $2.33 billion in the payment of unemployment benefits (based on 2016 prices). This calculation assumes unemployed would be seeking welfare payments and they are paid at the equivalent of lowest possible rate for unemployment (March 2016 prices).

Figure 22. Unemployment Cost - Simulation Outcomes

Element	Value	Source
Estimated number of total unemployed if no leavers before Year 12	589,776	Calculation based on current number of unemployed with year 12 or higher divided by 0.74 (proportion that currently have Year 12 or higher)
Additional number of unemployed (pro rata calculation based on new Year 12 completers)	153,342	Subtracting current number of unemployed with Year 12 or higher from estimated number of total unemployed if no leavers
Reduction in number of unemployed (based on 2016 unemployment rate and no completers before Year 12)	171,264	Reduction in projected total unemployed from (589,776) from the January 2016 total number unemployed
Annual saving – in 2016 prices based on minimum unemployment payment	**$ 2.34 Billion**	Newstart Allowance – minimum annual payment multiplied by reduced number of beneficiaries by 2070
Accumulated savings from reduced unemployment benefit payments	**$59.77 Billion**	Aggregated savings from reduced number of unemployment benefit payments by 2070.

The reduction in the number of unemployed begins very modestly with just over 3,000 in the first year of modelled benefits (2021) but as each successive wave of entrants completing Year 12 enters the labour market these accumulate to a final total of more than 170,000 fewer unemployed. Of course, in reality the actual numbers will vary because of cyclical and structural changes in economy and economic activity. But given the development of estimates around the current rate of unemployment (6%), it is a conservative scenario allowing for periods of higher and lower unemployment.

Figure 23. Reduced Number of Unemployed ('000s)

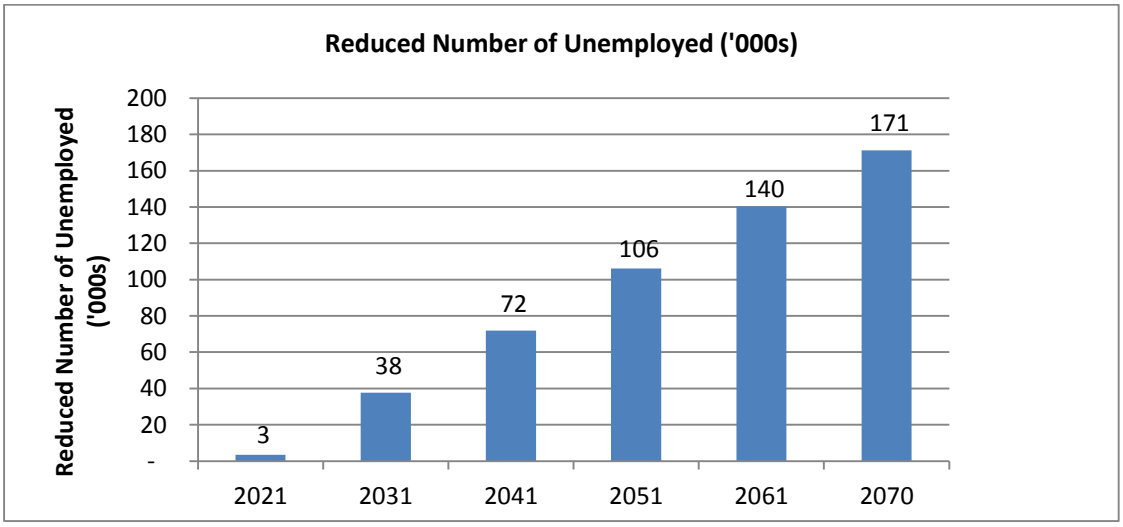
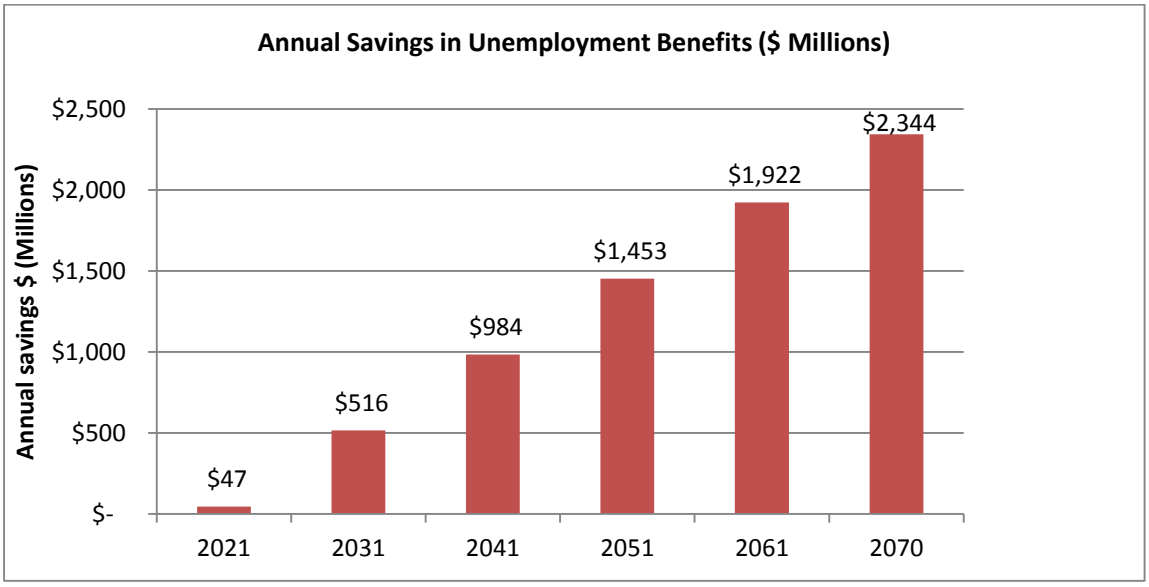
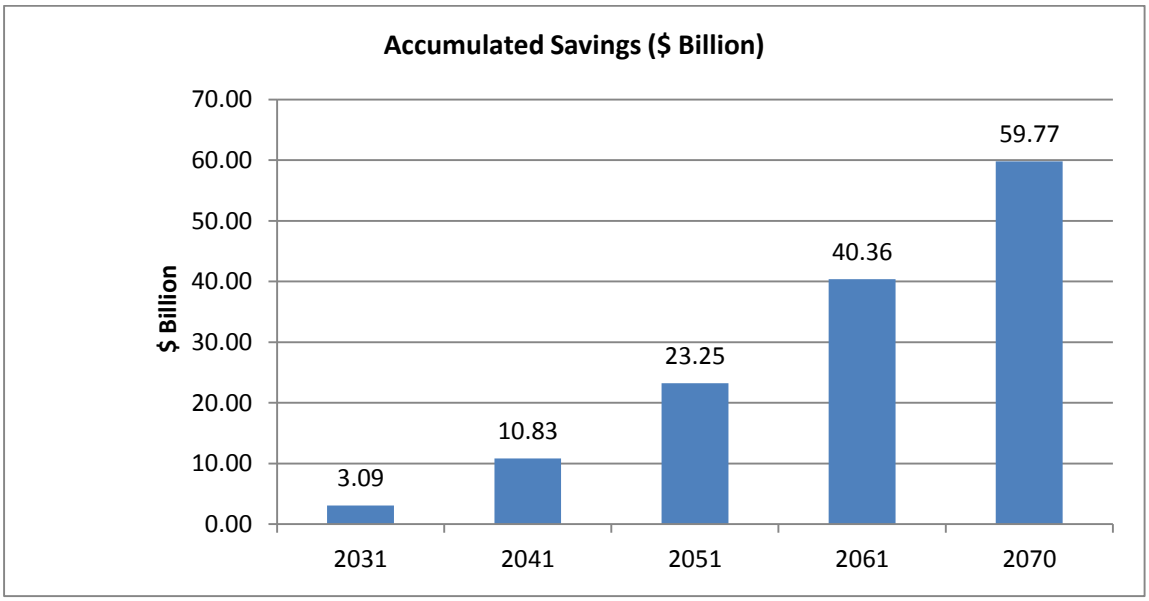


Figure 24. Annual Cost Savings in Welfare Payments – Unemployment Benefits



The accumulated savings from unemployment benefits not paid is calculated by adding up the annual savings for each year to come up with the calculation up until 2070. This represents 50 years from the modelled commencement of benefits and would take the first cohort of beneficiaries to the point of pensionable retirement.

Figure 25. Accumulated Cost Savings from Unemployment Benefits Not Paid



Loss of Tax Revenues

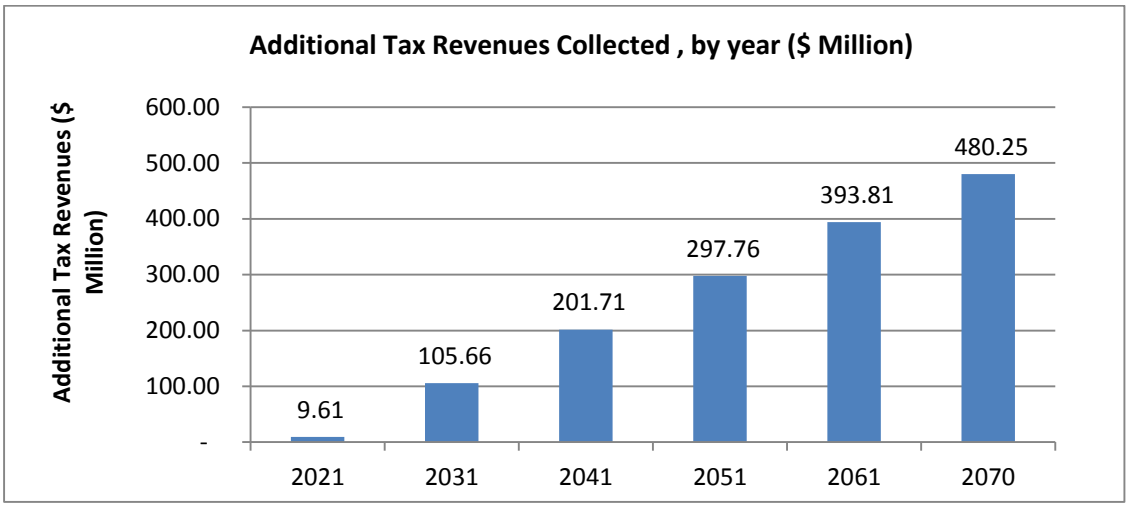
Another financial cost carried by the public purse is the lost tax revenues that accrue from students not completing to year 12 or who are not left adequately skilled to enter the labour market. The calculations for estimating the cost of foregone revenue from insufficient skilling of students is beyond this report. What is presented is a very simple and minimal calculation of

lost government revenues accruing from just that cohort that does not complete Year 12 and enters into unemployment.

Using the cost assumptions described above, it is possible to generate estimates of foregone taxes. The cost model assumes the very conservative assumption that all additional Year 12 graduates are employed at the national minimum wage (February 2016 rate) and pay the specified minimum income tax (as per ATO guidelines). This is a conservative assumption as many are likely to be paid more than the national minimum wage. It does however build in some tolerance into the model to allow for those that do not work full-time. The model also does not allow for the possibility that the tax rate might be higher in other circumstances even given the individual being paid at the lowest possible rate. The calculations are all made in 2016 prices.

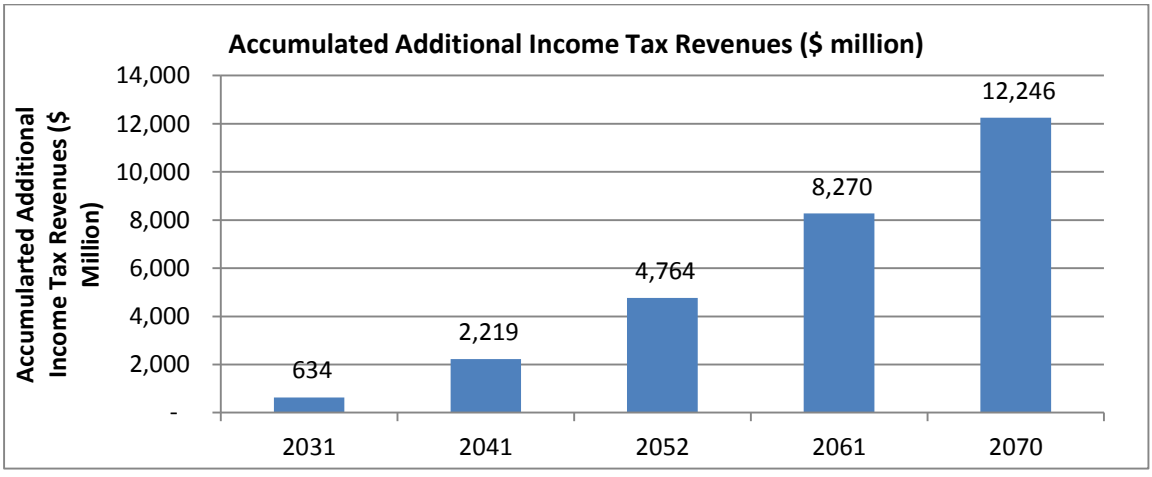
The annual additional tax revenues foregone begin with a modest $9.6 million in 2021 and climb to an annual loss of $106 million by 2031. These are very conservative estimates and do not allow for any economic multiplier effects or the possibility that the additional year 12 leavers (who are employed) earn anything more than the national minimum wage for the rest of their working lives. In reality, the additional tax revenues will likely be much higher.

Figure 26. Annual Additional Tax Revenues Foregone without Year 12 Completers



In aggregate, the accumulated additional income tax revenues will reach more than $2.2 billion by 2041 and have grown to more than $12.3 billion by 2070.

Figure 27. Accumulated Additional Income Tax Revenues ($ million)



Crime

On a global level, incarceration and conviction rates are high among the least educated. Lochner and Moretti (2004) calculated that increasing high school graduation rates by one percentage point in 1990 would have resulted in nearly 100,000 fewer crimes in the USA. That would have resulted in an annual social benefit valued at more than $2 USD billion (or USD 3,000 per additional male graduate). In the UK, Machin et al (2011) set about estimating the social savings from crime reduction associated with increasing the population of individuals with an education qualification. When measuring only benefits from property crime reduction, they estimated savings of over £10,000 per additional student qualification.

In Australia, ABS data demonstrates prisoners on average have a lower level of educational attainment than the general Australian population. In 2006, almost two-thirds of the general population aged 25–34 years had completed Year 12, compared with just 14 per cent of prison entrants in that age group. More than one-third of prison entrants (36–37 per cent) had a highest completed level of schooling of Year 9 or less, compared with around one in twenty (4–8 per cent) of the general population. (AIHW 2009). Further still, people who have not completed Year 12 are not only more likely to commit a crime; they are also more likely to be victims of crime themselves. As an example, people who are unemployed are more likely to be a victim of assault (9.8 per cent) than people who are employed (5.5 per cent) (Australian Social Inclusion Board 2010).

It is not possible with this short study to generate meaningful estimates of the public costs that accrue due to crime and which are due to school related failures in Australia. What is clear however, is that there are significant recurrent costs associated with correctional facilities, as well as the broader judicial system and compensation/care for the victims. Based on figures from the USA and the UK, the annual crime related (public) costs in Australia that are connected to schooling in some way, are likely to be in order of hundreds of millions of dollars each year.

Health

A strong correlation between educational attainment and health is graphically illustrated as a gradient whereby more educated individuals tend to have better health later in life and better labour market prospects (Conti et al 2010). The literature shows that more educated individuals in turn, have better health later in life and better labour market prospects (Cutler and Lleras-Muney, 2010).

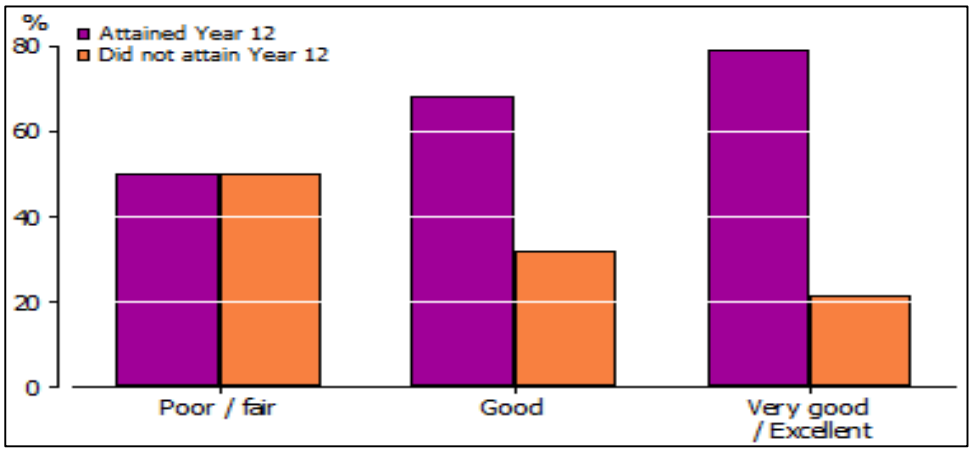
Education can influence health through a range of complex mechanisms, such as:

- through its connection with labour market participation and thereby income and access to health care and insurance;
- through knowledge formation and cognitive development, which impact decisions and behaviours;
- through its association with health behaviours such as smoking and obesity and preventative service use.

In Australia, self-assessed health is a good indicator of the overall health of a population, providing some insight into how a person perceives their own health at a given point in time. Evidence from the ABS shows those with poor self-assessed health were less likely to have attained Year 12 than those with better self-assessed health.

In 2009, the proportion of 20-24 year olds with Year 12 increased as the level of self-assessed health improved. For example, only one-half (50%) of those who rated their health as poor or fair had attained Year 12, compared with almost four-fifths (79%) who rated their health as very good or excellent.

Figure 28. Level Of Self-Assessed Health Status By Year 12 Attainment For 20-24 Year Olds – 2009



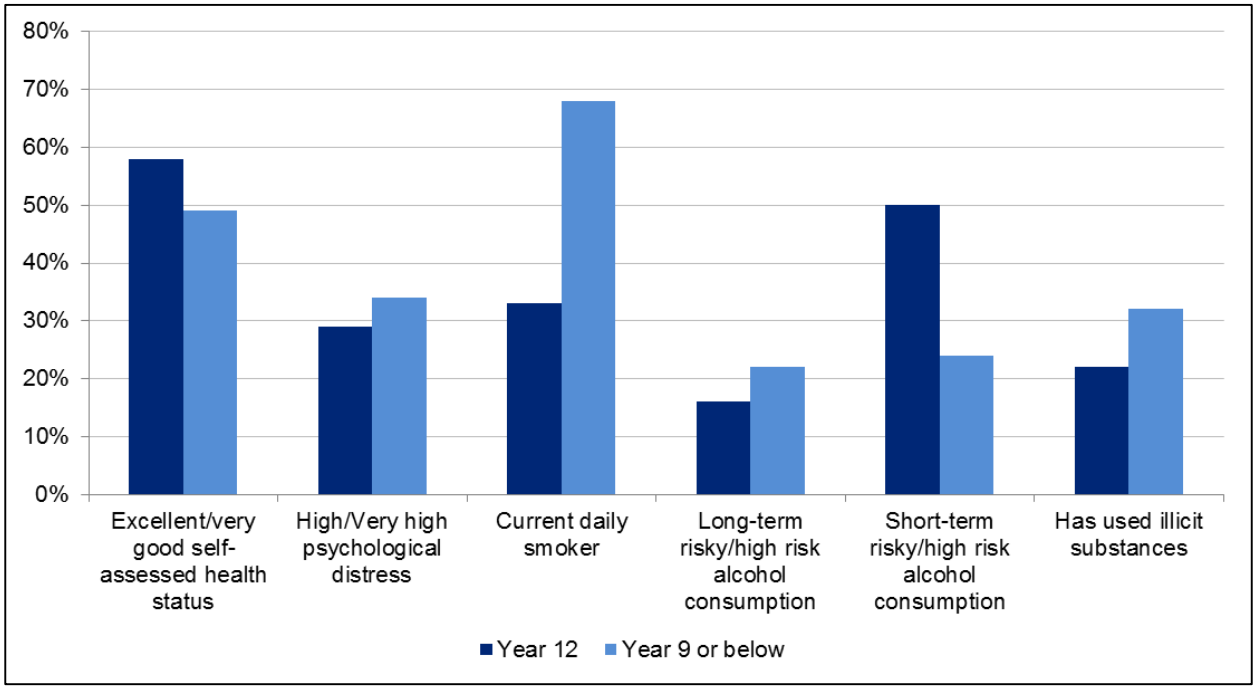
Source: ABS 2009 Survey of Education and Training

The health benefits of education are strongest among disadvantaged groups. Results from the 2008 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) show a higher level of schooling is positively associated with self-reported health status. Indigenous persons aged 15–34 years who had completed Year 12 were more likely to rate their health as excellent/very good than those who had left school at Year 9 or below (59 per cent compared with 49 per cent). A similar pattern of association was evident between higher levels of school completion and levels of psychological distress and risky health behaviours. (ABS 2010)

When compared with Indigenous people who had left school at Year 9 or below, those aged 15-34 years who had completed Year 12 were:

- less likely to be current daily smokers (34 per cent compared with 68 per cent);
- less likely to have reported high/very high levels of psychological distress in the last four weeks (29 per cent compared with 35 per cent);
- less likely to have used an illicit substance in the last 12 months (23 per cent compared with 32 per cent).

Figure 29. ATSI Health Outcomes by Educational Attainment



Source: ABS 2010

Similar to crime, it is not possible in this work to produce estimates on the cost impact of educational attainment via a causal impact on health outcomes. What is abundantly clear from international literature is that lower educational attainment has a clear correlation with health problems. Even stronger is the evidence that the education-health correlation/causal relationship may be stronger amongst disadvantaged groups.

Given the high costs associated with delivery of health care services, and the large proportion of people not completing year 12 (in absolute terms and compared to the OECD average) it can be anticipated that there will be significant additional costs due to people leaving school without the adequate knowledge and skills. In fact, the low completion rate for 12 years of schooling will be sufficient on its own to impose significant additional health care related costs on the public purse.

6. Better Schools for Stronger Economic Growth

The previous section examined the public financial cost carried by governments (and therefore the Australian community) from the inability of our schools to meet the learning needs of all our children. Beyond this public financial cost, there is also negative impact on the future economic growth of the nation. This section of the report examines the most recent evidence and economic modelling that seeks to quantify the scale of foregone economic growth arising from the failure of our schools to meet the learning needs of all children.

Better Schools for Stronger Economic Growth

Global Findings

- The great value-add for Australia rests with raising the learning and skills of children that are currently being failed by the system.
- The economic gains from solely eliminating extreme underperformance in high-income OECD countries would be sufficient to pay for all schooling.
- A great strength of the universal basic skills goal is the contribution it would make to inclusive growth. Within each country, the variation in earnings currently observed would shrink, and many more individuals would be able to engage productively in the labour market.
- The evidence of improvements in achievement over the past 15 years shows that many countries could meet the goal of universal basic skills over the next 15 years.

OECD Findings Specific to Australia

If every student acquired the basic skills specified for 15 year olds (PISA Level 1, Mathematics) then the improved skills will deliver:

- An average additional $27.5 Billion in economic benefits each year until 2095 by investing so that every child acquires the basic skills by the age of 15 years old.
- A future economic benefit of AUD 2.2 Trillion (discounted for inflation) until 2095.
- This economic benefit is 130% of current GDP.
- A GDP level in the year 2095 will be 11% higher in 2095 due to the reform

More ambitiously and relevant to Australia, an increase in the average PISA score of 25 points, would deliver through improved skills:

- An average additional $65 Billion in economic benefits each year until 2095 by investing so that average PISA score increases by 25 points
- A future economic benefit of AUD 5.2 Trillion (discounted for inflation) until year 2095.
- An economic benefit that is 335% of current GDP.
- A GDP level in the year 2095 that will be 29% higher in 2095 due to the reform.

Various studies and reports have referred to the benefits that can accrue by solving the learning deficit of children that are currently not learning enough within schools.

Most recently a major OECD study covering 76 countries (OECD 2015) presents the economic impact of achieving universal basic skills over a 15-year period ending in 2030. It shows how over time, the knowledge capital of the nation improves as better-educated youth enter the labour force. This report is of particular interest because it is most recent but also in its consistent coverage of so many countries using similar methodology and the comparable PISA test performance database.

The more skilled workforce leads to increased economic growth and other positive social outcomes. The economic value is calculated as the difference between the GDP expected with

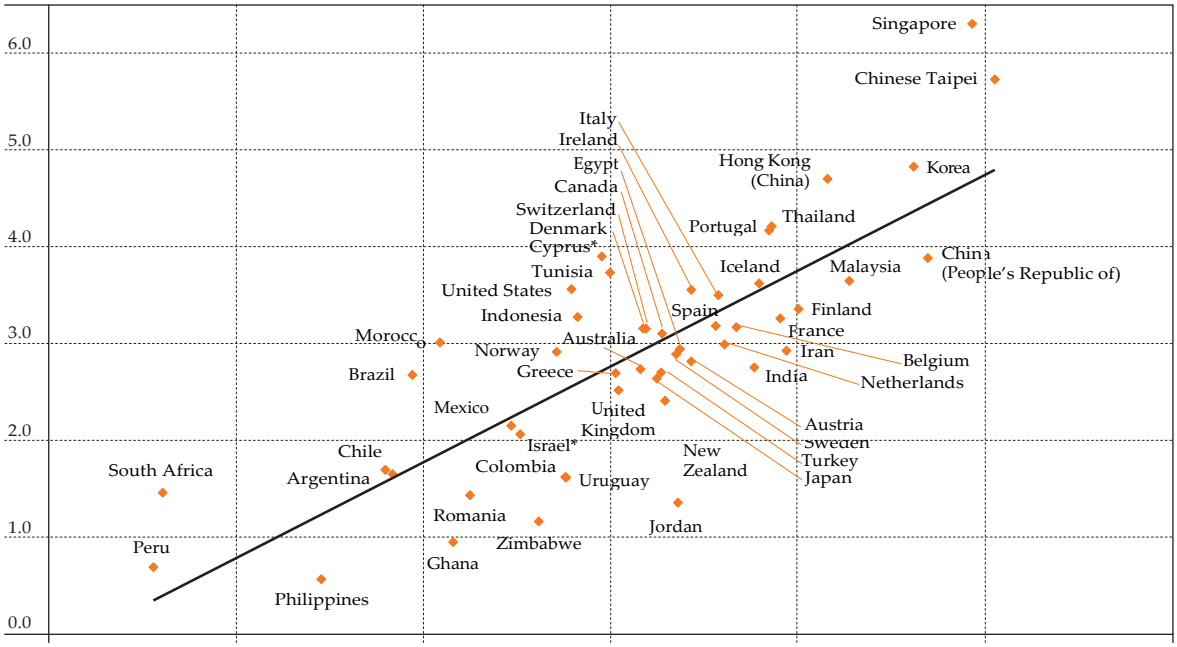
the current workforce and the GDP expected with the improved workforce. It calculated over the expected lifetime of a child born today.

The study is particularly significant for Australia as it models precisely the outcomes that are pursued by the Gonski school funding agenda – greater support for schools that carry the heaviest load of disadvantaged students.

OECD Study Approach

The OECD study builds on earlier research (Hanushek and Woessmann, 2015) showing that growth is directly and significantly related to the skills of the population. Skills are measured by the aggregate test scores on international mathematics and science tests. The conclusion is that a population's knowledge capital, or collective cognitive skills, is by far the most important determinant of a country's economic growth. The OECD study illustrates the relationship between skills and long-run economic growth by plotting annual growth in real per capita GDP between 1960 and 2000 against average test scores (after allowing for differences in initial per capita GDP) and initial average years of schooling. The study finds that countries align closely along the regression line that depicts a positive association between cognitive skills and economic growth.

Figure 30. Knowledge Capital And Economic Growth Rates Across Countries



Source: OECD 2105

The OECD study builds on the finding that improved knowledge capital increases economic growth and reasons that in order to engender inclusive and sustainable growth, any goal must relate directly to populations' skills. Therefore, relevant education and development goals should be phrased in terms of student achievement levels that are consistent with the skills required by the workforce in the future.

The study measures skills based on the achievement of youth on international assessments of learning outcomes. Using data from 76 countries, it focuses on the portion of the population that lacks the basic skills needed for full participation in today's global economy. The adopted definition of basic skills is the acquisition of at least Level 1 skills (420 points) on the OECD

Programme for International Student Assessment (PISA). This level of skills corresponds to what might today be called modern functional literacy.

Based on that framework, a clear and measurable development goal is that all youth acquire basic skills. This goal, which directly promotes inclusive development, incorporates two components:

- full enrolment of youth in secondary school, and
- sufficient achievement for economic and social participation.

By measuring progress on a consistent basis across countries, this goal can be used to direct attention and resources toward sustained economic development.

Global Findings of OECD Study

- Over time, the knowledge capital of the nation improves as better-educated youth enter the labour force.
- The more skilled workforce leads to increased economic growth and other positive social outcomes.
- The economic value of the policy change is calculated as the difference between the GDP expected with the current workforce and the GDP expected with the improved workforce, calculated over the expected lifetime of a child born today.
- The results would be stunning for all countries –including high-income OECD countries. While most of this latter group of countries have achieved nearly universal access to secondary schools, all continue to have a portion of their population that fails to achieve basic skills.
- On average, these countries would see a 3.5% higher discounted average GDP over the next 80 years.
- This is almost exactly the average percentage of GDP higher income countries devote to public primary and secondary school expenditure.
- The economic gains from solely eliminating extreme underperformance in high-income OECD countries would be sufficient to pay for all schooling.
- A great strength of the universal basic skills goal is the contribution it would make to inclusive growth. Within each country, the variation in earnings currently observed would shrink, and many more individuals would be able to engage productively in the labour market.
- The evidence of improvements in achievement over the past 15 years shows that many countries could meet the goal of universal basic skills over the next 15 years. But improvement is clearly difficult, and some countries have even seen their achievement levels fall.
- No substitute for improved skills has yet been identified that offers similar possibilities of facilitating the inclusive growth needed to address the full range of development goals.

OECD Findings – Specific to Australia

Figure 31. Benefits Accruing from Improved Learning and Skills

Modelled Learning Outcome	Economic Value Generated (Billion AUD)*	As % of Current GDP	GDP Increase in 2095	Long Run Growth Increase	Increase in PISA Score
Universal Enrolment in Secondary School and Every Student Acquiring Basic Skills	2015	130%	11%	0.20	10.1
Increasing Average Performance Of Current Students By 25 Pisa Points	5176	335%	29%	0.49	24.7
Attaining Gender Equity Amongst Current Students	796	52%	4%	0.08	4.0
Every Current Student Acquiring Basic Skills	1833	119%	10%	0.18	9.2
Universal Secondary Enrolment at Current Quality Levels	172	11%	1%	0.02	0.9

* Conversion from USD presented in OECD report based on March 2016 foreign exchange rate AUD = 0.75USD

The OECD findings show extremely strong results accruing to the Australian economy from improvements in learning and skills. For example, if there was universal enrolment in secondary school and every student acquired the basic skills specified for 15 year olds (PISA Level 1, Mathematics) then the following results would be anticipated:

- An average additional $27.5 billion in economic benefits each year until 2095 by investing so that every child acquires basic skills by the age of 15 years old.
- The aggregate future economic benefit (discounted for inflation) generated by improved skills until 2095 will be AUD 2.2 trillion. This economic benefit is 130% of current GDP.
- The GDP in the year 2095 will be 11% higher due to the reform.
- The annual economic growth rate (in the long run, once the whole labour force has reached higher level of educational achievement) will be 0.2% higher than it would otherwise have been

In the case of Australia, this model scenario understates the benefits that are likely to accrue from improvements in educational outcomes. This is because it does not capture the benefits that will accrue from improved learning beyond the PISA Skill Level 1.
As an already advanced economy with that is already demanding innovation and improvements within the workplace, Australia is likely to be better represented by a model scenario where the average performance of current students improves by an average 25 PISA points.

The OECD study finds that if Australia were to have an increase in its average PISA score of 25 points, the following results would be anticipated:

- An average additional $65 billion in economic benefits each year until 2095 by investing so that PISA score increases by 25 points
- The future economic benefit (discounted for inflation) generated by improved skills until 2095 will be AUD 5.2 trillion.
- This economic benefit is 335% of current GDP.
- The GDP in the year 2095 will be 29% higher in 2095 due to the reform.

- The annual economic growth rate (in the long run, once the whole labour force has reached higher level of educational achievement) will be 0.5% higher than it would otherwise have been.

7. A Choice for Government –Double Bonus or the Price of Failure

The Gonski Review Funding Package

The Review of Funding for Schooling (Gonski Review) has been the most significant national review of school funding arrangements since the 1970s. The Gonski Review considered the funding needs of students from all schools across the government, Catholic and independent school sectors. It considered the current arrangements for providing Australian Government and state and territory funding to schools, as well as other sources of school income. In addition, the panel reflected on the forms of accountability employed by the schooling sectors, as well as the data required to monitor and assess standards of delivery and educational outcomes.

Gonski - Key Findings and Recommendations

- The panel believes that a significant increase in funding is required across all schooling sectors, with the largest part of this increase flowing to the government sector due to the significant numbers and greater concentration of disadvantaged students attending government schools.
- Funding arrangements for government and non-government schools must be better balanced to reflect the joint contribution of both levels of government in funding all schooling sectors. They must also be better coordinated so that funding effort can be maximised, particularly effort to improve the educational outcomes of disadvantaged students.
- The panel recommends that all recurrent funding for schooling, whether it is provided by the Australian Government or state and territory governments, be based on a new schooling resource standard.

The Gonski final report recognised that national priorities and reforms have also been agreed by all governments through the Council of Australian Governments to progress the National Goals for Schooling. It recognised the significance and need for key policy initiatives including improving teacher quality and school leadership, greater accountability and better directed resources, integrated strategies for low socio-economic school communities, and improving the outcomes of Indigenous students. However, while these reforms may lay a good foundation for addressing Australia's schooling challenges, the final report argued that they need to be supported by an effective funding framework.

School Resourcing Standard

Central to this new framework proposed by the Gonski review is the development of a national schooling resource standard, which:

- forms the basis for general recurrent funding for all students in all schooling sectors
- consists of separate per student amounts for primary school students and secondary school students
- provides loadings for the additional costs of meeting certain educational needs. These loadings would take into account socio-economic background, disability, English language proficiency, the particular needs of Indigenous students, school size, and school location
- is based on actual resources used by schools already achieving high educational outcomes for their students over a sustained period of time

- recognises that schools with similar student populations require the same level of resources regardless of whether they are located in the government, Catholic or independent school sectors
- will be periodically reviewed every four years so that it continues to reflect community aspirations and, in between reviews, be indexed using a simple measure that is based on the actual increase in costs in schools already achieving the relevant high educational outcomes over a sustained period of time.
- The per-student amount plus loadings would represent the total resources required by a school to provide its students with the opportunity to achieve high educational outcomes for their students over a sustained period of time.
- On the basis of the determinations made by the panel for the purposes of the modelling, the results indicated that if these arrangements had been implemented in full during 2009, the additional cost to governments would have been about $5 billion.

The Partial Implementation of School Funding Reform

The final report of the Gonski Review was presented to government at the end of 2011. The Gillard and Rudd governments committed the Australian Government to adopt most of the recommendations including the adoption of a school resourcing standard and joint responsibility towards school funding with state and territory governments. The adoption of the school funding levels as specified by the school resourcing standard were staggered over a six year period with the large increases in per capita funding not occurring until years five and six.

The incoming Coalition government committed to delivering the funding as agreed by the previous national government up to year 4. This left out most of the increases which did not flow through until years 5 & 6.

Without delivering the per capita increases specified by the school resourcing standard for years 5 & 6, there is no fundamental reform of school funding as recommended by the Gonski Review.

The OECD report *Going for Growth* identified Australia as a country where "educational inequalities remain high and gaps are particularly large for minority groups, especially indigenous communities". (OECD 2015) It recognises the significance of the implementation of the Gonski reforms, and lists them as part of the relevant action being taken by the government to address inequitable outcomes:

> ***Improve performance and equity in education****…Children from disadvantaged backgrounds face severe educational and skills shortfalls. Actions taken: …Reform of school funding is underway (the Gonski reform), including introduction of an allocation formula that gives greater weight to socio-economic factors.*

A Double Bonus or the Price of Failure

The most recent international literature makes very clear the Australian problem with inequity in learning is relatively high when compared with the OECD average and a demographically similar country like Canada. There is nothing normal (or inevitable) about the degree of inequity in Australian learning outcomes.

What this report has shown is that for Australia, inequity in learning corresponds with inequity in resource distribution. Indeed, the Australian problem with inequitable distribution of resources across schools is a key feature of Australian schooling. By international comparisons, Australia is an outlier in the way that it distributes significantly greater amounts of resources to its most advantaged schools.

The international evidence cited in this report is very clear – well targeted additional resourcing (for schools and systems that need them) is able (and even necessary) to deliver improved educational outcomes for children.

Meta analyses of international studies has shown that sustained improvement in the level and distribution of funding across schools can lead to improvements in the level and distribution of student outcomes. Of course, money alone may not be the answer. It is clear however that adequate and equitable distribution of resources to schooling provides one necessary condition for improving the overall adequacy and equity of learning outcomes. Put simply, if the money isn't there, schools and systems don't have the option to support strategies that might improve student outcomes.

The Gonski review indeed provided just this requirement in its recommendations for the resourcing of schools – it proposed a transparent funding formula that was needs based and took into account the calibrated need of students and schools for resourcing levels that matched their specific learning needs.

The Australian Commonwealth (as well as state and territory governments) are faced with a clear choice – they can either position Australia to reap the benefits of a high performance and equitable education system or they can allow the country to bear the cost of failure.

Failure to invest in the reinvigoration of the Australian school system (through the full implementation of the Gonski reforms) will impose long run financial costs spanning the entire working life of today's school students.

To indicate the scope of these costs, this study has conservatively estimated the costs of the additional unemployment benefits of those that remain unemployed and added foregone income tax revenues. These alone accumulate to more than $70 billion without allowing for multiplier effects on the rest of the economy. Other known costs include those likely to be incurred from poorer health, higher incarceration rates and general costs associated with crime and social exclusion. All together, these will impose hefty additional direct financial costs on Australian governments and the community.

Alternatively, by investing in schools, Australia stands to do much better than just avoid these direct financial costs. Through effective and targeted interventions to address the needs of the most needy (as specified by the Gonski Review) Australia stands to gain vast economic benefits.

If every student acquired the basic skills specified for 15 year olds (PISA Level 1, Mathematics) then Australia will gain an average $27.5 billion in economic benefits each year until 2095. This amounts to a **future economic benefit of AUD 2.2 trillion** (discounted for inflation) until 2095.

More ambitiously (and of relevance to Australia), an increase in the average PISA score of 25 points, would deliver through improved skills an average **$65 billion in economic benefits**

each year until 2095. This totals a **future economic benefit of AUD 5.2 trillion** (discounted for inflation) until year 2095.

In either case, the scale of the economic benefits will be greater than the current value of Australian GDP – quite possibly more than three times the current GDP value.

The Gonski review did the hard analytical work in diagnosing the key problems in school funding and devising a practical solution that could accommodate the politics that bedevil the school funding agenda.

By providing the required boost in school funding for 2018 and 2019 (estimated by the Parliamentary Budget Office to be an additional $4.5 billion), the Commonwealth government can play its part to support improvements in teaching and learning that will deliver economic benefits running into trillions of dollars over the coming decades.

Investing in education will provide a healthy dividend whose benefits will spread far and wide across Australia. Most significantly, the benefits will also reach the pockets of some the poorest and most disadvantaged individuals and communities. Investing in education means economic growth with greater fairness - it now needs the commitment of the Australian government to make it happen.

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