Schooling Challenges and Opportunities
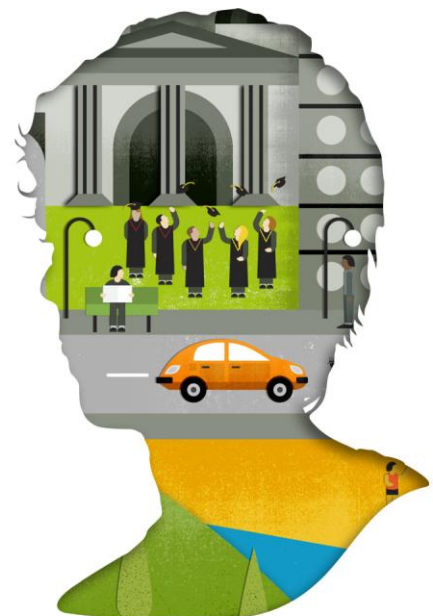
A Report for the Review of Funding for Schooling Panel

29 August 2011

NiLS

Melbourne Graduate School of Education

THE UNIVERSITY OF MELBOURNE

Disclaimer: This report has been commissioned by the Review of Funding for Schooling Panel. The findings, analysis and conclusions expressed in this report are those of the authors and do not necessarily reflect the views or have the endorsement of the Panel.

Contents

Acknowledgements

The Panel conducting the Review of Funding for Schooling engaged a consortium to undertake research and provide advice to inform the Review. The consortium combines knowledge of the education sector, labour market modelling and analysis expertise, and strategy and policy development capability. Its members are as follows:

- The *Melbourne Graduate School of Education (MGSE).* One of Melbourne Universities largest schools, and incorporating the Melbourne Education Research Institute, MGSE is the leading research Graduate School in education in Australia. For this project Richard Sweet of Sweet Group Pty Ltd. worked closely with the Melbourne Graduate School team, most notably to contribute his expertise on international comparisons of educational outcomes.

- The *National Institute of Labour Studies (NILS)*. NILS specialises in research and consulting in the fields of work and labour markets. Renowned for combining rigorous analysis with a continuing concern for the wellbeing of people as workers, NILS' research is regularly used as a key resource by governments, business and interest groups.

- The *Nous Group*. A national management and strategy consulting firm with some 130 staff, Nous' work spans public policy and business strategy advice, leadership development, organisational capability and information management and technology. Within its public policy practice Nous has strong expertise in the schooling, vocational education and training, and higher education sectors.

The work commissioned of the consortium was titled 'mod_Schooling Challenges and* Opportunities' to reflect the focus on diagnosing current performance as well as commenting on potential levers to improve outcomes and equity.   The work was conducted between February and July 2011. Members of the project team have met with a number of educators and policy makers and we are grateful for the time and advice we have been given. We are particularly indebted to the people consulted for our four regional case studies.

The consortium would like to acknowledge and thank Professor Ben Levin and Professor John Hattie for their invaluable comments on earlier drafts of this report.

We also thank the officers of the Department of Education, Employment and Workplace Relations who have been supporting the panel in this important work.

1 Summary

Australia's school system is among the better performing systems in the world. Taken as a national average, our children at age 15 are scoring relatively well on mathematics, literacy and science tests compared to their counterparts around the world. Indeed some of our schools would rank in the 'world's best' category on this criterion of performance.

This overall result for Australia is not as strong as it has been in the past, however, and it masks a wide degree of variability within our education system. That variability relates to educational outcomes, and to equity – that is, the degree to which people from all backgrounds are able to realise their potential in school.

This report reflects the contributions and analysis of the three partners in this project: the Melbourne Graduate School of Education, the National Institute of Labour Studies (NILS) and consulting firm the Nous Group. It aims to do three things:

- To understand what is contributing to good or bad performance by our schools and why

- To understand the degree of 'lift' needed in our schooling system and why this is important

- To offer advice on what we know works to lift school performance, which in turn suggests where resources and effort should be concentrated in the future.

Before going further, it is worth emphasising just how different Australia's school system is compared to other countries. First, it is divided into three distinct sectors, all of which have a significant market share (approximately 63% government, 21% Catholic and 16% independent). It is particularly unusual to have such a large private ('independent') sector. Second, Australia's subsidisation of the fee-charging, autonomously-run independent school sector with public funds is unique across OECD countries. Third, Australia has a robust and competitive market for school education – the most competitive in the world by one measure – whereby parents with a reasonably high level of disposable income can exercise wide choice. In most other jurisdictions there are much more strict zoning rules. Fourth, although we do not 'stream' students as some other systems do, there is a high degree of academic selectivity in Australia's systems. Those schools that can attract high-performing students do so.

These are all important features to understand in determining why Australia does well, for what types of students it does not do well, and also why Australia is starting to fall behind.

Why is Australia doing well on average?
The answer is: because there is a sizable proportion of schools that are producing very good results, a large number of schools that are not, and a group in the middle that helps balance this out. This is not a glib point. It goes straight to the heart of the equity issue, as there is a strong relationship between socio-economic status (SES) of a school population and its educational results.

Such a relationship is relatively common; it is a widely-observed phenomenon that reflects a range of advantages enjoyed by children with better-resourced parents. In general, higher-income parents are better educated themselves and are able to provide a home environment with books, computers, space to study and hands-on assistance with homework. They can combine high aspirations, cultural capital and social networks with direct investments in education to the advantage of their children[1].

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[1] See for example Bourdieu, Pierre (1972) *Outline of a Theory of Practice,* Cambridge University Press

What is striking is the strong correlation between the performance of a child and the average SES of all the students that attend his or her school. In other countries, including 'high equity' countries like Finland and Canada, such an effect would not be evident. In Australia it is quite pronounced. The NILS modelling used in this report provides compelling evidence of this and shows the gain in reading scores of moving an under-performing lower SES child to a higher SES school, compared to their scores should they remain in a low SES school.

It might be expected that the subsidisation of places in higher socio-economic schools or the awarding of more scholarships would reduce this problem. This would be the case for the individual student who moves but not for the system, because what happens in Australia's schooling market is that the majority of schools – independent, Catholic and a proportion of government schools – can select who they enrol. And given a choice, schools will take children who have a strong academic record. The movement of a bright child from a low SES school to a higher SES school will undermine the quality of the remaining student body in the low SES school. The gain to the child who moves is offset by a loss to his or her fellow students who stay behind. This is how the process of SES and performance stratification is reinforced.

Put simply, if the schools that can select the students who are likely to do best are allowed to, the schools that cannot choose (mainly the government sector schools) are left with a student body that is less supportive of good performance for each individual student who remains.

Our research confirms that if you are unable to move to a 'good' school (as is the case with a lot of disadvantaged children) you are likely to 'default' to your local government school. If that school has a lot of other disadvantaged children, it will be very difficult for you to perform well, and if you are unable to improve your academic performance (regardless of your academic potential) you are stuck. This can lead to a concentration of disadvantaged children in disadvantaged schools that has an adverse impact not just on the students themselves, but on communities who are bereft of a decent local affordable school.

If you are able to improve your performance, the chances are your parents will seek out a 'better' school where the peer group is stronger academically and where there are more resources to support your educational development. This school may be a select-entry government school or – as many people choose when their child is ready for secondary education – a non-government school. The Melbourne Graduate School of Education provides rich data in this report on how these dynamics play out in four regions of Australia.

Poor performing schools have compounding internal factors – they tend to experience a lack of staff renewal, low morale, low expectations, lack of incentives and/or capacity to attract high quality leaders or teachers.

Some communities do not have access to quality schooling - residualisation of schools becomes both a symptom and a cause of wider social and economic exclusion of communities, potentially creating a downward spiral.

School performs poorly

School closes or continued poor performance

Mid-high SES students leave

Funding declines with enrolments and average cost increases

Some students are constrained in their choices due to economic, social or geographical factors and do not leave.

Students in rural/areas, low SES students and low performers – these students do not have access to higher performing schools due to fees, selective enrolment practices (e.g. based on academic performance, religious preference, etc) or location.

Poor performing schools suffer a 'double hit' when mid-high SES students leave – since funding is tied to enrolments, average costs increase as schools lose enrolments. This is particularly difficult in regional and remote areas.

Figure 1: The compounding effects of concentrations of disadvantage

Why do we imply that the 'better' school may not in fact be better? Certainly it is a better option for the child in order to overcome disadvantage and reach his or her potential. But our data shows that there is not necessarily a lot that the schools themselves are doing that is 'better'. The high performing schools tend to be those that attract the most successful students. In other words, school 'quality' is probably better expressed as 'student quality at that school'. Once we take account of the student quality and the other resources of the school, government schools do as well or better than private schools. This important result, from the careful analysis of PISA data, means that the greatest 'value for money' is often found in schools that do not get the highest test scores. They do, however, use their resources well to increase the performance of their students. Accurate measures of school quality, which go well beyond the test scores of their students, are essential if we are to make the most of our educational dollar and enable parents to make properly informed choices.

This in turn has profound implications for how we think about how to improve the school system.

What is the degree and type of 'lift' needed in our schooling system and why is this important?
This report proposes that Australia should aim for more consistently high performance across all schools - regardless of school sector - with improved equity of outcomes.

If Australia stands still it will fall behind and we can see this happening already. The education systems that are starting to outperform ours are those of Shanghai, the Republic of Korea, Hong Kong and Japan. Meanwhile several Scandinavian countries and Canada remain out ahead. These countries demonstrate that we can do better. This means lifting the performance of the system as a whole and, in particular, reducing the overly-large proportion of under-performing students. If we shorten our underperforming 'tail' by 10%, we will achieve an increase in performance of five points. This would bring us half-way to closing the performance gap with Canada – a logical benchmark given the relative similarity of our respective cultures, demographics and political systems.

Figure 2: PISA 2009 Reading results - outcomes and equity

Improving performance in our view also means improving retention and lifting Year 12 completion rates. The latter have stagnated compared both to global trends and to the number of people receiving Vocational Education and Training (VET) qualifications. To succeed in employment, school graduates of the future will need to have a strong foundation in mathematics and literacy, and be adaptable and resilient.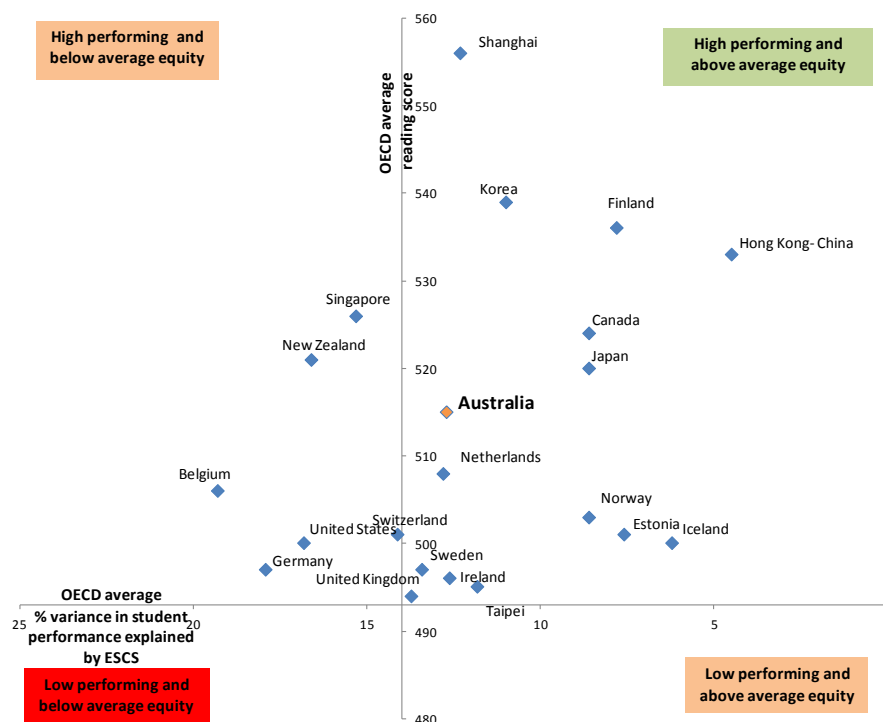 They will need analytical and problem-solving capabilities - higher order interactive skills, including strong capabilities to work skilfully with peers, customers and suppliers from varied backgrounds. We do not argue in this report that VET qualifications are not valuable. Nevertheless the best strategy is that children complete their school education before moving on to post-school qualifications. This will maximize their options for the future and allow them to continue to learn and adapt.

Completion of Year 12 also opens the way to enrolment in university. Higher education delivers better employment and higher incomes. It is also correlated with better health, more active participation in civic activities, and a lower likelihood of criminal behaviour. Moreover, the benefits of higher educational attainment flow into the next generation.

Parents don't just look to schools to teach their children the basic curriculum to function in life and to secure good employment. They rightly see schools as places that help shape the values and outlook of a person. This means that, notwithstanding the SES effects noted above, factors such as school ethos and culture, as well as the expectations that teachers and parents have of children (and the expectations they have of themselves) are vitally important in determining the success of a student in school.

We therefore need to think of schools as places where children can be helped towards realising their potential as students, citizens and contributors to the economy and society.

This is a particularly difficult but important challenge when it comes to thinking about those with fewer advantages in life. While we focus in the report on socio-economic disadvantage, there are other types of disadvantage that need to be taken into account (e.g. disability, remoteness, speakers of English as a second language, Indiginity) when thinking of how to realise full potential. We touch on these in the report. While many of these are correlated with student SES they add another layer of complexity, especially in considering how to address impediments to learning at the individual level.

How can Australia improve its performance and equity? What works?

There are two underpinning principles about student success at school that emerge from the research. Putting aside SES background and other particular characteristics:

1. The best predictor of a child's future performance is his/her past performance

2. The greatest influence on performance is what happens in the classroom - that is, the effectiveness of teaching.

In other words, a child will continue to perform as they always have unless a positive influence is exerted in the classroom.

Also important to note is that:

3. What happens in the classroom is conditioned by school ethos and how it is led, none the least because good teaching and learning requires an orderly learning environment

4. A school's success is influenced by its standing in the community (reputation) and its resources (including its market power).

The most profound conclusion we reach after our extensive and intensive analysis is that there is a well-understood set of ingredients that contribute to student performance and widen the opportunity for children of all backgrounds to achieve their potential. This is a crucially important insight. The key to

improving Australia's education system is not doing a lot of new things, but rather it is applying what we know works in a comprehensive, integrated and sustainable manner.

'Comprehensive' in this context means a whole-of-system approach that takes the focus away from sectors and puts it onto schools. Our data suggests that there is potential to improve the 'value-add' offered by schools (the lift in performance over and above what would be expected from prior performance) in all sectors. And while schools with under-performing students are concentrated in the government sector, for reasons outlined above and detailed in the report, such schools are found in all sectors. A comprehensive approach transcends the sectoral differences and focusses on school differences.

It also means thinking about other external contributors to a student's or school's success. What can the local community do not just for a school but for all schools in a region? What other services or support do government agencies (other than education departments) provide, and what decisions do they make which affect schools? What can be done to support parents to engage positively in their child's learning, not just during the school years, but beforehand?

'Integrated' means that each ingredient for success – or each lever for change – must be used in concert with others. Research shows that an innovation can bring an impressive lift in performance that lasts for a while, but the effect declines after a few years. The charter school initiative in the United States, for example, which allowed greater individual autonomy for how schools were run, created a great deal of excitement initially and seemed to have a highly positive impact. But educationalists are generally ambivalent about their impact on performance over time. The results from students attending charter schools have not been consistently stronger than those in US government schools. The risk is to rely on one or two 'silver bullets' to deliver a change – for example, introducing greater autonomy – rather than engaging other levers at the same time.

'Sustainable' means that reforms need a chance to work. Dealing with the challenges of lifting performance is not about switching something 'on' but about building capability, improving the learning environment and nurturing a positive school culture. To be sure, progress has to be tracked closely, but deep-seated changes need a chance to be embedded and to work. While innovation at the local level is crucial, we need strong and stable anchors that keep the system focussed on what is proven to work.

The specific levers for improvement that we highlight in our report are:

- Improving the quality of teachers and the practice of teaching – this means attracting and retaining a strong professional teaching workforce, guiding them well in the best instructional methods and supporting them to carry out their responsibilities.

- Ensuring the right external standards and governance – setting goals and using the right data is important. Also, supporting autonomy over deployment of resources for high-performing schools, but limited autonomy over student selection.

- Promoting regional-level collaboration and networked-schools – it is important to engage the community and support inter-school linkages to mitigate the effects of competition between schools and 'lift all boats' in the region.

- Supporting disadvantaged students – targeted assistance and support (financial, practical and emotional) for those with particular needs, to complement quality teaching of those who can most benefit.

- Investing in underperforming schools where there is a concentration of disadvantage – addressing the downward spiral of schools by ensuring a safe and well-functioning learning environment, with a positive ethos. This includes actively encouraging high-performing schools to take in cohorts of under-performing students.

- Strong leadership to drive school improvement – school leaders are key to ensuring high standards of instruction and a culture oriented towards capability-development among teachers and students. They also play an important role in engaging the community to support school improvement.

What does this mean for future school funding?

In the regional case studies conducted for this project, a strong theme emerged that more money for programs is not always the preferred answer. Teachers in struggling schools said that to do better, they needed more time to engage with parents and with their peers. (We note that this would still entail a cost to the system, but their point was the additional remuneration was of relatively less value than reduced teaching hours). More generally teachers' non-salary conditions appear as or more important as an incentive than promises of increased remuneration. Principals felt split between providing instructional oversight, fulfilling managerial responsibilities and engaging with the community, leading to a call for more leadership positions or support to carry this load.

In terms of building infrastructure, schools acknowledge that they have recently received a valued injection of funding through the Building the Education Revolution. Moreover, there are positive funded initiatives in place being pursued by individual states or sectors to help disadvantaged students or encourage those who are at risk of leaving school to stay engaged in learning. COAG has agreed to put a focus on improving teacher quality, targeting core literacy and numeracy skills and assisting lower SES school communities. These are all the right areas of focus and deserve continued investment.

The challenge of comprehensive, integrated and sustainable education system improvement therefore starts with:

- Maintaining current areas of focus with some additional investments to further enhance or embed these reforms – efforts to improve school leadership skills, teacher quality and instructional methods are prime examples. Additional investments would possibly take the form of expanding training and teacher support and providing more staff so that teachers and leaders have more time for planning, reviewing and engaging with others.

- Re-directing resources from elsewhere – while controversial, we do need to question the extent to which public funds should continue to subsidise those already well-resourced selective schools that are not providing 'value-add' in terms of student performance. In our view there ought to be some pressure on schools to take on more under-performing students and demonstrate their quality through student performance over and above what would have been expected from past performance. This may mean restructuring some or all of the public subsidies so that they are retrospective and 'reward-based'.

- Investing in elements that create the 'glue' for a systemic approach and which address equity issues most directly – to transcend sectoral approaches and mitigate the effects of our competitive school market, we argue that consideration be given to regional community bodies whose responsibility is to support performance improvement of all schools, including through collaboration and joint initiatives. This would require new funding. We have also highlighted the need for targeted investment (as part of a set of integrated reforms) in infrastructure to support a) data-driven instructional methods and b) improved school amenity for schools with concentrated disadvantage.

We commend the Government for commissioning this review and the panel for ensuring that its own findings are firmly based in evidence and are not focussed on 'quick fixes'. We share the desire to capture this opportunity to achieve an effective and enduring lift in Australia's performance so that it improves its position among the better and most equitable schooling systems in the world.

2 Australia has a high performing schooling system compared to the rest of world, but there are a few worrying trends

Australia has a highly performing school system, with Australia's 15 year olds scoring significantly higher than the OECD average in reading, mathematics and science. However, while in 2000 only Finland significantly outperformed us in reading literacy, Japan in mathematics literacy, and Korea and Japan in scientific literacy, there are now at least four overseas education systems that outperform us in each discipline.

2.1 Performance is high, but we are starting to fall behind in reading and mathematics

Australia participates in the PISA survey, an international survey administered by the OECD every three years, with the most recent survey being conducted in 2009. The survey tests a sample of 15 year old students in reading, mathematics and scientific literacy. The OECD average was originally set at 500 points, with approximately two thirds of students in OECD countries scoring between 400 and 600 points.[2] (See Appendix A.1 for a discussion of alternative international benchmarks).

Australia scores on average significantly higher than the OECD average in reading literacy, with a mean score of 515 compared to the OECD average of 493. The countries scoring significantly higher than Australia in 2009 were: Canada, Finland, Singapore and Korea. Shanghai and Hong-Kong, which are assessed as separate systems, also achieved higher average scores than Australia (Figure 3).

In mathematics Australia scored significantly higher that the OECD average, with a mean score of 514, compared to the OECD average of 496. However, there are seven countries that significantly outperform us: Canada, Japan, Switzerland, Finland, Chinese Taipei, Korea and Singapore, and the schooling systems of Shanghai and Hong-Kong. The Netherlands, New Zealand, Belgium, Germany, Estonia and Iceland all perform at a similar level to Australia (Figure 4).

Australia scored significantly higher than the OECD average in science, with a mean score of 527 compared to the OECD average of 501. Only two countries, Singapore and Finland, significantly outperform us in this discipline, along with the schooling systems of Shanghai and Hong Kong. Japan, Korea, New Zealand, Canada, Estonia, the Netherlands, Chinese Taipei, Germany and Switzerland all perform at a similar level to Australia in science (Figure 5).

The relative performance of boys and girls in Australia is similar to that of other countries within the OECD. While girls outperform boys in reading literacy, the results are reversed for mathematics literacy, and there is no significant gender-based difference in scientific literacy scores.

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[2] OECD (2010), *PISA 2009 At a Glance*, OECD Publishing http://dx.doi.org/10.1787/9789264095298-en
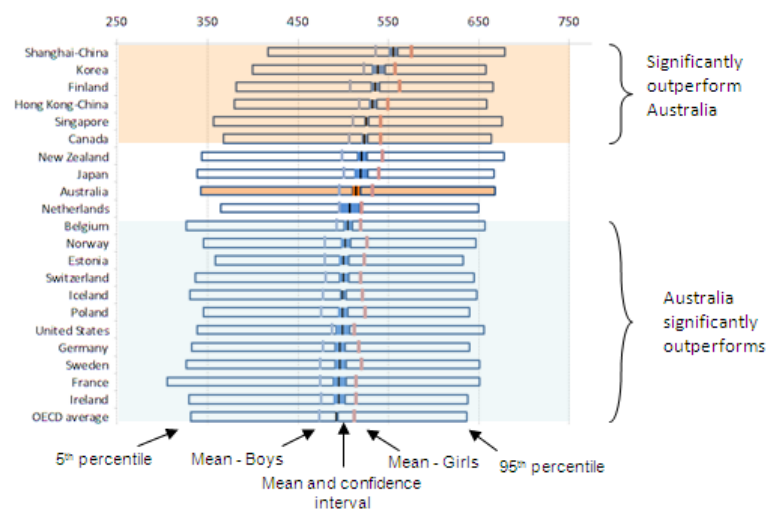
Figure 3: PISA 2009 Reading literacy scores
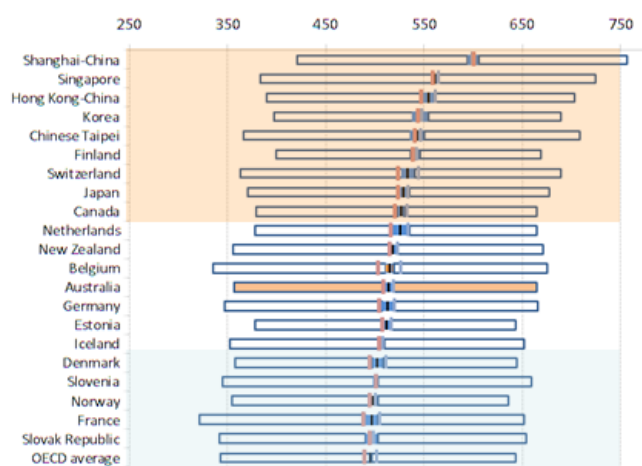
Figure 4: PISA 2009 Mathematical literacy scores
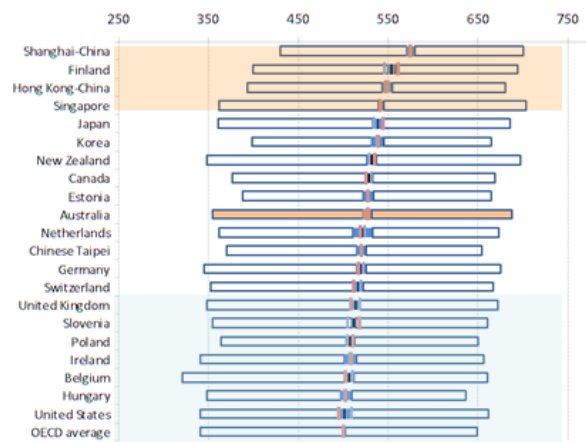
Figure 5: PISA 2009 Scientific literacy scores

While Australia performs quite well in relation to the OECD average and to a set of comparable countries, our performance in reading and mathematics has declined since 2000 (see Figure 6). Australia is one of only four OECD countries to have experienced such a decline in that period, with the others being Ireland, Sweden and the Czech Republic.
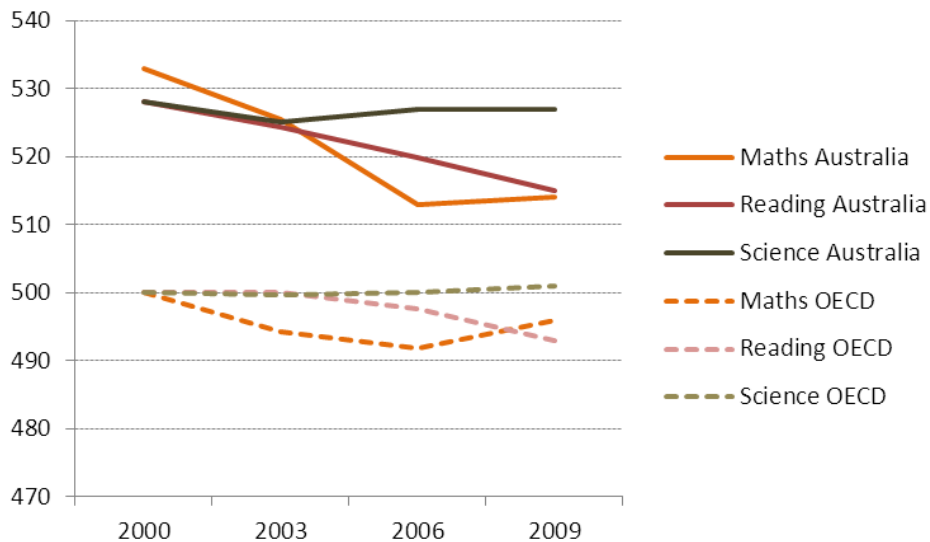
Figure 6: Australian PISA scores from 2000 to 2009

The underlying cause of this decline in performance is not clear, and we do not know of any satisfactory theories. What we do know is this decline has been consistent across all students, as we have seen falls at both the upper and lower ends of the performance spectrum (i.e. the 10th and 90th percentiles). We also know that, while the observed decline in reading performance was 13 points, it would have been as much as 20 points had the socio-economic composition of the population not improved during this period[3].

In short, Australia's performance over the past decade should have improved due to the increased wealth of the country, but it has in fact gone backwards. This is during a time when the performance of other countries and systems has improved significantly (see Box 1 for Lessons from Singapore).

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[3] OECD *PISA 2009 Results: Learning Trends. Changes in Student Performance since 2000 Volume* V, Table V.2.7. We will discuss the relationship between socioeconomic status and education performance later in this report.

Lessons from Singapore

In less than half a century Singapore has transformed itself from a small, poor, tropical island to a global hub of trade, finance and transportation. The education system has also transformed itself during this period, from being basically non-existent to a world leader.

While Singapore has transitioned through a number of different reform stages, there are many elements of the current system that Australia can learn from.

Commitment to equity and merit

Singapore has focussed on reducing both social and economic gaps. In education this means extensive support for children that require it. Children are screened through tests at the start of first grade. Children that need support are then provided with daily systematic intervention by teachers in small groups (8-10 students) in learning support programs so that they do not fall behind.

This focus on helping lower achievers is continued throughout the system, there is a focus on 'levelling up' whereby those in the lowest stream (subjects are divided in streams) are provided with very high quality training. This focus on assisting poor performers, and the multiple pathways built into the system, ensures that 'late bloomers' reach their potential.

Sophisticated human resource management

High quality teachers and school leaders are the cornerstone of Singapore's education system, and are the main reason for high performance. Building human capital is achieved through a number of levers:

- Recruitment: Prospective teachers are selected from the top one-third of secondary school students. As well as academic ability a commitment to the profession is essential, with candidates being selected by a panel of current principals.

- Training: All teachers receive training in the Singapore curriculum at the National Institute of Education, where there is a strong focus on pedagogical content.

- Compensation: Salaries are monitored to ensure teaching remains attractive to new graduates. Teachers can also receive performance and retention bonuses.

- Professional development: Teachers are entitled to 100 hours of professional development each year. Much of this is school based, and led by staff who identify teaching-based problems in a school.

- Performance appraisal: Teachers are assessed annually by a number of people against 16 different competencies.

- Career Development: There are three distinct teaching career paths: master teacher, specialist in curriculum or research, or school leader. Each path has a well-defined career path. After three years teachers are assessed to see which career path is most suitable.

- Leadership selection and training: Young teachers are continuously assessed for their leadership potential, and given opportunities to demonstrate and learn leadership skills. A comprehensive screening process is then used to select potential leaders, who then undertake six months of full time executive leadership training.

Adopted from: OECD (2011) Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States, OECD Publishing Paris, pg. 159-175

Box 1: Lessons from Singapore

2.2 The level of underperformance is greater than that of many similar countries

As well as raw scores, students are classified as being in one of six proficiency levels, with those below Level 2 being classified as lacking the PISA baseline proficiency. For example, in reading literacy this means that the students "lack the essential skills needed to participate effectively and productively in society."[4] Whereas in mathematics it means they can perform simple mathematical functions at best.

In reading, mathematics and science, Australia's 'tail' of low performers (those scoring below Level 2) in PISA 2009 was relatively small when compared to the OECD average. However, there are a number of similar countries that have significantly fewer underperformers in their spread of educational outcomes across the survey samples.
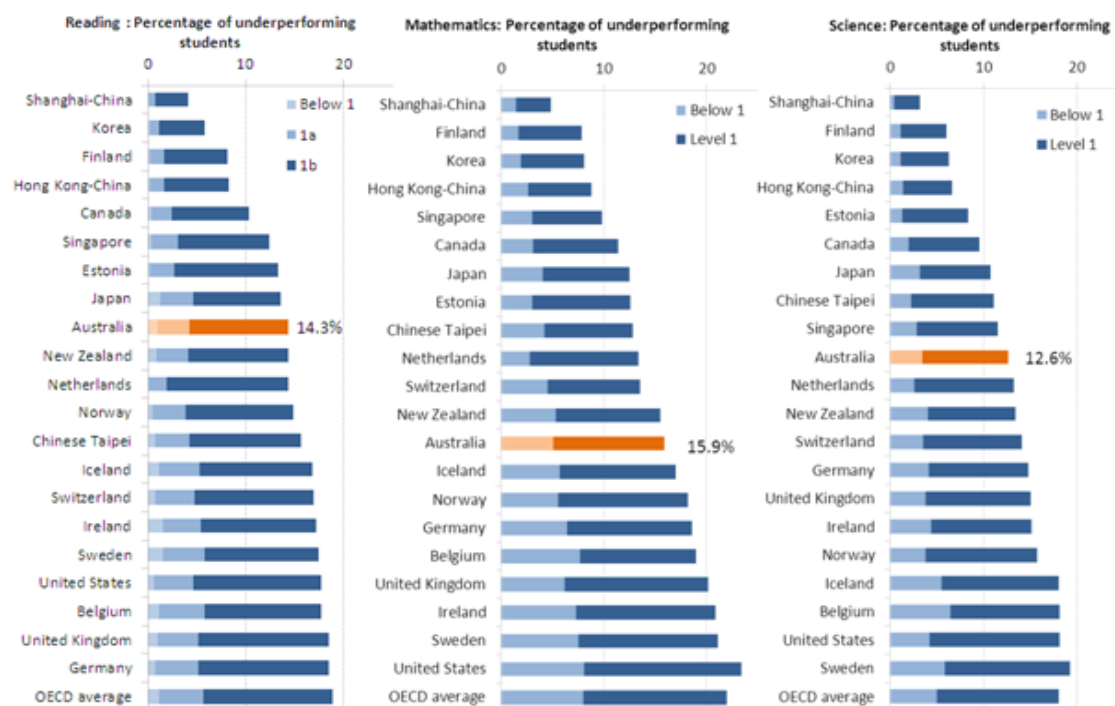
Figure 7: PISA 2009 - Percentage of underperforming students

In all countries underperformance is more concentrated in students with lower socio-economic backgrounds. In Australia, most lower socio-economic status (SES) students are concentrated in government schools, but it is important to note that underperformance is apparent among students of different backgrounds and in schools of all types (more details on the Australian results and how they break down can be found in Appendix A.2.3.).

The change in distribution in Australia's performance between 2000 and 2009 (Figure 8) shows two distinct patterns. While we have noted that the decline in reading and mathematics has been uniform across all bands of performance, with reading this decline is more evident (on an absolute basis) at the higher end (i.e. 90th and 95th percentile performance). For mathematics, the decline is more evident at the lower end of achievement (i.e. 5th and 10th percentile performance).

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[4] OECD (2010), *PISA 2009 at a Glance*, OECD Publishing, pg 12

Figure 8 also shows a comparison with Canada's current (2009) distribution (see Box 2 for Lessons from Ontario). The average score in Canada is significantly higher than in Australia in reading and mathematics literacy. However, Australia's top performers (90th percentile and above) are equal to those of Canada for reading and mathematics, and higher for scientific literacy.
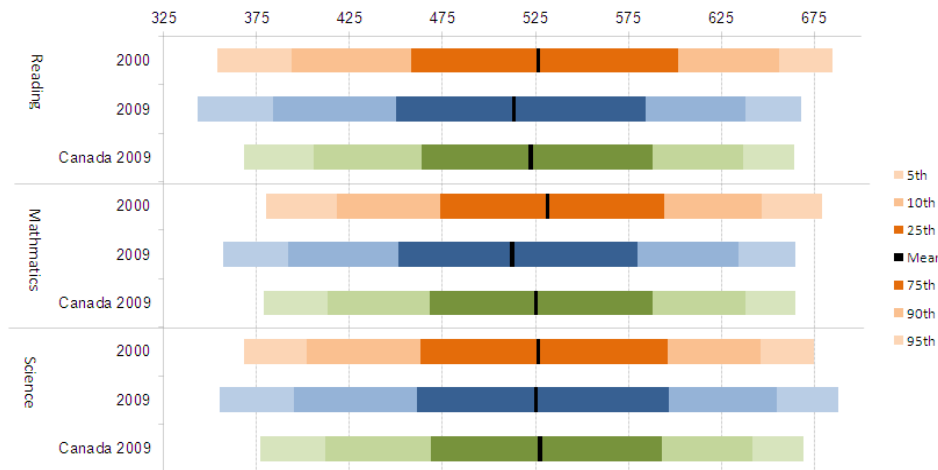
Figure 8: Australia's PISA distributions, 2000 and 2009

To lift overall performance in Australia we need, in particular, to shorten this tail of underperformance – that is, reduce the number of students who aren't performing at a satisfactory level. If we are able to reduce the level of underperformance to that of Canada, while maintaining or improving the level of performance at the middle and higher levels, we will be on the way to regaining our place at the top of the education tables.

Lessons from Ontario

During the past decade Ontario has been through a significant period of education reform, which has resulted in its education system quickly becoming one of the world's best. While the reform had many elements, the focus on improving the quality of teaching is an important one, and is particularly relevant to Australia.

When the McGuinty government was elected one of its earliest reforms was to launch the Literacy and Numeracy Secretariat, which was set up to drive improvements in the class room practices of all teachers. Seed money was put into the field to encourage local experimentation and innovation, which sent a strong signal that teacher-generated solutions to weaknesses in reading and mathematics performance were likely to be more successful than solutions imposed from above.

The fact that teaching has historically been a respected profession in Canada, and continues to draw its candidates from the top third of secondary school graduates, meant that the government had a solid basis for believing that its trust would pay off.

Ontario has paid special attention to leadership development, especially for school principals. In 2008 the government initiated the Ontario Leadership Strategy that spells out the skills, knowledge and attributes of effective leaders. Among the elements of the strategy is a strong mentoring program that has now reached over 4 500 Principals and Vice Principals, and a new province-wide appraisal program for school leaders.

Adopted from: OECD (2011) Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States, Paris, pg. 76-77

Box 2: Lessons from Ontario

2.3 Other OECD countries are increasing their numbers of high school graduates whereas our Year 12 attainment rates are stalling

Compared to the OECD countries in the period from the late 1980s through to 2000, Australia's rate of participation in post-compulsory schooling was high. This translated into relatively high levels of attainment of Year 12 qualifications. However, the growth in Australia's rates of school completion has stalled since 2000, while the trend in the rest of the OECD has continued upwards.

Depending on how it is measured, post-compulsory educational participation in Australia is either below or at best equal to the OECD average. Australia's post-compulsory participation rates are better than the United Kingdom's and about the same as Canada's, but are exceeded by other countries with comparable socio-economic structures: Estonia, Finland, Iceland, the Netherlands, Norway and Sweden (see Appendix A.2.2 on a discussion regarding which countries are most comparable to Australia).

The National Partnership Agreement on Youth Attainment and Transitions agreed to by COAG set a target of 90% of 20-24 year-olds attaining Year 12 or a Certificate II by 2015, and 90% attaining Year 12 or Certificate III by 2020. While we are currently on track to meet these targets, Figure 9 shows that most of this growth has been achieved through increases in Certificate III qualifications, with Year 12 attainment rates being largely flat over the past decade (except for a notable increase in 2009 due to the global financial crisis). Appendix A.3 has a more detailed discussion on attainment rates and Australia's performance internationally.
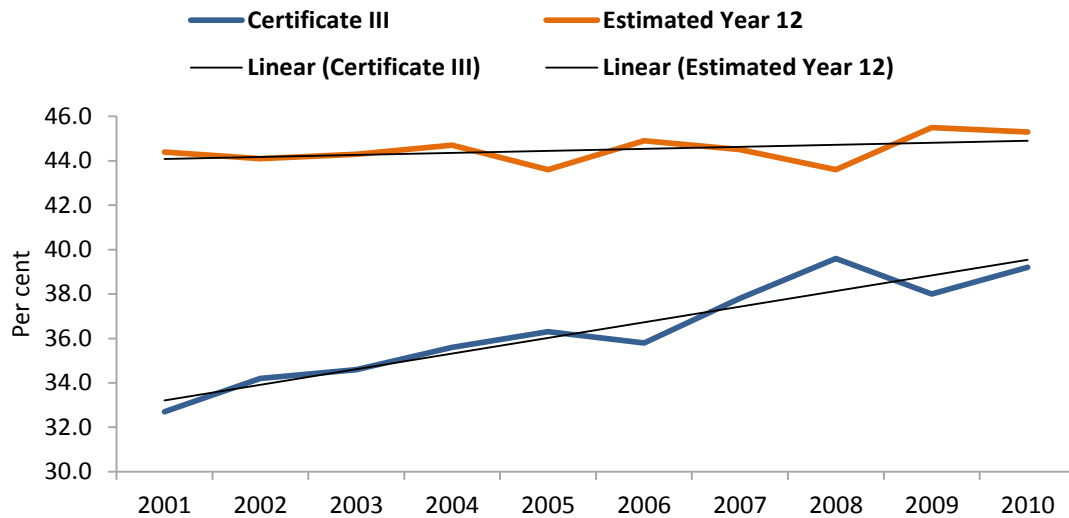
Figure 9: Certificate III attainment and estimated Year 12 attainment, 20-24 Year-olds, 2001-2010

We do not dispute the importance of alternative educational pathways and offering students alternate ways to achieve a Year 12 equivalency. Indeed, the introduction of more varied means by which to keep young adults engaged in education and training has been crucial to helping those most at risk of falling into unemployment and social exclusion. Nevertheless, Australia should not lose sight of the importance of lifting Year 12 attainment rates if we are to remain internationally competitive. As we will discuss in Chapter 4.1, there are real economic benefits to individuals for completing Year 12. While these benefits may not be significantly different than those gained from completing a Certificate III or IV, the increased likelihood of going to university does. Having more students finishing school who are university-ready will be important also for maintaining our competitive advantage as a knowledge-based economy.

2.4 We have seen growing inequity in Australia and our school system could do better in addressing this

In commissioning this report, the Review Panel identified the equity of schooling outcomes as of keen interest and concern[5].

Australia has enjoyed a period of unprecedented economic growth, with consistently strong annual GDP growth rates since 1993 (until the impact of the Global Financial Crisis in 2008). However, during this time we have also seen an increase in Australia's Gini coefficient – a common measure of relative income inequality – from .303 in 1997-8 to .331 in 2007-8[6]. Notwithstanding Australia's effective income redistribution mechanisms and welfare protections, over this period of 20 years the share of the bottom third of receivers of income fell by 6.5%.

Using a different measure that takes a broader view of inequity, Kostenko et al concluded that "20 to 30 per cent of the Australian population aged 15 years and over experience what we refer to as 'marginal exclusion' at any given point in time. Four to six per cent are 'deeply excluded', and less than one per cent are 'very deeply excluded'."[7]

Education has the potential to improve equity by reducing the impacts of disadvantage on educational outcomes. Indeed, the provision of universal, openly accessible government schooling in Australia is predicated on providing equal opportunity to gain a good education.

The simple fact of providing access to a school is not enough to address all the facets of disadvantage. It has long been established that there is a significant relationship between the socio-economic background of students and their educational performance at school. The equity of a schooling system is therefore typically measured by the impact that a student's socio-economic background has on their schooling outcomes (that is, in this context, their PISA results). The less evident the effect of a student's background on his or her schooling outcomes, the more equitable the school or schooling system is considered to be.

So how does Australia rate compared to other countries in terms of equity in education? The PISA equity measure that is favoured both by OECD experts and by ACER, which manages PISA on behalf of the OECD, is the strength of the socio-economic gradient, or the *percentage of the variance in student performance* that is explained by the PISA index of economic, social and cultural status (ESCS)[8]. This index is constructed from measures of the occupational status of parents, the educational level of parents, and home possessions.

Using this measure, the most reasonable conclusion to draw about the relationship between socio-economic status and student performance in Australia is that it is at least equal to the OECD average. In

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[5] DEEWR (2010) Review of School Funding: Emerging Issues Paper, pg 5: defines equity in the follow terms: "equity should ensure that differences in educational outcomes are not the result of differences in wealth, income, power or possessions".

[6] ABS data. The Gini coefficient measures income inequality over a whole society. If all income went to one person (maximum inequality) the Gini coefficient would be 1. If all income was shared equally (maximum equality) the Gini coefficient would be 0. Therefore a coefficient that is closer to 0 suggests greater income inequality in a society. The most common values are between 0.3 and 0.5.

[7] Kostenko Weiping, Scutella Rosanna and Wilkins Roger (2009) Estimates of Poverty and Social Exclusion in Australia: A Multidimensional Approach, Melbourne Institute of Applied Economic and Social Research, The University of Melbourne, Brotherhood of St Laurence.

[8] The Australian national report for PISA 2009 refers to the index as "the key proxy for equity in PISA". (ACER (2010) Challenges for Australian Education: Results from PISA 2009, pg. 277). An alternative measure of equity – the slope of the socio-economic gradient – is at times used by some commentators, but is not favoured by PISA experts.

other words, Australian schools do an average job of ensuring that socio-economic disadvantage doesn't affect educational performance and outcomes.

Nevertheless, other countries of a similar socio-economic status and with similar values are more equitable than Australia on the OECD PISA scale. In Iceland, Finland, Canada, Estonia, Japan and Norway the impact of socio-economic status upon performance is significantly lower than the OECD average (Figure 10).[9]
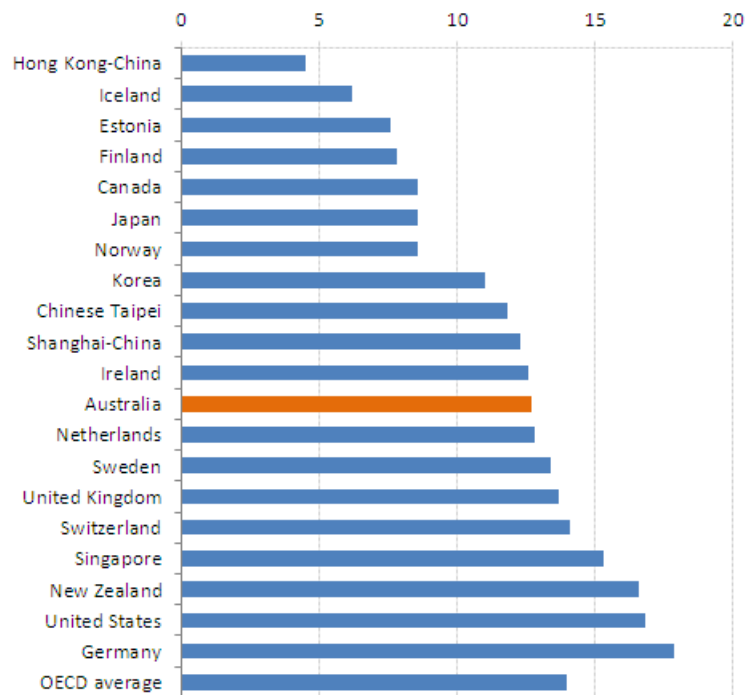
Figure 10: Impact of socio-economic status on reading outcomes (percentage of variance in reading score explained by ESCS)

Importantly, disadvantage in education needs to be seen as a function not only of the socio-economic characteristics of *students*, but also of the average socio-economic characteristics of their *schools*.

When compared to similar OECD countries, Australian schooling is characterised by a relatively stronger concentration of disadvantaged students in disadvantaged schools. That is, in Australia there is a higher proportion of students in schools where the average student socio-economic background is below the national average.

Australia also has a relatively low proportion of students who attend schools with average or mixed socio-economic characteristics (see Table 19, appendix A.3.6). This is an important point for understanding why some schools seem to do better than others, and what needs to be done to lift performance, and where such efforts should be focussed.

The distribution of Australian students (Figure 11) can be summarised as follows:

A third of Australian students are in schools with socio-economically disadvantaged students, that is schools where the average SES of the students is below the average SES of the nation. This is higher than in all similar OECD countries, and the OECD average (Figure 12)

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[9] And also Italy, Korea and Japan.

Nearly 60% of the most disadvantaged students are in schools with disadvantaged socio-economic status. This is well above the OECD average, and substantially higher than in any comparable OECD country.

Only around a third of all Australian students are in schools with average or mixed SES, which is well below the OECD average.

Australia: Percentage of Schools by Student SES
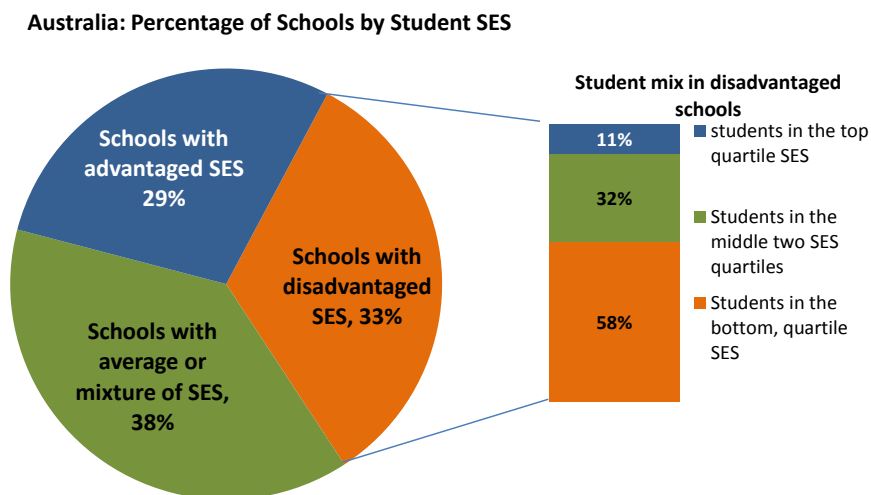
Figure 11: Australia schools mix by student SES[10]

OECD: Percentage Schools by Student SES
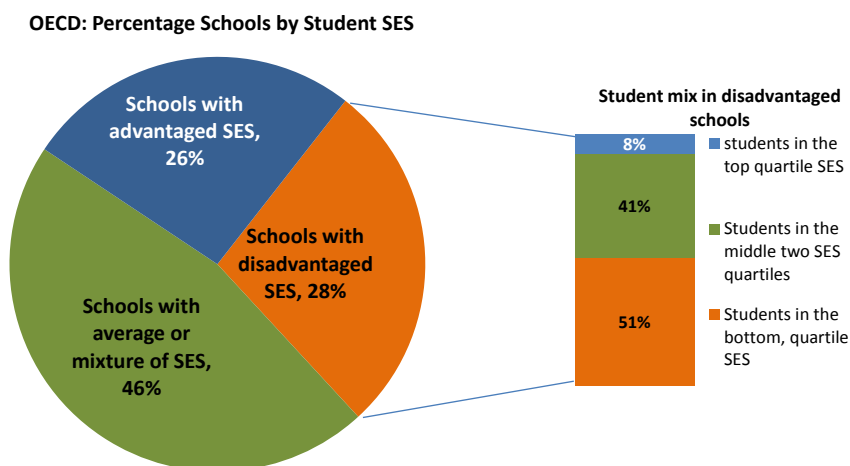
Figure 12: OECD average schools mix by student SES[11]

[10] OECD PISA 2009 Table II.5.10

[11] ibid.

The concentration of disadvantaged students in Australia compared to other OECD countries can be explained in large part by the high number of select-entry schools within both the government and non-government sectors. Australia is unusual in the degree to which parents can exercise choice over where their children are educated, irrespective of where they live. We will explore this point further in Chapter 3.3.

2.4.1 It is possible to have school systems that are both highly equitable and high performing

Figure 13 charts both the equity and educational outcomes of high performing countries. As can be seen a number of countries manage to achieve better education outcomes, and have higher levels of equity. Countries such as Finland, Canada and Japan are all characterised by having strong government education systems, and show that we can aim for both performance and equity.
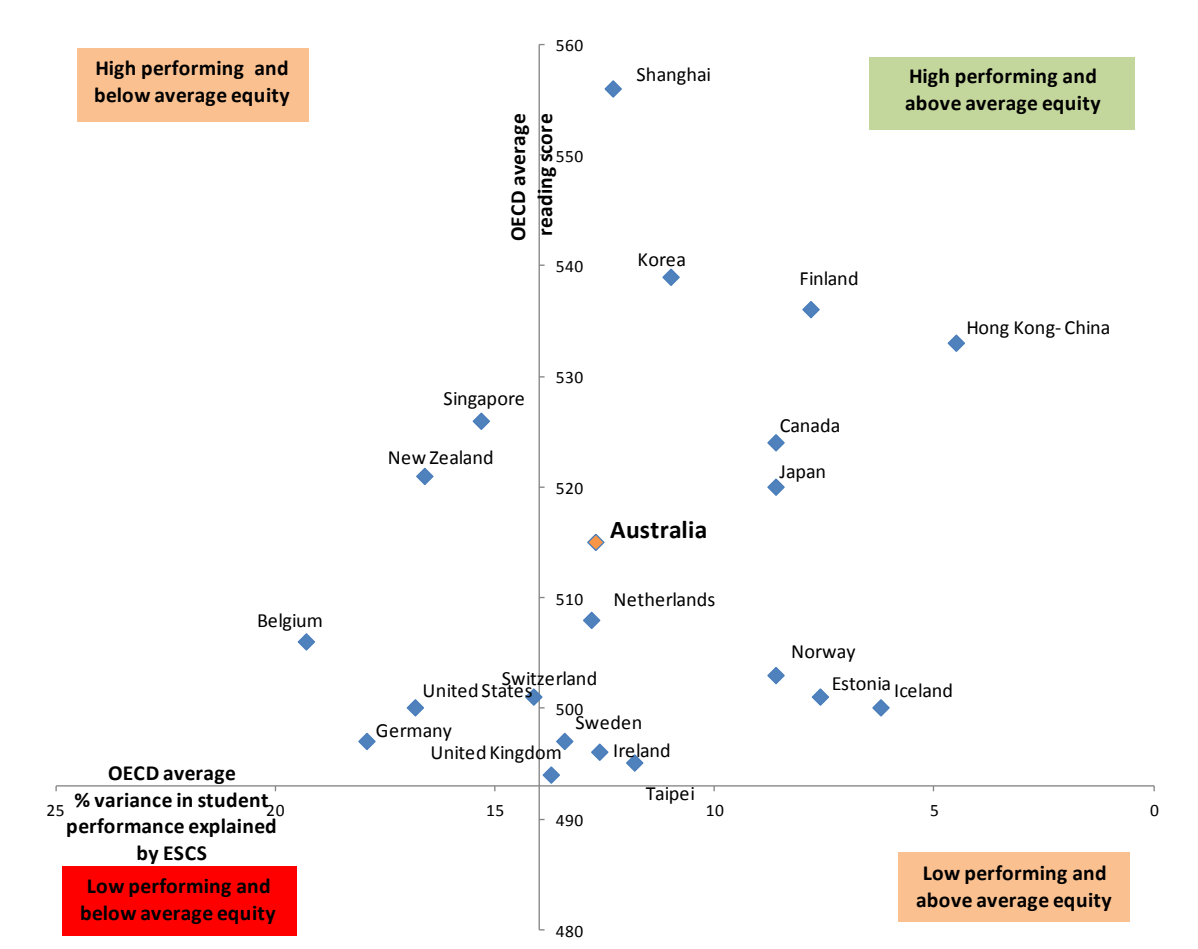
Figure 13: PISA 2009 Reading results - outcomes and equity [12]

[12] OECD (2010) *PISA 2009 Results: Overcoming Social Background. Equity in Learning Opportunities and Outcomes Volume II*, OECD Publishing

3 Australia's overall results disguise a high degree of variability within and across the system

So far we have looked at Australia's performance nationally and how it compares to other OECD economies. Within Australia there is a wide degree of variance between school systems, between states and territories and between schools. Educational outcomes in Australian schools range from world's best standard, to well below the OECD average.

This variation in schooling outcomes is largely driven by the variation in student socio-economic background. Multilevel analysis allows us to isolate the degree of impact of a number of individual factors on learning outcomes. This is particularly useful as there are several variables that are highly correlated making it hard to establish which one is making the difference. For example, the education level of a student's parents will correlate with the socio-economic background of the student, and a student with educated parents is more likely to come from a higher socio-economic background. Multilevel analysis allows us to separate the impact of these two variables and provide more finely-tuned insights.

For this report, the National Institute of Labour Studies (NILS) constructed a model using PISA data that enables us to test these variables and their impacts in different ways. Figure 14 gives an overview of how the elements of the model are grouped while Appendix B.1 provides further explanation and detailed outputs from the model. Note that 'ESCS' in the model is a reference to Economic, Social and Cultural Status; the measure that PISA adopts for Socio-Economic Status (SES).
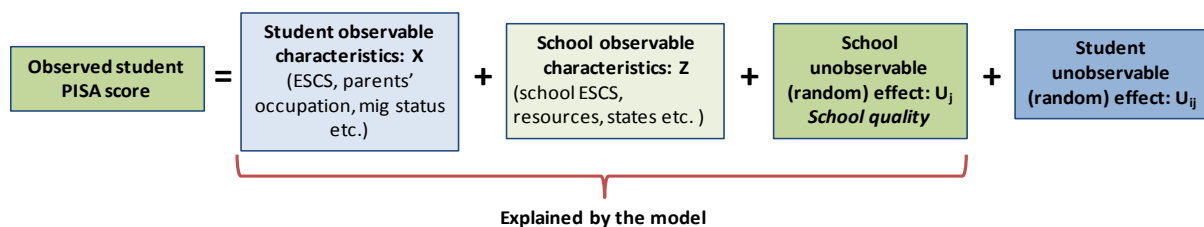
Figure 14: Stylised multilevel model for the estimation of scores

We will refer to the findings from this model as we continue to explore the dynamic drivers of, and contributors to, high or low performance across regions, sectors and schools.

3.1 There is significant variation between and across schools, states and sectors

Anecdotally, there is an impression of a clear hierarchy in the performance of the three school sectors in Australia - independent schools achieve the highest results, followed by the Catholic sector, followed by the government Sector. This is borne out in aggregate terms when we look at the data, whether we use PISA or NAPLAN results as Figure 15 show.
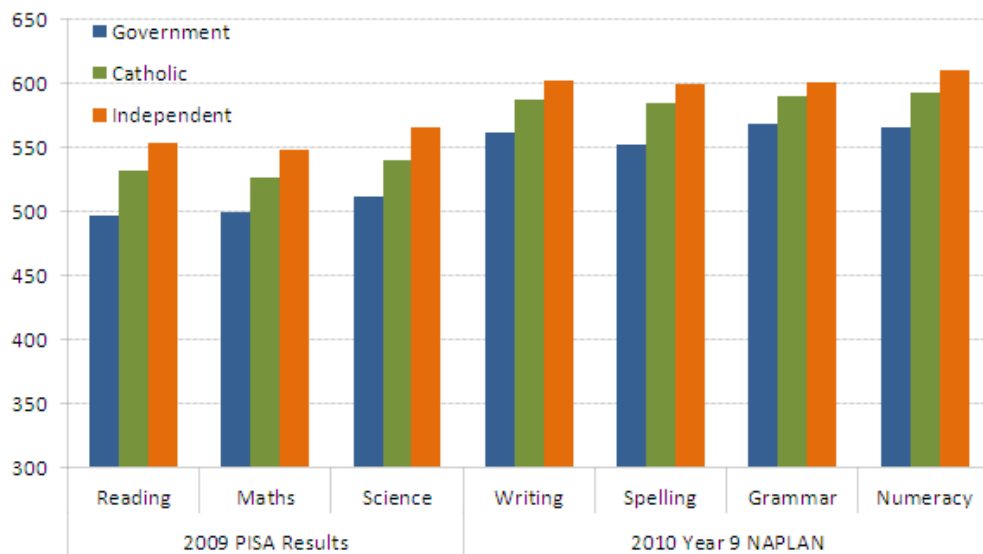
Figure 15: Results across school sectors in Australia[13]

This hierarchy of outcomes across sectors remains when we look at other measures too. Figure 16 shows that differences in Year 12 retention rates between the independent, Catholic and government systems are significant and have remained fairly constant for the past decade. Even allowing for transitions from the government sector to the non-government sector this still represents a significant level of underperformance in the government sector.

Absentee rates are up to 4 percentage points higher in government than non-government schools (which in relative terms equates close to 100%), and increases in Year levels 7, 8 and 9.[14] Absenteeism is associated with patterns of early school leaving (i.e. it affects retention) as well as with lower literacy and numeracy results.[15]

There are numerous other examples that can also be drawn from Year 12 results. For example: in 2010, 86 of the 100 schools with the highest average Year 12 scores in Victoria were non-government schools. Of these, 20 were Catholic schools, which is slightly lower than the sector's enrolment share. Of the 14 government schools, five were selective entry or specialist schools.[16]

These patterns are different in NSW where 11 of the top 20 ranked schools were government schools, but only 28 of the top ranked 100 schools were government schools. The government schools in the top 20 were selective high schools, which have similar student bodies to Independent schools in terms of prior educational performance. That is, the schools are generally able to select for higher performing students.

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[13] NILS own 2009 PISA analysis, Nous school weighted NAPLAN mean calculations

[14] Productivity Commission, Report on Government Services, 2011.

[15] Curtis David D., McMillan Julie (2008) School Non-completers: Profiles and Initial Destinations, LSAY Research Report No 54, NCVER, http://www.ncver.edu.au/publications/2088.html`

[16] Victorian Curriculum and Assessment Authority, unpublished data
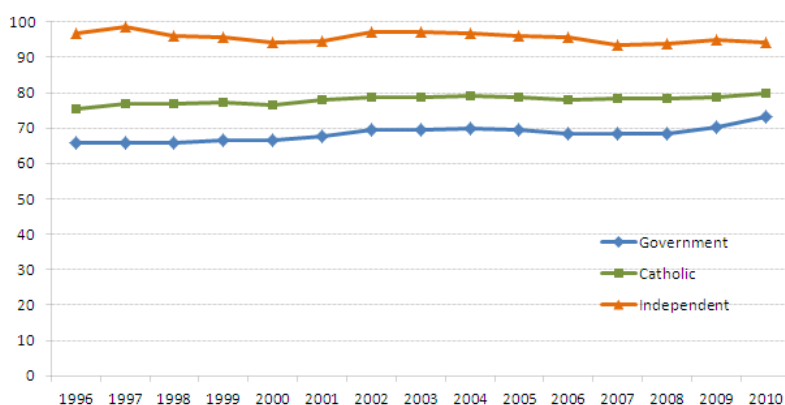
Figure 16: Apparent retention rates by sectors[17]

In terms of the impact of this sectoral variation on national outcomes, it is noteworthy that a higher proportion of Australian students attend non-government schools than in any similar OECD country other than the Netherlands (see Table 30, Appendix B.1.4).

Furthermore, the differences in reading performance between government and non-government schools in Australia are large in absolute terms and large compared to most similar OECD countries except Canada and the United Kingdom. Differences between the socio-economic status of government and non-government schools are also large both in absolute terms and when compared to many similar OECD countries.

In addition to the variances between sectors nationally, there is significant variation within each state and territory.

Figure 17 shows that while the hierarchy between the three school systems remains evident across the nation, the amount of variation between them differs across states/territories.
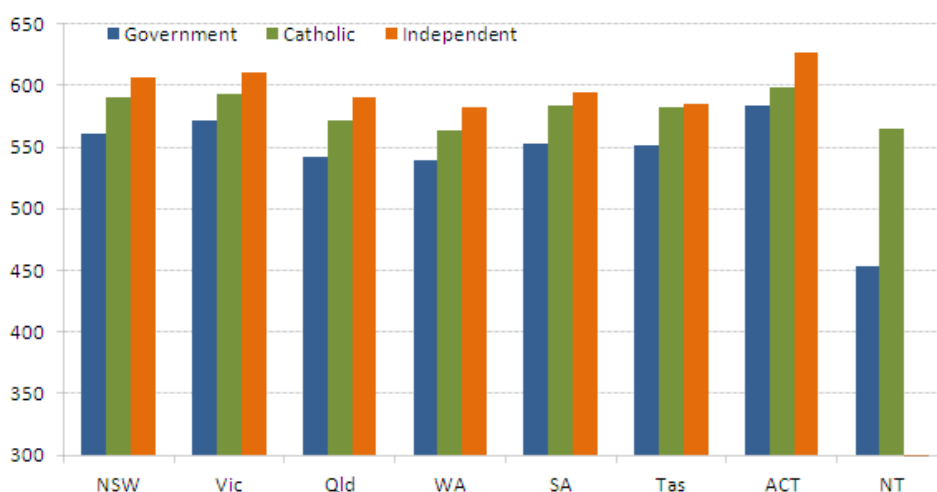
Figure 17: 2010 Year 9 NAPLAN Reading scores – by state/territory and sector[18]

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[17] ABS nssc table 64a apparent retention rates 1996-2010 www.abs.gov.au

[18] Nous analysis of ACARA *My School* data, school weighted mean data.

Drilling into the data further, there are also significant variations between *schools*, regardless of sector, within each state and territory. Figure 18 shows the Year 9 reading scores for all the schools in one state plotted against each school's average ICSEA[19] score, which is a measure of advantage/disadvantage based on a number of variables. We have used a sample state to keep the results to a manageable number and easy to read. However the pattern is consistent across all of Australia.
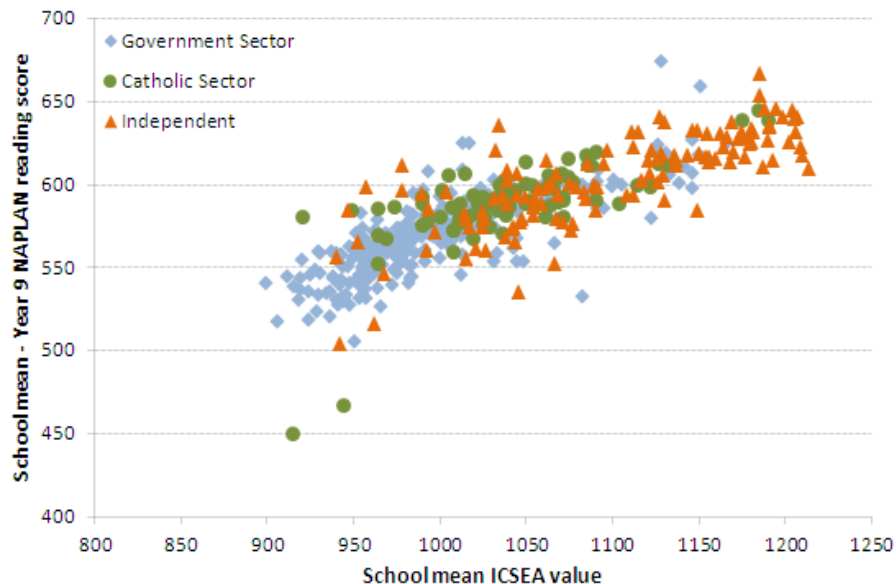
Figure 18: NAPLAN 2010 – Schools' performance and average school ICSEA (sample state)

The data reveals two interesting insights:

1. **There is a high degree of variability in all the sectors.** In this state the highest performing school is a government school, and the lowest performing school is in the Catholic sector. However, there is a high degree of variability, with all sectors having high and low performing schools. One conclusion to be drawn from this is that any efforts to lift educational outcomes nationally will require a focus on low performing schools in all sectors.

2. **There is an obvious relationship between the schools' student average ICSEA value** and the schools' average results, with linear regressions producing r-squared[20] values for each of the sectors being a minimum of 0.50, meaning that 50% of the variation in the average school score is explained by the average student background. It follows that, while the independent sector generally outperforms the government sector, this is largely a feature of the background of the students attending independent schools, and *does not necessarily reflect higher quality in or performance by the independent schools* themselves.

This latter finding is explored further in the next section.

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[19] The Index of Community Socio-Educational Advantage (ICSEA) was developed for the *My School* website to enable identification of schools serving similar student populations. The variables used in calculating ICSEA values include: student-level data on the occupation and education level of parents/carers; and/or socio-economic characteristics of the areas where students live; whether a school is metropolitan, regional or remote; the proportion of students from a language background other than English or who are Indigenous.

[20] *R-squared* is the proportion of response variation "explained" by the regressors in the model. Thus, $R^2 = 1$ indicates that the fitted model explains all variability in y, while $R^2 = 0$ indicates no 'linear' relationship (for straight line regression, this means that the straight line model is a constant line (slope=0, intercept=y) between the response variable and regressors.

3.2 Much of this variation can be explained by socio-economic status

Examining the distribution of family income across the sectors shows that there is trend of low income families being over-represented in the enrolments of government schools, and high income families being over-represented in independent schools and to a lesser extent in Catholic schools (see Table 1).

Again we need to be wary of variations within the overall picture. Leaving aside secondary school students from high income families, the majority of students for each income band are educated in government schools; approximately 10% of students from low income families are educated in independent secondary schools; and 15% are educated in Catholic schools.

See Table 1 for a more detailed breakdown of family income and school attendance.

Family income (per week)				LOW	MEDIUM	HIGH	All income levels
	<$350	$350-$649	$650-$999	<$1000	$1000-$1699	>$1700	
Type of school attended by primary students in each family income range							
Government	80%	80%	76%	78%	70%	58%	69%
Catholic	13%	13%	16%	15%	21%	25%	20%
Other non-government	7%	7%	8%	7%	9%	17%	11%
All primary schools	100%	100%	100%	100%	100%	100%	100%
Type of school attended by **secondary** students in each family income range							
Government	75%	77%	72%	74%	65%	46%	61%
Catholic	14%	14%	17%	16%	22%	29%	22%
Other non-government	12%	9%	11%	10%	13%	26%	17%
All primary schools	100%	100%	100%	100%	100%	100%	100%
Type of school attended by all (primary and secondary) students in each family income range							
Government	78%	78%	74%	77%	68%	53%	66%
Catholic	14%	14%	17%	15%	21%	26%	21%
Other non-government	9%	8%	9%	9%	11%	21%	13%
All primary schools	100%	100%	100%	100%	100%	100%	100%

Table 1: Percentage of primary, secondary and all students in each family income range who attend government, Catholic and other private schools, Australia, 2006[21]

Nevertheless, the alignment between socio-economic status and the hierarchy of the three sectors is marked. Average socio-economic background of schools in each sector strongly correlates with academic results, so much so that performance differences between government and non-government schools are halved when the impact of the student body's average socio-economic status is taken into account.

[21] Preston, B (2007). Original source: Australian Bureau of Statistics 2006 Census custom tables.

Further, when the average socio-economic status of the school is considered *in addition to the socio-economic status of the individual student*, performance differences at the individual level between those attending government and non-government schools disappear. This indicates that a large component of the relative performance advantage of Australian independent schools is a function of the relative clustering of advantage (see Table 30, appendix B.1.4).

NILS' analysis of the 2009 PISA data shows that when you control for all factors, any advantage that independent schools have is largely due to socio-economic factors. Moreover, it could be argued that the government system performs better than the non-government system in terms of producing outcomes that are as good or better than would be expected for a student given his/her own socio-economic background and the average socio-economic background of his/her school.

Of course, we have to remember that in the real world we can't control for all factors, and the fact remains that in most cases independent schools produce the highest results. What these results are telling us, however, is that these schools more often attract students who do well. Government schools generally are not able to attract or necessarily select for those students who are likely to do well. This has important consequences (among other things) for thinking about the degree to which autonomy from government control – particularly with respect to enrolment policies – makes a positive difference.

Another way to consider the performance of the three sectors is to look at the 'value added' provided by schools to students within the sectors. In order to measure the 'value added' of schools we look to the 'unobserved' school effect in NILS' multilevel analysis. This measures the variation between schools after controlling for all other school and student characteristics. We impute from these unobserved effects an indication of differences in the teacher quality and/or school culture and ethos.

Given that Catholic and independent schools tend to produce higher results than governments schools, one would expect to be able to demonstrate that the non-government sector adds more value to a student's education. In other words, taking a student from a government school with, say, a mediocre record of performance and putting them into an independent school, you would expect to see better results *after you've controlled for the effect of the students being with a higher socio-economic cohort*. There would be something about the school's intrinsic quality that would make a difference to the student's education outcomes. However, this does not seem to be the case. The NILS multilevel analysis reveals that schools from the three sectors have the same distribution of 'value added' for reading, science and mathematics after controlling for other factors such as school resources and student socio-economic status.

While there is no statistically significant difference between the distribution of quality within the three sectors, when we combine Catholic and independent schools into one category, NILS' analysis shows that the distribution of quality in the government sector has higher kurtosis or 'fatter tails' than the non-government sector (Figure 19). This suggests that there is more variance in the 'value added' within the government sector, with some schools adding significant value and others contributing a lot less.
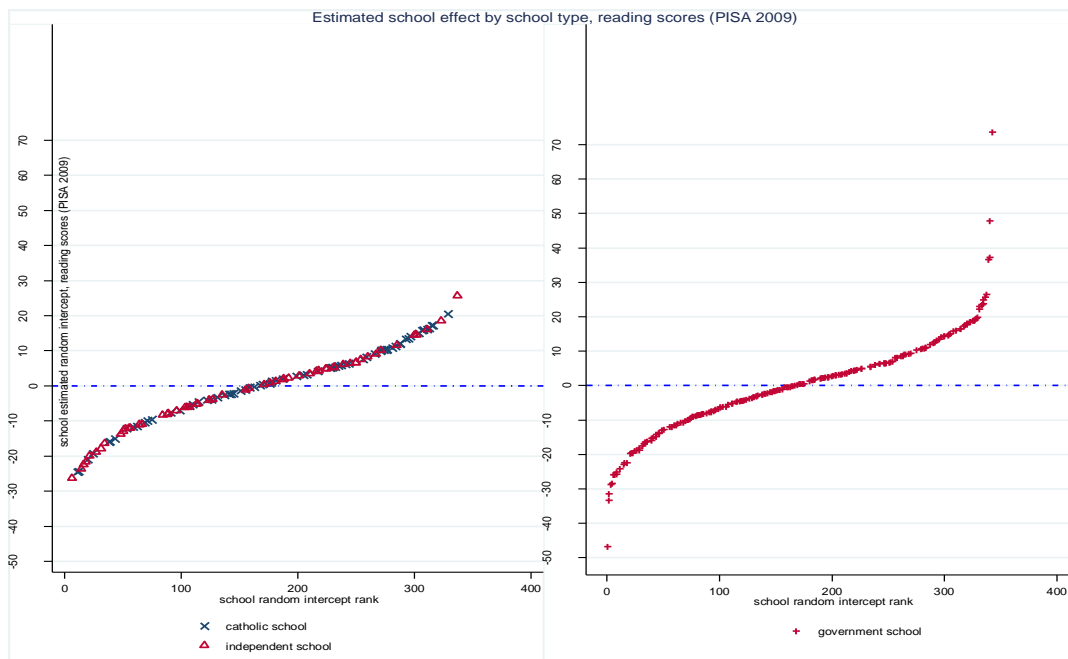
Figure 19: Estimated school effect by school type and reading scores (PISA 2009)

So, if school quality says more about the students than the schools or sectors, how do some schools end up with 'higher quality' students than others, and why do we see concentrations of disadvantage that lead to lower school scores?

3.3 Because parents generally need resources to exercise choice in the school market, we see a concentration of disadvantage that weighs performance down

The Australian school education market is robust. On the demand side over one third of Australian parents choose non-government schools for their children, which in most cases requires the payment of fees. Reviewing the Australian school market in 2009, Campbell et al found that there was a high degree of choice amongst Australian parents, but that the need to find a suitable school created overtones of anxiety amongst the 'marginal middle class'.[22] This is because parental choice is mediated by fee regimes, capacity to win places in selective entry schools and programs, and residency requirements guaranteeing access to government schools that have gained reputations for high quality.

On the supply side, parents in Australia have a greater number of options than in any other OECD country when it comes to deciding where to educate their children. (See Table 29 in Appendix B.1.4 which shows the responses from school principals in OECD countries to the question "How many schools does your school compete with for students?"). Moreover, an increasing proportion of schools in the government sector have been able to become more selective in their student enrolments. This means they can market themselves in different ways, featuring different specialisations, thereby drawing in students from outside the typical catchment area.

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[22] Campbell, C, Proctor, H, and Sherrington, G (2009) *School choice: how parents negotiate the new school market in Australia,* Crows Nest, NSW: Allen & Unwin.

While state and territory government systems guarantee access to a primary or secondary school within a designated zone, all have abandoned requirements that restrict enrolments to within zones. Instead parents are free to seek enrolments in non-zoned schools if there are sufficient places[23]. This is quite different to the practices elsewhere in the OECD, partly due to zoning policies and partly due to streaming students into vocational or academic schools at the secondary level.

These changes to the government sector have not stopped the well documented 'drift' from government to non-government schools over the past two decades. This trend was documented by Watson and Ryan who observed a 13.5% fall in government school enrolment share over the period 1975 – 1998.[24] At the same time the enrolment shares in the Catholic and independent sectors increased by 6.5% and 7.0% respectively.

Lamb also traced the patterns of enrolments in Victorian government secondary schools over the period 1980 to 2004.[25] He looked at the socio-economic dimensions of the drift within the government school sector noticing a pattern of declining enrolments in schools with low SES enrolments and increasing enrolments in schools with high SES enrolments. This trend reversed for a short period in the early 1990s when schools in Victoria were amalgamated, but the pattern has since returned. Specifically, we have witnessed:

- Increased enrolment of high SES students in independent schools, with students shifting from both the Catholic and government sectors

- Increased enrolment for 'average' SES students in Catholic schools, replacing some of the students who shifted to the independent sector

- Reduced enrolments by high and average students in government schools.

The most serious consequence of this is an intensifying stratification along SES lines that leads to a concentration of disadvantage in certain schools. And as we have seen, school SES has a significant impact on student outcomes quite apart from an individual's own SES status and personal circumstances.

So while the drift continues, it has a compounding effect on disadvantage and underperformance, creating a vicious circle as illustrated in Figure 20. The important point is that the impact of this concentrated effect is felt not just at the level of student performance, but plays out in teacher morale, community alienation from the local school, and difficulties in attracting good teachers as well as good students. As a schools' reputation worsens, so more and more parents send their children elsewhere. (See Appendix C for a detailed discussion on the factors that influence parents' choice of school for their children.)

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[23] Keating Jack; Burke Gerald; Annett, Peter (2011) Mapping of schooli funding systems in Australia, Melbourne, MCEECDYA.

[24] Watson, L. and Ryan, C. (2009) Choice, vouchers and the consequences for public high schools: lessons from Australia, http://w.ncspe.org/ accessed 30 March 2011

[25] Lamb, S. (2007) 'School Reform and Inequality in Urban Australia: A case of residualising the poor', in Teese R. & Lamb S. (eds.) Education and Equity: International Perspectives on Theory and Policy, vol 3. Amsterdam: Springer

Poor performing schools have compounding internal factors – they tend to experience a lack of staff renewal, low morale, low expectations, lack of incentives and/or capacity to attract high quality leaders or teachers.

School performs poorly

Some students are constrained in their choices due to economic, social or geographical factors and do not leave.

Students in rural/areas, low SES students and low performers – these students do not have access to higher performing schools due to fees, selective enrolment practices (e.g. based on academic performance, religious preference, etc) or location.

Mid-high SES students leave

Some communities do not have access to quality schooling - residualisation of schools becomes both a symptom and a cause of wider social and economic exclusion of communities, potentially creating a downward spiral.

School closes or continued poor performance

Funding declines with enrolments and average cost increases

Poor performing schools suffer a 'double hit' when mid-high SES students leave – since funding is tied to enrolments, average costs increase as schools lose enrolments. This is particularly difficult in regional and remote areas.

Figure 20: The compounding effects of concentrations of disadvantage

Some commentators have referred to this compounding phenomenon as 'residualisation' of the government school system[26] – the idea that the system is hollowed out to the point where the school becomes dysfunctional and the financial, human, scholastic and social capital of the institution is so weak that it is essentially irreparable and must be shut down. This concept is somewhat misleading, however, in its implication that it is an inter-sectoral phenomenon. Given the growing number of government schools that have selective enrolments and which have developed their own market power to rival some of their competitors in the non-government sector, the issue of concentrations of disadvantage is as much about what is happening within the government sector, as much as it is about the drift between sectors. Appendix D contains a more detailed discussion regarding the Australian schooling market, and contains four regional case studies describing the impact of the schooling market on local areas.

One dimension of the concentration of disadvantage is the tendency for lower SES students to be enrolled in smaller schools and higher SES students to be enrolled in larger schools (Table 34 in Appendix C.4.2). This pattern is consistent across four quartiles of ICSEA, for primary and secondary schools across the government, Catholic and independent systems. At the senior secondary level there is a tendency for student SES levels and school size to interact such that higher SES students in larger schools tend to have higher scores in the NAPLAN results (Table 35 see Appendix C.4.2). Concentrations of low SES students in small schools means that the students that may well need the most support are in schools which are least able to provide it.

The other dimension to drift within and between school sectors is the concentration of culturally or racially similar students in certain schools. In Levin and Belfield's OECD-wide research, they concluded that "there is some evidence that – given more choices over schools – families prefer to opt for enrolment in schools that are of the same racial group as their own. Also, many families wish to enrol their children with peers of the highest possible capability and social backgrounds".[27]

In Australia we see some very stark examples of this, particularly with respect to schools in a region becoming segregated into predominantly Indigenous and predominantly non-Indigenous schools, and

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[26] Preston Barbara (2011) Submission to the Review of Funding for Schooling,

[27] Belfield, C. and Levin, H. M. "Education Privatization: Causes, consequences and planning implications", UNESCO: International Institute for Education Planning, Paris 2002 p. 47

this is discussed in one of our regional cases studies (see Appendix D.1.4). It is also very evident in selective government schools with high performing students who are predominantly Asian (see Table 33, appendix C.4.1).

This raises a set of questions around the other benefits that parents and students look for in the school experience. We explore some of the broader benefits of schooling in Chapter 4.2. At this point, we would simply note that, as a matter of principle, in order to help promote a tolerant, outward-looking and culturally aware adult population, it would seem desirable to have Australia's cultural diversity represented in the student bodies of its schools.

Case Study – Inland City

This inland city of approximately 60,000 people provides an example of how residualisation can occur in a robust education market.

The city is a vibrant economic centre, and has been through a period of growth over the past decade. Households are on average better off than the state average. The current government secondary school share was 52.5% in 2010, which is approximately 9.5% below the state average, having declined 8.6% during the period 1996-2010.

While we cannot point to exact drivers of changes in school enrolments there are a number of attributes of the market which suggest that 'residualisation' has occurred:

- Two of the three government secondary schools have experienced a decline in enrolments in the past decade, despite the increase in the town's population

- However one (and possibly a second) of the government schools has remained strong. The strongest school has to limit enrolments based on residency

- There has been an increase in the Indigenous enrolments in all of the government secondary schools, and a concentration in one school has been coupled by decline in overall performance and enrolments

- Government schools have also faced a decline in attendance and attainment rates, and achieve NAPLAN results below the state average.

Given that the city's location limits parents' school choice in the government sector it is perhaps not surprising that there has been significant increases in non-government sector enrolments. If trends continue at the current rate, within four years government sector enrolments will be below 50%. This continued trend is likely to further reduce the ability of the government schools to support their students, resulting in a further drift to the non-government sector by those who can afford it, while those without the economic or social capital are left with no option but to send their children to schools which are achieving ever diminishing educational outcomes.

See Appendix D.1.4 for the full case study.

Box 3: Case study - Inland City

3.4 Individual circumstances also affect student performance in different ways

As we have shown, it is the student's own background and circumstances, and those of the collective student body, which most significantly impact schooling outcomes. It is worth exploring in more detail how this works at the level of the individual.

NILS' multilevel analysis confirms that students from low SES families achieve lower literacy, mathematics and science scores on average. Compared to a high SES student, a low SES student will score:

- Up to 33 points less in reading;
- Up to 42 points less in mathematics; and
- Up to 43 points less for science (whilst holding all other factors constant).[28]

These differences in scores mean that low SES students are achieving outcomes well below the OECD average, with a difference in 30 points often being considered a difference of one year of schooling.[29] Figure 21 shows that moving a low SES student to higher performing schools can have a positive effect on performance. Even so, taking the example of moving a student from the bottom ESCS quartile to a school in the top performance quartile, still delivers a result that is middling overall, and below the average performance of all top quartile SES students.
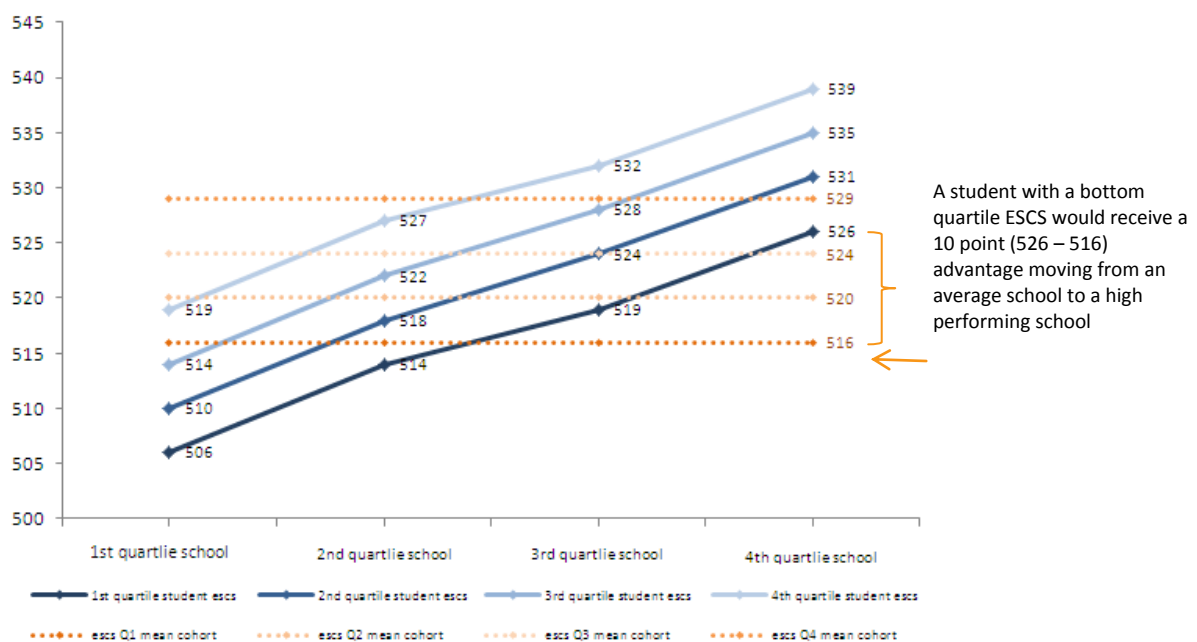
Figure 21: Estimated student scores in reading according to their socio-economic status (in quartiles) and school performance levels (in quartiles)

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[28] National Institute of Labour Studies (2001) NILS multivariate analysis of 2009 PISA results, provided by National Institute of Labour Studies on the 2 May 2011

[29] Note that accurately describing the variation in performance of 30 points in terms of years of schooling is problematic, given that 'a year of schooling' will have different educational outcomes depending on the schooling system and the student. However the use of the term 'year of schooling' to describe the difference between the educational outcomes in Canada and the United States, which is approximately 30 points.

Indigenous students tend to do poorly, even when other factors such as SES status are controlled for. In 2009 PISA tests, Indigenous students scored 82 points less in reading than non-Indigenous students on average (Figure 22), with an average score of 435 (an average which is comparable to Bulgaria's). The NILS analysis shows that after controlling for all factors associated to students' and schools' characteristics, about 31% of the total gap in scores between non Indigenous and Indigenous students is directly related to Indigenous status since schools and students are rendered comparable by the multilevel model. The rest of the difference (56.1 points on average) is due to the Indigenous students having different characteristics, both observed (family environment, ESCS, school characteristics) and unobserved (school and teachers quality, parents' engagement and so on).

Difference in Indigenous and non-Indigenous reading scores, 2009
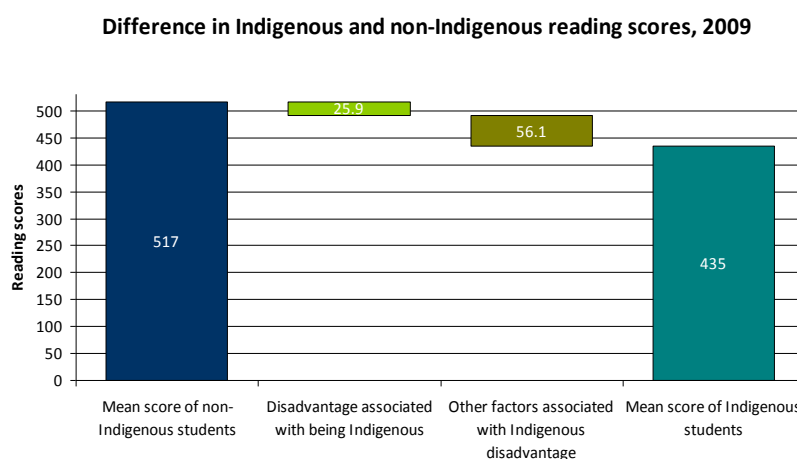
Figure 22: Mean reading scores of Indigenous and non-Indigenous students and the magnitude of disadvantage by factor, 2009[30]

Encouragingly, retention rates for Indigenous students have increased over the past few years, albeit to a small degree (see Figure 23). Nevertheless, on current trends it is unlikely that Australia will achieve the COAG targets for Indigenous students' reading, writing and numeracy and Year 12 attainment.

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[30] NILS' own analysis of PISA 2009 database
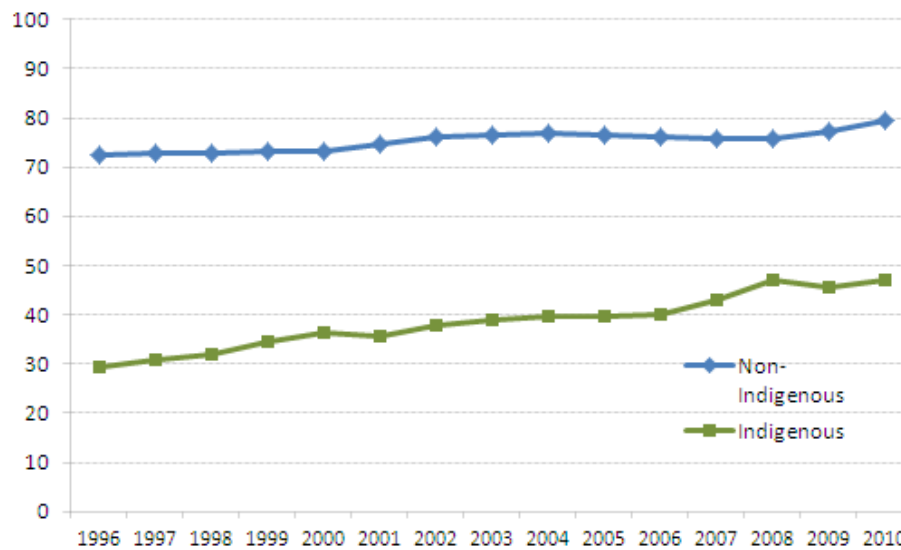
Figure 23: Apparent retention rate by Indigenous status[31]

With respect to the effects of being of non-English-speaking background, it is interesting to note that Australia is the only country among similar OECD countries in which students with an immigrant background substantially outperform local born students. The results from NILS' analysis suggest that other factors must be driving the higher scores of English as a Second Language (ESL) students, since being born outside Australia and speaking a language other than English at home has a *negative* impact on student performance. Figure 24 shows that:

- Being born outside Australia has a significant negative effect on reading, mathematics and science learning outcomes

- Speaking a language other than English at home only impacts reading and science outcomes and *not* mathematics outcomes

- A concentration of ESL students has a positive impact on predicted mathematics scores

- Additional instructions or support for ESL students while learning appear to have no impact on performance. However, preparatory instruction does improve reading scores.

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[31] ABS nssc table 64a apparent retention rates 1996-2010 www.abs.gov.au.
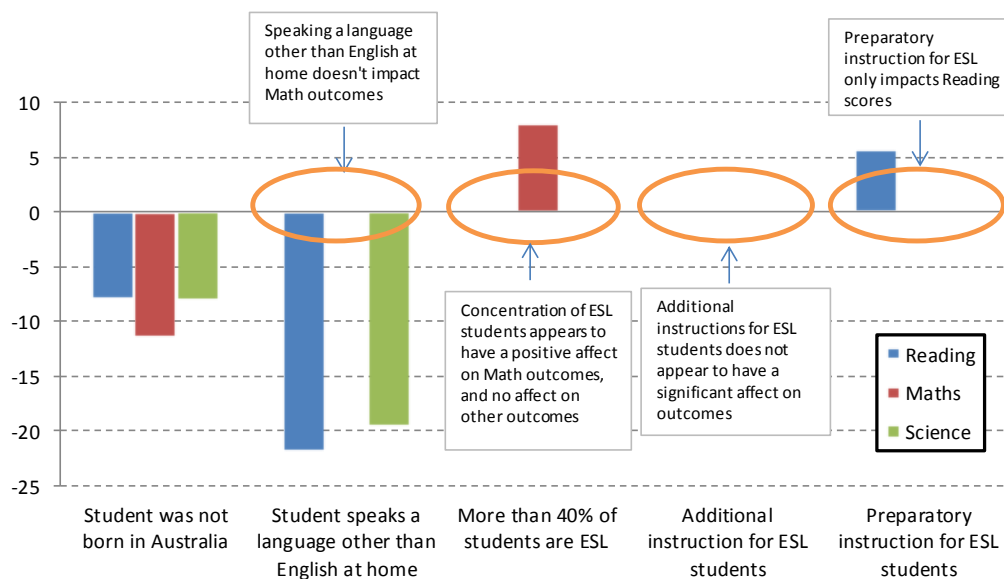
Figure 24: Impacted of ESL variables on predicted student reading scores (statistically significant factors related to ESL)[32]

The contrast between high raw scores on the one hand, and the identified negative impact of being born outside Australia or speaking a language other than English on the other, is surprising. It suggests that there must be a number of factors associated with ESL students that assist in improving their scores. A number of possible explanations include:

- **Have parents with high expectations** – the NILS multilevel analysis finds that students whose mother was born outside Australia receive a score 5.3 points higher on average. This variable might be capturing the approach of immigrant mothers to their child's education. Having a father that was born outside Australia has no impact on students' reading scores.

- **Enjoy reading more** – a study by the National Literacy Trust in England found that students from Asian backgrounds (who form a large majority of Australia's immigration profile) enjoyed reading the most out of any student group and read more frequently.[33] Enjoyment of reading and frequency of reading have a strong positive impact on student performance in mathematics and reading which could lead to higher raw scores.

- **Have a higher socio-economic background than immigrants in other OECD countries** – Australia takes a relatively greater concentration of economic and skills-based migrants than other comparable OECD countries. Strong performance might reflect the higher SES profile of immigrants.

These factors and others could outweigh the negative impact of speaking a language other than English at home or not being born in Australia, and explain the difference between ESL student performance in Australia and other OECD economies.

Students in regional and remote schools are often perceived as being 'disadvantaged' and the data confirms that this is the case. The performance of Australian students in rural schools is significantly below that of students in city schools (defined as towns above 100,000 people), even after accounting for socio-economic status.

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[32] National Institute of Labour Studies own analysis of the PISA 2009 database

[33] Clark. C and Douglas, J. (2011) *Young People's reading and writing: an in-depth study focussing on enjoyment, behaviour, attitudes and attainment,* London, National Literacy Trust.

Student location	Mean reading	% above minimum standard
Metro	578.3	91.9
Provincial	565.5	89.7
Remote	536.7	78.9
Very Remote	473.7	45.0

Table 2: 2010 Year 9 NAPLAN reading scores by geography[34]
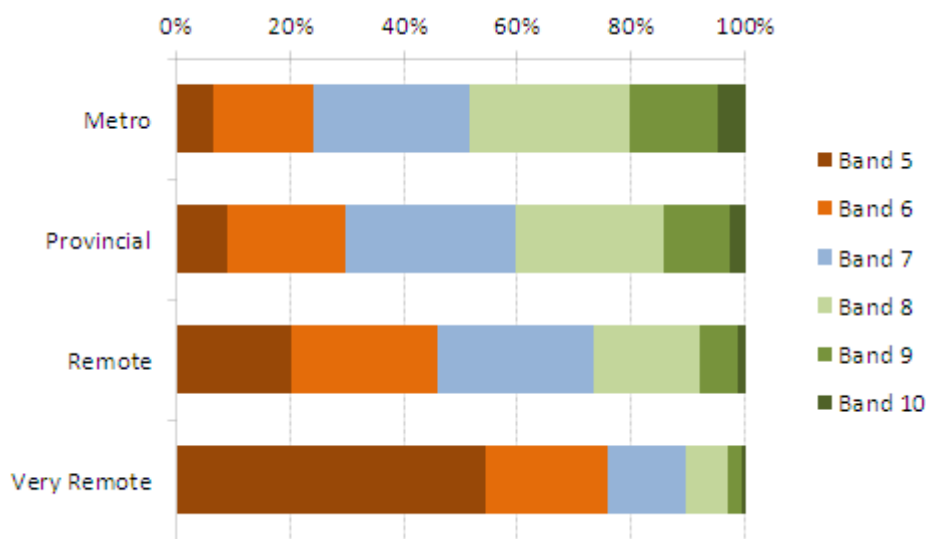
Figure 25: 2010 Year 9 NAPLAN reading scores by geography[35]

The performance of very remote students is particularly concerning with 53.3% achieving Band 5 and below level of reading in Year 9 (Figure 25), which is below the national minimum standard.

This impact of school location upon student performance in Australia is much higher than the OECD average and higher than in any similar OECD country after accounting for SES (Table 3). It is likely that Australia's size is partly to blame for this disparity in performance.

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[34] Australian Curriculum, Assessment and Reporting Authority 2010, NAPLAN Achievement in Reading, Writing, Language Conventions and Numeracy: National Report for 2010, ACARA, Sydney. Table 9.R5

[35] ibid. Table 9.R5

Select OECD countries	Village, hamlet or rural area (fewer than 3 000 people)	Small town (3 000 to about 15 000 people)	Town (15 000 to about 100 000 people)	City (100 000 to about 1 000 000 people)	Large city (with over 1 000 000 people)	Difference in reading scores between students in city or large city schools versus in rural schools (after accounting for SES)[36]
Australia	493	502	503	525	526	**32**
Canada	511	517	528	526	538	**18**
Estonia	494	498	503	511	m	**20**
Finland	533	535	538	537	m	3
Iceland	506	503	490	502	m	-4
Netherlands	480	489	512	519	m	39
Norway	494	505	505	512	m	**18**
Sweden	496	496	503	500	m	4
United Kingdom	507	504	497	494	490	-14
OECD average	477	487	**495**	**502**	**497**	**23**

Table 3: Reading performance and school location after accounting for socio-economic background, 2009[37]

NILS's multilevel analysis shows that the remotness of the school does not significantly impact students' scores after accounting for students' characteristics and schools' resources.

Research tells us, however, that schools in regional and remote areas have higher teacher shortages and teacher turnover. They have higher average costs due to small enrolment numbers and more limited access to facilities and resources (e.g. the internet).

Regional and remote areas are also typically characterised by lower SES communities, offer fewer opportunities for further studies and have fewer work opportunities. These factors undoubtedly have a negative impact on the quality of education provided and influence the attitudes and aspirations of students, which in turn impacts student performance.

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[36] Values that are statistically significant are indicated in bold.

[37] OECD (2010) *PISA 2009 Results: Overcoming Social Background. Equity in Learning Opportunities and Outcomes Volume II*, Table II.2.6, OECD

4 The costs of having students not reaching their full potential are too large to ignore

There has been extensive research into the economic benefit of educational achievement, which shows that a small increase in educational performance can deliver large increases in economic outcomes. For example, research by Hanushek and Woessmann[38] demonstrated there were significant economic gains to be made if countries improved the cognitive skills of their citizens, as measured through educational outcomes. They estimated that an increase in the average PISA scores in Australia of 25 points (or 5%) would result in increased economic growth. From the period 2010 to 2090 the net present value of that growth would amount to US$2,527 billion[39]. Alternatively a 2005 Access Economics report estimates that increasing the Year 12 or equivalent attainment rate to 90%, which would be an increase of 50,000 students per year, would increase GDP by 1.1% by 2040.[40]

Just as the economic benefits of education are significant, so is the opportunity cost of not improving performance, both in terms of individuals' life chances and in aggregate terms for the national economy.

4.1 There is a well-established link between economic development and educational achievement

Data shows that differences in cognitive skill largely explain the variation in economic growth rates across OECD countries (Figure 26). This underlines the importance of human capital to economic growth.
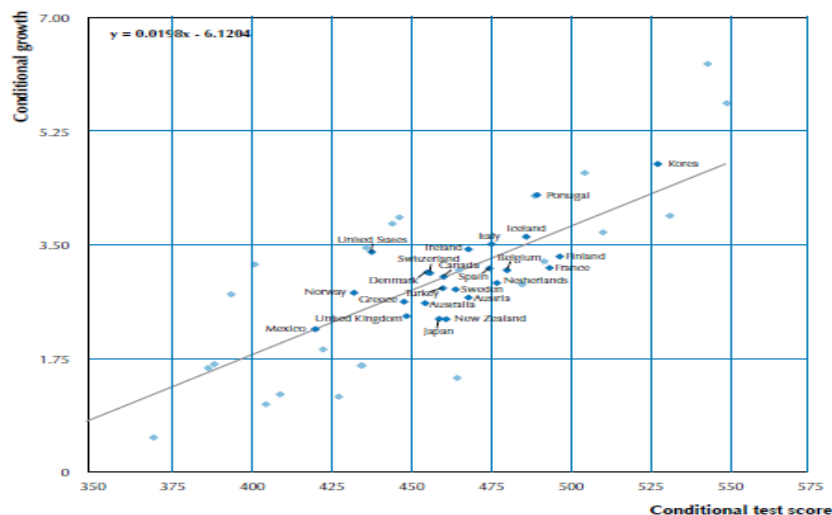
Figure 26: Educational performance and economic growth in OECD economies[41]

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[38] Hanushek and Woessmann, (2010) *The High Cost of Low Educational Performance* (Paris, OECD). Calculated as average of Mathematics and Science scores. Baseline calculated as an average of Mathematics and Science in 2000, 2003, 2006.

[39] The Net Present Value is the sum of the total increase in economic gain, discounted to current values to reflect the value of money over time. Values have been forecast for 80 years to reflect the full benefit of reforms that would impact students born today.

[40] Access Economics. *The Economic Benefit of Increased Participation in Education and Training*, 11 April 2005

[41] OECD (2010) *High Cost of Low Educational Performance*, OECD, Paris.

Improvement in Australia's human capital through improved school outcomes will be needed to achieve sustained increases in productivity performance. The Intergenerational Report states that over the next 40 years, we will need to hit a productivity growth rate of 1.6 per cent per annum to sustain our GDP per person growth.[42] However, this could be a challenging task: Australia's productivity performance has slowed in the recent past, averaging only 1.4 per cent in the past decade compared with 2.1 per cent in the 1990s. High-quality schools and education systems are the best way to improve our labour force and promote innovation and technological improvement.

Education also has a strong positive impact on individual financial stability. The positive link between years of schooling and lifetime earnings is now one of the best established facts in labour economics. Those who disengage early from school generally have increased likelihood of experiencing unemployment and low life-long income.[43] In Australia, Year 12 graduates (or those with a Certificate III/IV) earn at least 10% more per week than those who dropped out in Year 10. Figure 27 presents data from the ABS showing a clear relationship between increased levels of education and average weekly earnings.
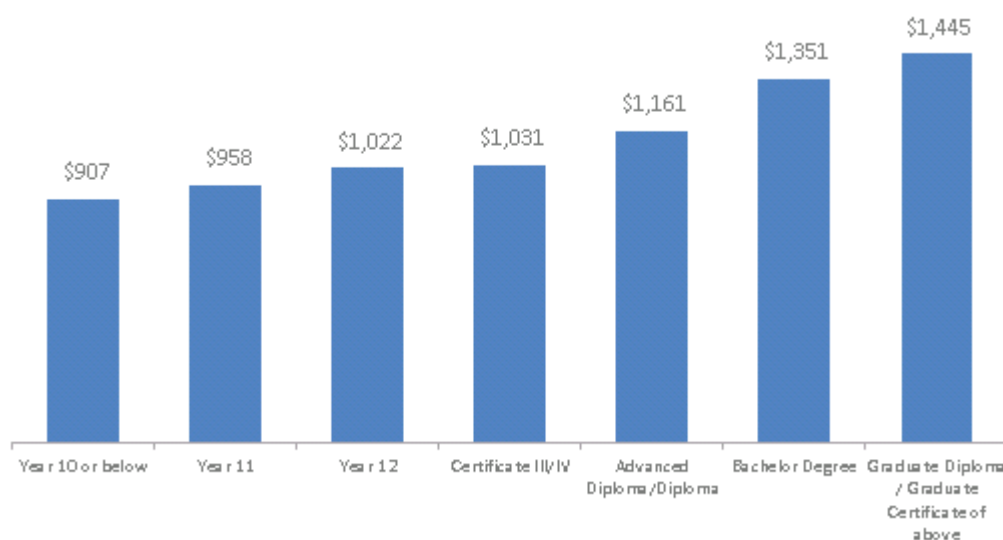
Figure 27: Median weekly earnings by education level[44]

However, using the Household Income and Labour Dynamics in Australia (HILDA) data set it is possible for us to calculate the returns on educational attainment (see Figure 28). The results show that the return to the individual of completing Year 12 is a 15% increase in hourly wages, and close to 20% for completing a Level III or IV Certificate.

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[42] Australian Government, Australia to 2025: future challenges, the 2010 Intergenerational Report, http://www.treasury.gov.au/igr/igr2010/ accessed 1 June 2011.

[43] National Institute of Labour Studies, own analysis of HILDA database, see Appendix E

[44] ABS, Education and Training Experience 2009 (6278.0).
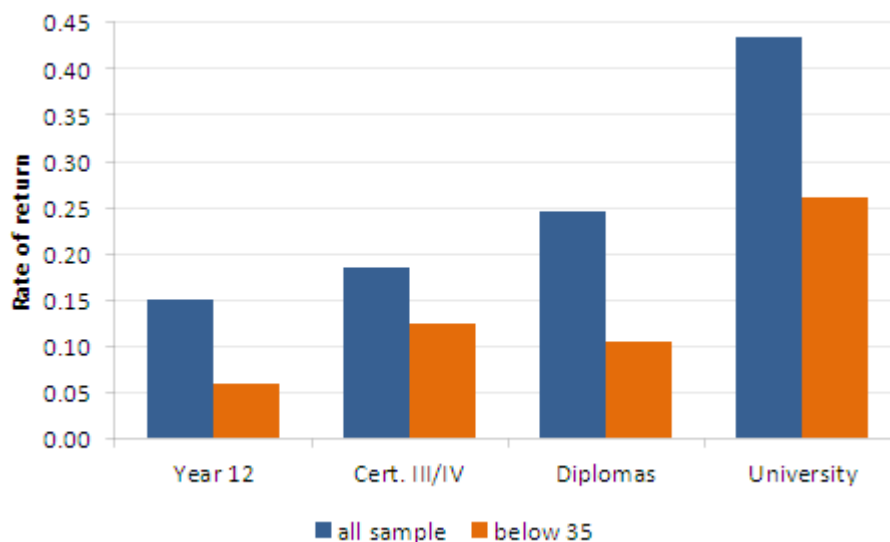
Figure 28: Returns to education compared to school dropouts (percentages of hourly wages (HILDA)[45]

We should note that if these gains are to be achieved we need to ensure that those at the margins are receiving a quality education. While we acknowledge the VCAL program in Victoria is a good program, it does deal with more difficult cases, and this does result in weaker transitions[46]. Supporting these programs, and providing stronger and more diverse transition options is key to realising the return on investment in keeping students in school for longer.

In addition to the positive impacts of lifting Year 12 or equivalent attainment rates and increasing student performance, the quality of educational outcomes achieved is important for two reasons:

- First, it improves employability and earnings for the individual that in turn bring benefits to the wider economy (not just through increased productivity and competitiveness, but through higher tax revenues).

- Second, there is a well-established link between poor school performance, and the probability of dropping out of school. NILS has used the PISA 2006 and Longitudinal Study of Australian Youth (LSAY) datasets to determine the impact that student and school characteristics have on the probability of dropping out of school and not undertaking further training. The analysis confirms the correlation between lower scores and the likelihood of students dropping out of school (see Appendix E.2.)

Importantly, increasing the educational attainment rate of the current generation has a direct impact on the educational outcomes of the next generation, as research has consistently shown that parental education levels have a significant impact on the educational outcomes of a student. There is a compounding effect in that higher attainment leads also to higher incomes, so the combination of both parental educational achievement and higher socio-economic status brings dual advantages to the child's prospects of doing well at school. It is worth noting that Finland has a long history of high levels of educational attainment, which is one of the factors that drive its current levels of high performance.

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[45] National Institute of Labour Studies, own analysis of HILDA database, see Appendix D

[46] Department of Education and Early Childhood Development (2011) On Track 2010 The Destinations of School Leavers in Victoria ,

4.2 The dividends from engagement in schooling extend to broader 'quality of life' dimensions

The benefits of schooling are not confined to producing higher levels of cognitive skill. There are a broad range of social benefits from education that enable a school graduate to participate successfully in society and to enjoy better quality of life as measured over several dimensions. Researchers have tended to focus on three areas when considering the wider impacts of education: health and wellbeing; crime; and civic and social engagement.

Health and wellbeing

In 2007, the OECD published a comprehensive analysis into the relationship between education and broader societal outcomes[47]. The report (which is discussed in more detail in Appendix F along with related research) confirmed the positive relationship between education and health, with some exceptions – namely the potentially negative effects of education in creating pressures and anxiety (e.g. around exam performance on mental health).[48]

There are three ways in which education can affect health:

1. **indirectly** – through education leading to higher incomes that enable people to access health services and support. For example, studies have shown there is a link between occupational groupings and infant mortality[49]

2. **directly** – by improving an individuals' own 'agency' and therefore their ability to exercise good judgement on matters concerning their health. One study found that smoking among college graduates in the United States had declined sharply since 1964 but only slightly among high school dropouts[50]

3. **intergenerationally** – by providing for the health and wellbeing of one's children. For example better educated mothers have lower infant mortality rates and more commonly vaccinate their children.[51]

The HILDA survey looks at job satisfaction and life satisfaction as two important measures of individual wellbeing. While the HILDA data only shows a link between education achievement and job satisfaction where the individual has a university degree (and not for those with lower qualifications), there is a strong connection between education and satisfaction with life. Essentially, the more educated you are, the greater your level of contentment (see Figure 83 in Appendix E.3.3).

Crime

There is ample evidence showing the more education an individual has completed, the less likely he or she will be convicted of a crime. This is not just due to economic factors – that is, having a higher proportion of school graduates earning stable incomes (though that is an important factor that mitigates the risk of engaging in crime). It also relates to the values and qualities that can be instilled in the school environment.

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[47] Schuller, T and Desjardins, R., *Understanding the Social Outcomes of Learning*, Centre for Education Research and Innovation, OECD 2000.

[48] ibid. pg 13

[49] Reproduced from *The Acheson Report Up Close* at http://news.bbc.co.uk/2/hi/health/222649.stm.

[50] Leigh, J.(3 June 1998),*The Social Benefits of Education: A Review Article, Economics of Education Review* v17 cited in Owens, J (2004) A Review of the Social and Non-Market Returns to Education.

[51] Wolfe, B and Zuvekas, S (1997), *Nonmarket outcomes of schooling, International Journal of Education Research 27 (6),* cited in Owens, J. above.

Education is not a panacea, but there is an important correlation between education and participation in crime that brings benefits to the individual and to society. In the case of crime rates, researchers have calculated the return on investment in education through crime reduction. Based on one US study, that return is in the order of 14-26 per cent.[52]

The probability of incarceration for those who have completed high school is reduced, with the biggest impacts of graduation being associated with murder, assault, and motor vehicle theft.

It is not just school completion that is important. While students are at school it is clear that the influences that are there and the existence of a bond with the school itself, serve to dampen forms of delinquency that might evolve into criminal behaviour.[53]

Civic and Social Engagement
Civic engagement can be defined as action, or readiness to participate in action, outside the private domain or market, and with the welfare of others in mind. Political engagement is seen as a sub-set of civic engagement, whereas social engagement encompasses engagement in activities that are market-oriented or that relate to the private realm. Civic and Social Engagement (CSE) activities therefore span political action of different types, volunteering and the like, as well as social activities.

Schooling clearly provides the networks both during and after the years of education, plus the knowledge and skills for CSE. So what can schools do to ensure that those positive influences are there and can be taken full advantage of by all students?

After investigating the contributions of various school 'inputs' – such as extra-curricular activities, group activities and classroom climate – Schuller and Desjardins conclude that "the curriculum, school ethos and pedagogy are key variables that shape CSE [and that] …learning environments that stress responsibility, open dialogue, respect and application of theory in practical and group-oriented work seem to work better than just 'civics education' on its own." [54]

Focussing on developing students' motivation and abilities for CSE therefore means nurturing an interest and trust in civic and political institutions. It also means valuing self-belief and creating opportunities for students to engage in respectful dialogue where they can practice developing and articulating their own views. It involves a pedagogical focus on the 'how' of learning as much as the 'what'.

The benefits to individuals of being willing and able to participate in CSE are evident in an improved ability to negotiate, advocate and otherwise pursue one's own interests. For society, the benefits derive from philanthropic efforts, volunteering, informed and vibrant public debate and a robust democracy.

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[52] Lochner, L. and Moretti, E. (March 2004) *The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-Reports* , American Economic Association, vol. 94(1).

[53] Sprott, J.B, Jenkins, J.M., Doob, A.N (January 2005), *The Importance of School: Protecting At-Risk Youth From Early Offending, Youth Violence and Juvenile Justice*.

[54] Schuller, T and Desjardins, R.(2007), *Understanding the Social Outcomes of Learning,* Centre for Education Research and Innovation, OECD, pg 13-14

5 To remain competitive Australia needs to lift the Year 12 attainment rates and prepare school graduates for the 21st century

As Australia's economy evolves, so must our schools ensure that they are producing graduates who can meet future labour force demands. In the current context of globalisation, with a shift towards information-based industries, and the emergence of competitive influences requiring adaptability and constant innovation, it is not a fruitful exercise to forecast skills demand with any degree of specificity. Understanding trends, however, is important, as is developing a general picture of what sort of skills generally will be valued in the economy of the future.

In the last two decades we have witnessed a growth in the demand for professionals and managers (Figure 29 and Figure 30). Professionals and managers generally require a bachelor degree or higher qualification or at least 5 years relevant experience in what are defined as 'high skilled' occupations. [55] In contrast the demand for low skilled workers such as labourers, machinery operators and drivers and salespersons (which only require secondary education or Certificate I qualifications) have flat-lined (Figure 29 and Figure 30). Technicians and tradespeople remain an important source of employment, although growth in these occupations has not been as high.
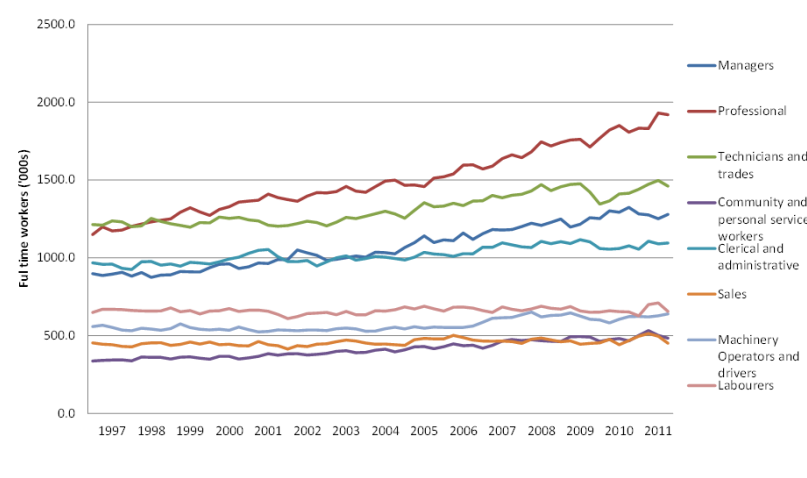
Figure 29: Full time workers by occupation August 1996 – November 2010 [56]

While attempts to predict demand and supply have a poor record of success, broadly-speaking we can expect this trend demand for higher-order skills to continue. Table 4 shows that the composition of the labour market will shift towards high-skilled occupations.

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[55] We have defined high skilled occupations as those with a skill level of 1 or 2 in the Australian Standard Classification of Occupations (ASCO). Level 1 occupations generally have a level of skill commensurate with a bachelor degree or higher qualification or at least 5 years relevant experience. Level 2 have a level of skill commensurate with an AQF Diploma or Advanced Diploma or at least 3 years relevant experience. In some instances relevant experience is required in addition to the formal qualification.

[56] Australian Bureau of Statistics, Labour Force, Australia, Detailed, Quarterly, 6291.0.55.003
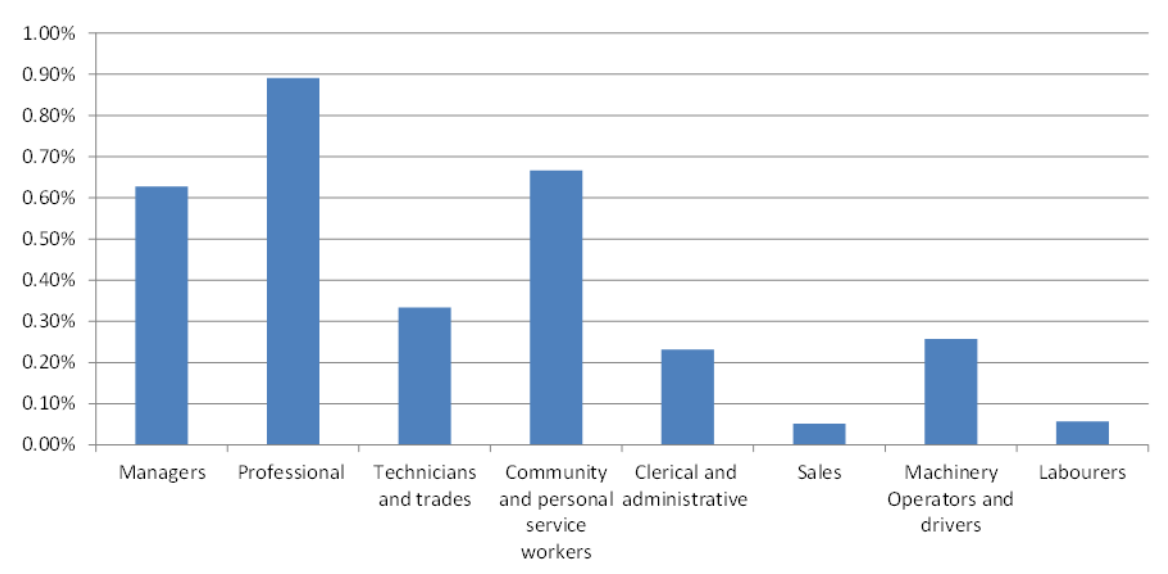
Figure 30: Average annual growth in full time workers by occupation November 1996 – November 2011[57]

Major occupation group	2009 (actual)	2025 (projected)
Managers	12.9	14.5
Professionals	20.8	23.2
Technicians and trades	15.2	14
Community and personal services	8.9	9.7
Clerical and administrative	15.4	14.3
Sales	9.4	8.7
Machinery operators and drivers	6.7	6.4
Labourers	10.7	9.2

Table 4: Employment forecasts by major occupation group, persons aged 15 years or older,
Australia, 2009 to 20025 (per cent of total)[58]

This fluid environment demands the development of adaptability and resilience among school graduates, and a mindset of lifelong learning, so that they can adjust to the highly dynamic labour market. Given the complexity and pace of many of today's work challenges, '21st century' skills also centre on higher order abilities to think critically, solve complex problems, and communicate effectively[59]. Table 5 describes these in more detail.

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[57] Australian Bureau of Statistics, Labour Force, Australia, Detailed, Quarterly, 6291.0.55.003

[58] Shah (2010) in *Summary of CEET demand projections – VET qualifications and the future labour market*, provided by DEEWR.

[59] *Partnership for 21st Century Skills, P21 Framework Definitions*,
http://www.p21.org/index.php?option=com_content&task=view&id=254&Itemid=120 accessed 1 July 2011.

5.1 Our school graduates need to be critical thinkers, problem solvers, innovators and effective communicators to thrive in the global economy

Workers are now more globally connected, more reliant on technology, more 'professionally mobile' and more likely to work across multiple disciplines today than ever before. This environment demands a holistic approach to teaching and learning that focusses on a blend of:

- core skills and 21st century interdisciplinary themes
- learning and innovation skills
- information, media and technology skills
- life and career skills.[60]

These are summarised in Table 5.

Skill group	Description
Core skills and 21st century interdisciplinary themes	Foundational skills in literacy, numeracy, science and the arts as well as 21st century themes such as global awareness should be the foundation for all school graduates.
Learning and innovation skills	Learning and innovation skills are critical to success in the 21st century. School graduates need to be able to: - Think creatively, work creatively with others and implement innovation - Have strong critical thinking and problem solving skills – this includes the ability to reason effectively, use systems thinking, make judgements and decisions and solve problems - Communicate clearly and collaborate with others.
Information, media and technology skills	School graduates need to have the critical thinking skills and technological capability to harness today's digital age. This requires: - Information literacy – such as the ability to efficiently and effectively synthesise information - Media literacy – includes both analysing media and creating media products - ICT literacy – use of computer-based systems and technology.
Life and career skills	Today's life and work environments require far more than cognitive skills and content knowledge. Students require adequate life and career skills in order to navigate their way through complex life and work environments. They need to be: - Adaptive and flexible - Self-directed learners and be able to use their own initiative - Productive and accountable. - Able to guide and lead others and act in the interests of the larger community, and - Interact effectively with others and work effectively in diverse teams (e.g. leveraging social and cultural difference to create new ideas)

Table 5: 21st century skills

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[60] *ibid.*

These skills are arguably best acquired through school education that focusses first and foremost on the 'core' foundational skills. While VET can build on this to provide many of the skills outlined above, an education predicated in part on preparing students for higher learning – that is, developing and practicing the analytical and communication skills and promoting a desire to keep learning how to learn – will support greater flexibility and adaptability into the future.

5.2 Australian values support a high equity goal for our education system

It is clear that we need to lift education performance to remain competitive globally. The question is whether we should seek to achieve this by 'lifting all boats' or by focusing on the upper end. We showed earlier that there need not be a trade-off between pursuing high performance and high equity simultaneously. Indeed, the best performing school systems rate highly against both. We have also argued that an important ingredient to lifting overall performance is to shorten the length of the underperforming 'tail'.

But there are other reasons, too, for pursuing a high equity/high performance outcome for Australia's education system: it aligns with our values of egalitarianism and a 'fair go' for all. An accessible, good quality school system is one of the best ways to ensure that each individual has the opportunity to fully realise his or her potential.

In setting a goal for Australia's education system, we propose that the aim should be for every single school to be in the upper half of the high equity/high performance quadrant in Figure 31. We therefore believe that we should aim for a system with schools that sit on what we call the 'frontier line' in this figure. Many would already be operating at some point along this line[61], but in general terms, we propose that the ambition for each state and territory and each of the school sectors should be to move 'upward and rightward' against these two dimensions of equity and performance.

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[61]Indeed, our analysis shows that the performance of our independent sector is possibly comparable to that of the Shanghai system, while the average performance of the Catholic sector approximates the balance between performance and equity that Canada experiences. We cannot be definitive in this conclusion because in undertaking international comparisons, PISA controls for certain variables in different ways than we might do when comparing systems within Australia.
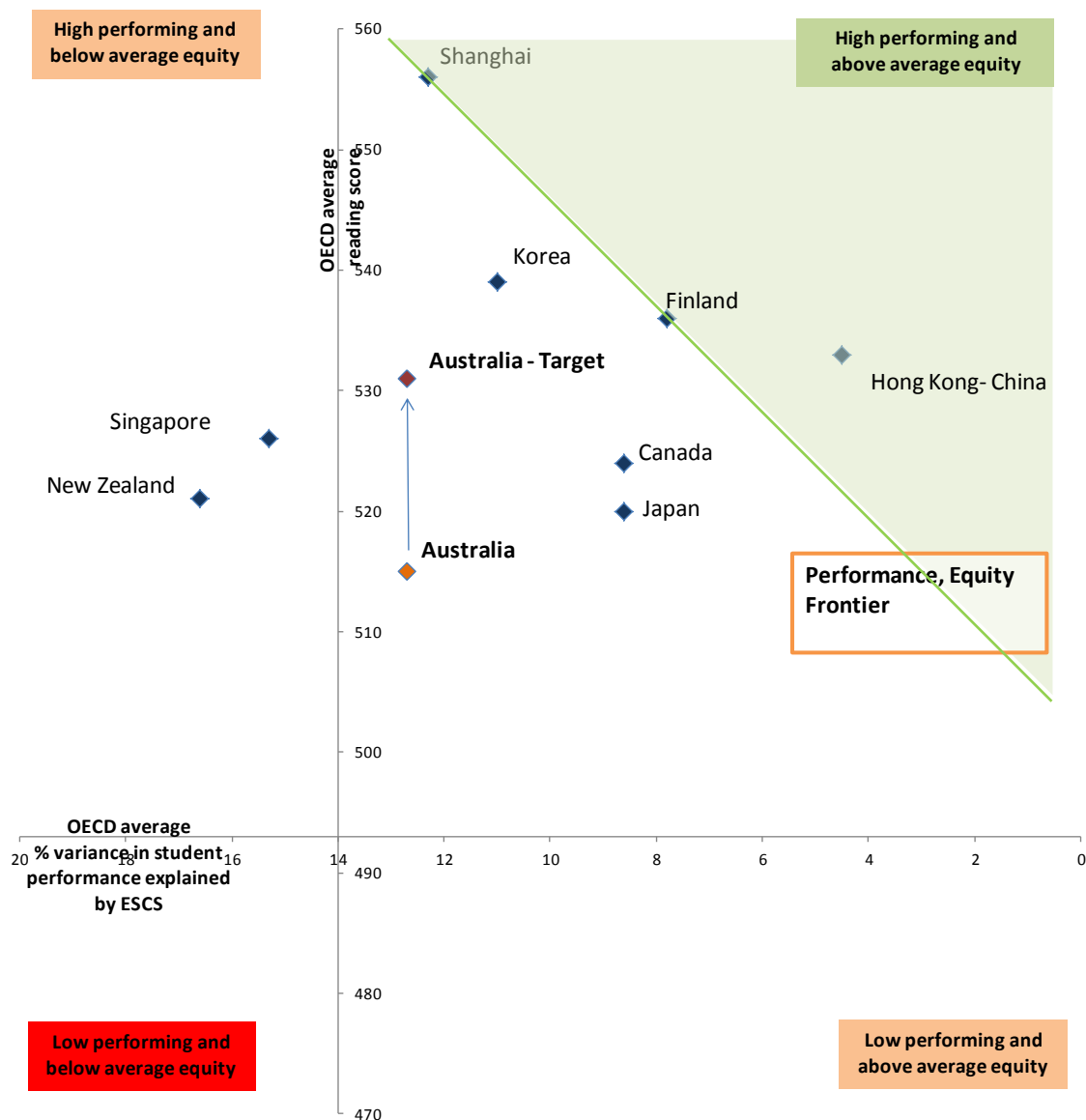
Figure 31: The performance/equity frontier

To provide an example of what this means in performance terms, moving Australia's government sector to the frontier line requires an increase in the sector's average reading scores for 15 year olds from 496 to 524 which would deliver an overall average PISA score of 531 (based on the current numbers and distribution of students). This is a significant increase, equivalent to over one year's worth of schooling.

5.3 Achieving these goals means system-wide efforts, with extra attention to lifting all under-performing schools

Making the shift to the equity/performance frontier, or a higher performing and more equitable schooling system, requires a major reduction in levels of underachievement, particularly as much of that underachievement is concentrated in low SES students and schools. As the government sector has a

preponderance of lower SES and lower performing students, this is where the bulk of this improvement needs to occur (see Figure 32).
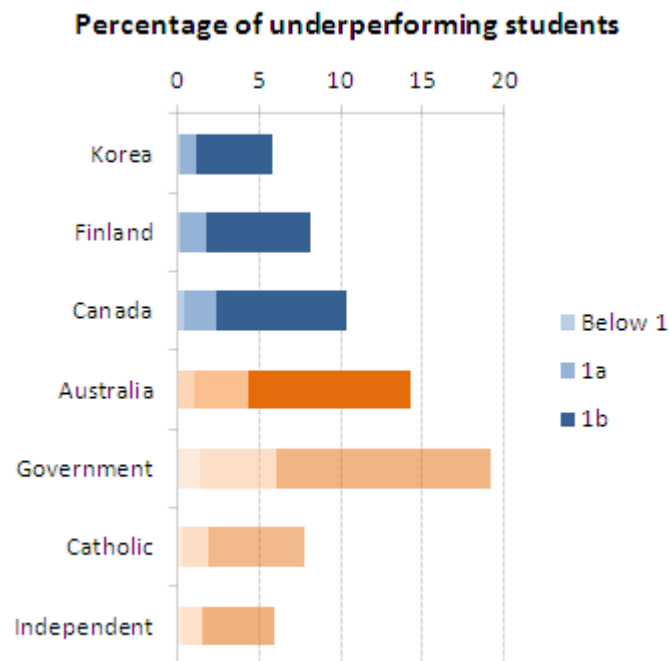
Figure 32: Percentage of underperforming students[62]

The level of underperformance in the government sector (19%) approximates that of the OECD average. If we were to lower this figure to 10%, the same level as Canada, it would reduce the nation's overall level of underperformance to 9%, (placing us between Canada and Finland). This would also result in an increase in average performance by 5 points. A more challenging target would be to reduce underperformance down to 7.5%, which is what we see in the Catholic sector at present. This approximates levels of underperformance in Hong Kong.

However, as underperformance exists in *all* sectors, improvement efforts must be comprehensive and transcend sectoral divides. This is a particularly important point when we are reminded that there is no evidence of systematic differences between the sectors in the 'quality' of schools. The inference to be drawn from this is that there is probably room for improvement in the non-government and the selective schools in the government sector as much as in those government schools where disadvantage is concentrated and performance is low. Moreover, we noted that the relative decline in Australia's education performance was evident at all levels, and cannot solely be explained by the larger underperforming cohort.

In short, system wide efforts are needed to improve both equity and performance in Australia. Australia's robust school market, with its high degree of inter-school competition for enrolments, makes this challenge a difficult one.

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[62] Underperformance is defined as being below 'level 1' in the PISA scores. Note that if we were to remove selective government schools, underperformance levels would be even higher.

At the local level, the issue that arises from open choice of schools and autonomy in enrolment decision-making is that schools are in a 'zero-sum' game. A drift of good students to one school away from another school exacerbates existing gaps in performance. As strong students, and the accompanying parental resources, shift to the strong school, the performance and hence market strength of the school increases.

The lower performing school is trapped in a downward spiral that is damaging for its student population and for the local community. As we described earlier, the school deteriorates, teachers' morale drops, school behaviour and orderliness can worsen, safety becomes an issue in the school and nearby, thereby affecting the surroundings and reducing the amenity of the area until the school becomes a 'blight' in the community. The irony of this trend is that, particularly in disadvantaged areas, schools can and should be a vibrant and accessible community resource that offers hope for children and parents alike, and a safe, nurturing environment for the development of a community's human and social capital.

To break this cycle we need to create an environment for 'lifting all boats'. Schools must be allowed to improve without this being at the expense of another. This means moderating the effect of competition with incentives to collaborate and to be mindful of wider community benefits of having well-functioning schools irrespective of personal considerations around school choice for one's own children.

6 Achieving these goals means focussing on what works

Over the past few decades many countries have tried to reform their schools and school systems but very few have delivered real enduring improvements. This observation is sobering and sends a clear warning: fads and short-term, isolated reforms do not work, or they work but only for a while. There are also no 'silver bullets'. No one strategy or lever will fix under-performance. Each school starts from a different point and each student has different needs, thus strategies need to be tailored appropriately.

There is, however, a strong evidence base and clear consensus on what does generate substantial and enduring improvements. The challenge, as is often the case, comes with thorough and comprehensive implementation.

6.1 Successful reforms target the right change, are politically sustainable and operationally feasible

Before examining 'what works' it is worth briefly investigating why reforms have under-delivered in the past. According to Ben Levin[63] past educational reforms have failed either because they: target the wrong changes; do not give adequate attention to political dynamics; and/or are not effectively implemented.

Separating out the SES impacts and individual student characteristics that can affect learning, there are several other variables that can be adjusted by educational authorities and school leaders to improve educational outcomes. John Hattie conducted a widely regarded meta-analysis of the relative impacts of these variables (Figure 33).

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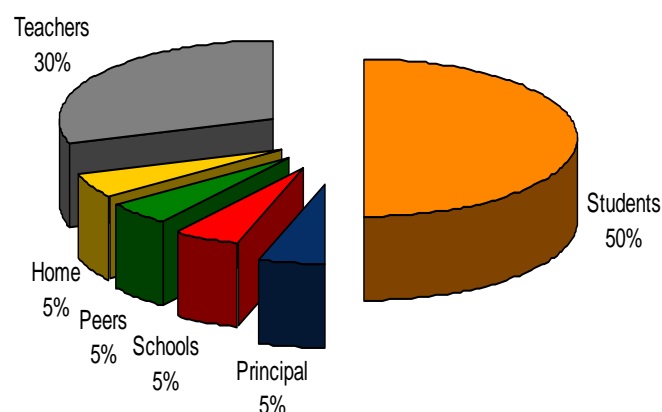
[63] Levin, Ben (2010) *Governments and Education Reform*. Some lessons from the last 50 years, Journal of Education Policy, Vol. 25, No. 6, November 2010, p. 740

Figure 33: Major sources of variance in student achievement[64]

Such a 'hierarchy of effectiveness' (based on the best available evidence) should always be used to identify the most appropriate reform options. However this is often not the case. As Levin[65] describes:

"More typically, someone comes across an idea she or he likes and urges its adoption… often the changes proposed are both single and simple – more testing of students, loosening certification requirements for teachers, or a particular school improvement model…"

The nature of our school system – divided as it is between sectors and jurisdictions – means that innovation can often happen on a small scale. This is good and reflects one of the strengths of our federation. But evaluating, scaling and leveraging these innovations is important. Reforms should be given enough time to work before being independently and thoroughly evaluated, and then transferred, as appropriate, across the system.

The degree of political support – broadly interpreted – is also important to reforms being properly implemented and resourced. Reforms require direction and funding from central authorities as well as 'buy-in' from an informed community. To attain this support, Levin contends that schools should have open and honest communication with external and internal parties[66]. Decisions should be based on evidence and take into account all relevant factors, bearing in mind the implications of change for other parts of the education system, for other government policies and for easy access to good schools by segments of the community that need this the most. At the national, state and regional level, much can be done to orient effort towards collective goals through a consistent narrative around agreed objectives.

Most reforms require people to change their behavior or learn new skills. This can be incredibly challenging and it takes time. It is no wonder then that many good ideas that have gained legitimacy and support have not led to enduring improvements in student outcomes. To create and sustain real change Levin and others argue persuasively that we need to build the capacity of schools to improve. This means having the right leadership structures, materials and resources, learning opportunities for teachers and data to support continuous improvement.

6.2 Reforms must be well-targeted to different degrees of under-performance

If we want to 'lift all boats' we must recognize that each school starts from a different point. Applying the performance scale used in McKinsey's report '*How the world's best performing school system come out on top*' to 2009 PISA data; we can see that most Australian schools (39.5 %) are in the 'great to excellent' band. However there's still a significant number (31 %) that score between poor to fair and fair to good.

School performance band	PISA score	Key statistics

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64 Hattie, J, Teachers Make a Difference: What is the Research Evidence?, Australian Council for Education Research, October 2003
65 Levin, B. (2008) How to change 5000 schools: a practical and positive approach for leading change at every level, Cambridge, Harvard Education Press
66ibid.

School performance band	PISA score	Key statistics
Great to excellent schools	Average reading score 520+	• 39.6 percent of Australian schools are in this range • Schools in this band have an average student SES of 0.62[67]
Good to great schools	Average reading score of 490 - 520	• 29.4 percent of Australian schools perform in this range • Good to great schools have an average student SES of 0.165
Fair to good schools	Average reading score of 440 - 490	• 23.2 percent of Australian schools perform in this range • Fair to good schools have an average student SES of 0.04
Poor to fair schools	Average reading score below 440	• 7.8 percent of Australian schools perform in this range • Poor to fair schools have an average student SES of -0.16

Figure 34: Australian schools' performance across four tiers using PISA 2009 data[68]

Poor to fair schools typically have a higher concentration of low SES students and may have higher average costs due to declining enrolments and poor morale amongst staff. It is important then that strategies are targeted towards getting the school 'back on track' by making it more attractive to prospective students and improving the experience of current students. Equally, strategies targeted at good to great schools should drive further improvement in school performance.

6.2.1 There are common elements that underpin any school's success and these should inform our future direction.

Research shows that there are several key elements that explain or contribute to good student outcomes. These are summarised in Table 6 below. The authors listed at the top of the table (with the exception of the NILS multilevel analysis) are those that are most cited with respect to the Australian schooling context, or who have conducted meta-analyses that distil the findings from a range of other wide-ranging research projects on educational improvement. There are common themes across each of their respective works, but we highlight different points of emphasis that emerges in each (represented by the number of ticks).

Levers	Ben Levin (2010)	Fullan et al. (2006)	Hattie (2009)	Goodwin (2010)	OECD Lessons from PISA (2011)	NILS PISA analysis (2011)
Early support for students with additional needs	✓✓		✓			✓✓
Student engagement and motivation	✓✓	✓		✓		✓✓

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[67] We note that if we were to accurately classify schools we would need to control for student SES to some extent.

[68] NILS analysis of PISA 2009 database, and framework from Mourshed, M, Chijioke, C, Barber M (2010) *How the world's most improved school systems keep getting better,* McKinsey & Company.

Levers	Ben Levin (2010)	Fullan et al. (2006)	Hattie (2009)	Goodwin (2010)	OECD Lessons from PISA (2011)	NILS PISA analysis (2011)
Support for students with additional needs (e.g. low SES)				✓✓		✓✓
Parental involvement	✓✓		✓			✓
Teacher quality (attraction and peer-to-peer learning)	✓✓	✓✓	✓✓		✓✓	
Teaching method based on continual assessment of impact	✓✓	✓✓	✓✓	✓✓	✓✓	
High expectations of students	✓✓	✓✓	✓✓	✓✓	✓✓	
A good curriculum	✓✓		✓			
High quality leadership	✓	✓✓	✓	✓		
Positive school culture and ethos	✓		✓	✓✓		
Orderly learning environment			✓		✓	
Standards and transparency of information		✓✓	✓		✓✓	
Community and stakeholder engagement	✓				✓✓	

Table 6: Support for reform levers by prominent educationalists/academics

Considering this evidence in the context of the current challenge in Australia, we recommend a policy and funding focus on the following six areas, noting that several are already the subject of considerable reform effort:

1. Teacher quality and improved teaching

2. Ensuring the right external standards and governance

3. Regional-level collaboration and networked schools

4. Support for disadvantaged students

5. Investment in under-performing schools where there is a concentration of disadvantage

6. Improving and supporting school leadership

Focussing on these levers for improvement will deliver the most benefit to schools and students; the best results will emerge if they are used in a comprehensive, integrated and sustainable manner. Only then will Australia be positioned to match or better the performance of a country like Canada.

7 Six levers for improvement point to what we should do, or do more of

So far in this report we have considered how Australia's education system is faring by international standards, explored some of the dynamics that contribute to below-par performance, and set out the case for Australian schools to pursue high performance/high equity outcomes. This section discusses the key levers available to policy-makers and others engaged in the education of Australia's youth – those that can be best employed to lift performance nationally and improve equity of outcomes.

Many of these levers are already being used to very good effect. Several suggestions are relatively new to the Australian context but most refer to initiatives that are underway locally and primarily need to *be adopted more consistently and in tandem with other reform* efforts.

The Review of Funding for Schooling presents an unprecedented opportunity to adopt a truly national and comprehensive approach to lifting school performance and the levers we discuss are all applicable, albeit with varying degrees of relevance, to all schools in all states and territories and across the three sectors.

The levers will only deliver fundamental and enduring results if they are employed in a complementary way. So while they are listed and discussed in turn, the reader will notice a high degree of inter-connectedness. For example, addressing the needs of disadvantaged students and schools involves having strong school leadership, effective engagement with parents and the wider community, investment in infrastructure and provision of specific support, and ensuring that the best teachers are adding value where it is most needed.

The underlying themes for all these levers are:

- **capability development** - among students, teachers, leaders, and to some extent parents

- **a focus on under-performing schools** -but not exclusively so, recognising that improvement should be a goal for all schools

- **approaches that transcend sectors** –we do not see any levers that are particular to one sector

- **positive cultures** – as reflected in the professionalism of school staff, an uplifting school ethos, and behaviors among students that contribute to a positive learning experience.

7.1 Improving the quality of teachers and of teaching

The relationship and interaction between teachers and students has a significant impact on students' educational outcomes. Consistent with Hattie's findings reported above, research by McKinsey shows that teacher quality affected student performance more than any other variable, and that on average, two students with average performance (50th percentile) would diverge by more than 50 percentile points over a three year period depending on the teacher they were assigned (see Figure 35).
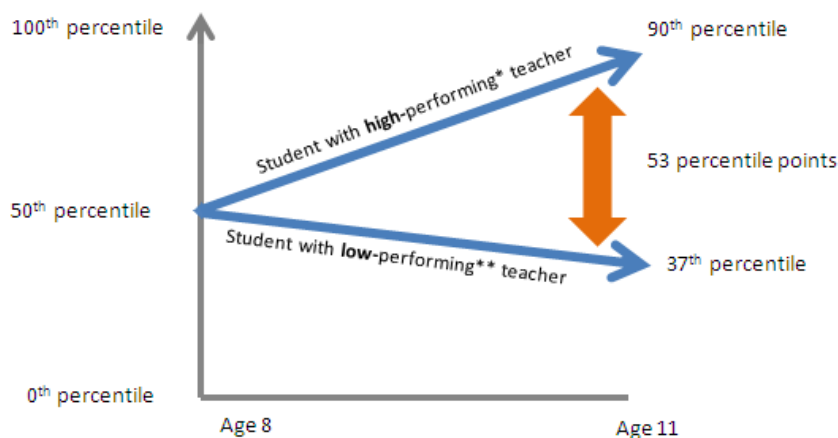
* Among the top 20% of teachers **Among the bottom 20% of teachers

Figure 35: Cumulative effect of teacher quality[69]

This suggests that the starting point for any effort to improve the performance of the country's school system is to focus on having good teachers. This is certainly something that governments across Australia have recognised and there have been a range of successful initiatives to draw strong candidates to the profession, to develop the existing workforce, deploy them more effectively, and reward those who are serving as excellent role models for their peers.

It is important to build on this strong foundation to create higher standards and greater consistency of performance and, in particular, to ensure that the best teachers are attached to the schools where they can have the greatest benefit.

7.1.1 Attracting, retaining and nurturing good teachers

Other OECD countries that out-perform Australia have high bars of entry to the teaching profession. Finland takes the top 10% of high school graduates into its student teaching courses (and requires completion of a Master's degree). Others, like Singapore and South Korea recruit from the top 30%. One of the reasons they are able to keep the bar high is that the profession enjoys a higher status, and in many case higher rewards, than is evident in Australia.

Raising the status of the profession
Research has shown that there is a link between the average pay of teachers and the aptitude of students entering teaching courses in Australian universities, with a fall in average teacher pay compared to other graduates linked to a fall in the average aptitude of teaching students.[70] The McKinsey study also shows that higher salaries attract higher aptitude students.[71] So one way to draw strong candidates into the profession is to possibly raise teacher salaries.

As well as ensuring that teaching is an attractive profession for high school graduates, other pathways to the profession need to be kept open. Programs such as 'Teach for Australia' that recruit university graduates from other disciplines for a limited-term assignment as a teacher appear to be showing

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[69] Sanders, W, Rivers, J (1996), *Cumulative and Residual Effects on Future Student Academic Achievement*

[70] Leigh, A, Ryan C, (2006) *How and Why has Teacher Quality Changed in Australia*?, Centre for Economic Policy Research

[71] Auguste, B, Kihn, P, Miller, M (2010) *Closing the Talent Gap: Attracting and retaining the top-third graduates to careers in Teaching*, McKinsey.

positive results. Certainly similar models in other countries are proving successful in terms of both student outcomes and retention of a majority of teachers beyond their contracted period. The OECD recently found that targeting promotional programs to "non-traditional" teaching entrants was one of the key drivers to improving teacher quality.[72]

Raising the status of teaching to attract good candidates also involves positioning it as a professional service like other well-respected professional services. This means highlighting teaching as a profession that requires specialised skills, that demands a high degree of quality, that is accountable, that has its own professional ethics, codes and a community of practice that shares information of value to all those working in the sector.

More than a marketing exercise for teaching, this is about building on the professional networks that already exist among teachers by creating the structures and platforms to nurture and promote a renewed professional ethos. In other words, improving teacher quality is not just about supporting, developing and empowering good teachers; it is a collective enterprise as well.

One of the major reforms made by the Ontario education system was to set up structures that gave teachers the opportunity to practice new ideas and learn from their colleagues. Within schools there were specific positions created at the district level and the school level to work with teachers in groups to tackle issues that were getting in the way of improved student performance. This provided a forum for teachers to share ideas about students that were struggling and to learn from each other about how to tackle particular problems or issues. This happens in many Australian schools already. Also there are 'mentor' schemes that provide similar opportunities to learn from colleagues or to reflect on teaching practices or problems. The research validates such initiatives and suggests that they are an important contribution to improving the motivation, satisfaction and professional development of teachers.

A common complaint is that there isn't enough time for this type of engagement, however. Australian teachers at primary level typically spend 1100 hours per year in the classroom, which is high by international standards. Giving teachers more time for peer-to-peer learning, for engagement with parents and the wider community, and for deliberation with colleagues on issues of common concern would have multiple benefits - including the retention and empowerment of good teachers.

Teacher training and performance management

To ensure a high standard of teaching, we need to maintain a high standard of teacher education. It is well-accepted that training of teachers requires a blend of theory and practice, ideally supplemented by some mentoring and ongoing professional development. There have been recent, laudable initiatives in Australia to design teacher training along the lines of the approach used for training medical practitioners, to ensure greater rigour in assessing practical skills development and supporting specialised pedagogy that is 'fit for purpose'.

An example is the clinical model of teacher training employed in the University of Melbourne's Master of Teaching. This model is designed to develop graduates who have the professional capabilities to meet the needs of individual learners through the use of data to plan and implement teaching interventions. The approach is based on an assessment that the 'apprenticeship model' where the practices of ex-teacher instructors and mentors are 'recycled' (for better or worse) is somewhat flawed. Instead, it embraces the disciplinary knowledge and critical analytical skills of graduate entry students, and integrates masters-level academic study with practical work in collaborating schools. Clinical teaching models are used with university based Clinical Specialists and school based Teaching Fellows working together to teach the candidates skills and practices underpinned by the core and discipline subjects delivered at the university. It has an underpinning philosophy that teaching is a clinical practice profession – one that is among the most complex and challenging.

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[72] OECD (2011) *Building a High Quality Teaching Profession: Lessons from around the world*: OECD Publishing.

Once in the profession, teachers need constructive and timely feedback on their performance. The results of the OECD TAILIS[73] survey show that Australian teachers do not believe they are receiving appropriate feedback. Less than 30% of Australian teachers report that evaluations have led to changes in the way they teach, with 63% of teachers saying that the evaluation processes is for administrative purposes only.

At the same time, there is anecdotal evidence to suggest that schools have a difficult time removing those teachers who are not up to standard.

Like any performance evaluation system, there needs to be organisation-wide structures, and systems underpinned and modelled by leaders who show unflagging commitment to making performance assessment fair and effective. Applying these principles to the school system and developing appropriate measures for teacher performance has fuelled a raft of experiments as well as a long running, often fractious debate here and overseas. Nevertheless, there are some useful research findings emerging on the key ingredients for a sound teacher evaluation approach.

One set of data is from the Bill and Melinda Gates Foundation, which is currently undertaking a two year, US $43 million study called 'Measures of Effective Teaching' (MET)[74]. MET uses randomised trials to determine what effective teaching is and how it can be measured. While only in its first year, some of the initial findings have shown that a teacher's ability to 'value add' to their students' past performance – that is, where their students outperform predicted test scores - is a strong predictor of future test scores. The study has also found that students are good at identifying effective teaching and can be reliable suppliers of commentary as part of a comprehensive evaluation.

A recent Grattan Institute[75] paper outlined eight key performance measures that its author argued should form part of a balanced scorecard approach to measuring teacher performance. These are: student performance and assessments, peer observation and collaboration, direct observation of classroom teaching and learning, student surveys and feedback, 360-degree assessment and feedback, self-assessment, parent surveys and feedback, and external observation.

They suggest that schools use at least four of these measures to create a balanced scorecard to measure teacher effectiveness, with student assessment being a requisite measure. However, as the authors state, the most effective form of assessment is one that involves "meaningful feedback to improve classroom teaching". Therefore, some form of observation – be it by peers, school leaders, or external parties – where teachers are given specific feedback on their instructional approach is an essential part of any teacher performance management system.

Deployment

Finally, there is the important question of how to attract high quality teachers to the right schools. One of the key issues affecting 'residualised schools' is that they are in unattractive locations and present a challenging range of social and behavioural problems. Some teachers are inspired by such challenges. But in many cases it is difficult to persuade the better teachers to work there. It is these latter cases where decisions about deployment of teachers – including through the use of incentives – can be more sensibly managed by a central authority.

Deployment within schools is also a concern. The neediest students within schools should have access to the better teachers on staff. This can be difficult in smaller schools, but where there is flexibility, principals need to ensure that their struggling students are not be further disadvantaged by being allocated teachers who do not have the right skills or predisposition to bring out their very best.

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[73] As summarised in Jensen, B (2011) "*What Teachers Want: Better Teacher Management*" Grattan Institute Melbourne.

[74] Bill & Melinda Gates Foundation (2010), *Learning about teaching. Initial findings from the Measures of Effective Teaching Project*, www.gatesfoundation.com.

[75] Jensen, B. and Reichl, J. (2011), *Better teacher appraisal and feedback: Improving performance*, Grattan Institute, Melbourne.

7.1.2 Improving the focus on and quality of instructional methods

All prominent educationalists emphasise that, putting aside the variables that can't be controlled (like SES status), what goes on in the classroom is most important to influencing student success. There has been a lot of discussion in Australia about curriculum and *what* should be taught in schools, but less debate about *how* it is taught.

There is now a strong consensus that classroom instruction needs to be highly directed to addressing the specific needs of the students present, rather than directed towards simply working through the set curriculum. Many teachers and schools are giving this the attention it deserves. We highlight the point here, however, because it is important for the wider community to understand what the latest research suggests, and also to argue that these intentional, tailored approaches are adopted consistently in all schools by all teachers.

Intentional teaching

The authors of a book called 'Breakthrough'[76] draw on research and their own experiences as educators to argue that to achieve systemic performance improvement in education there needs to be a focus on classroom routines and practices centred on personalised ongoing 'data-driven focused instruction'. The premise for this approach is that not all students come into a class at the start of the year with the same skills. The authors pose the question: If we know that a Year 7 class may have some students reading at a Year 5 level, and others at a Year 9 level why should all those students be taught in the same manner?

In practice, the 'Breakthrough' method (see Box 4 below) means testing students to understand their current level of achievement, tailoring instruction to address their particular areas for development, then re-testing and re-assessing regularly (even daily in some cases) so that the method and focus of instruction can be continually refined until the appropriate level of achievement is reached.

The principles underlying the 'Breakthrough' approach

- Knowing in a precise way the strengths and weaknesses of each student at the point of instruction through formative assessment

- Knowing the appropriate instructional response and in particular when and how to use which instructional strategies and matched resources

- Having the classroom structures, routines, and tools to deliver differentiated instruction and focused teaching on a daily basis.

Box 4: 'Breakthrough' approach[77]

Because the method is data-intensive it requires investment in infrastructure (i.e. databases) to be delivered at scale, and it requires teachers to be data literate. It is also predicated on having organisational systems within classrooms that support small-group learning. This can be a lot to ask of teachers who may be dealing with disruptive behaviour, which underlines a point we come to later about the need for an orderly school environment. Having a wide range of skill levels in a classroom also makes this instructional technique challenging and presents an argument for making good use of teacher's aides to supplement staff so that more small group work can be done.

Technology can be helpful here also: in the United States some charter schools are adopting 'hybrid' learning methods whereby children work in less formal environments at computers on their own for

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[76] Fullan, M, Hill, P, Crevola, C (2006) *Breakthrough* Corwin Press, Sage Publications
[77] ibid.

several hours a day. In essence they are undertaking 'self-paced learning'. For the balance of the day, the teachers work in small groups with students who have encountered problems in their online work. Teachers have the advantage of (almost) real-time data and feedback, as they can see the computer-entered answers to test questions and can discuss with the student or students where they encountered difficulties. This enables much more immediate intervention and tailored instruction to address the 'blockage' to that particular strand of learning. The amount of self-directed learning time can be calibrated according to the needs and abilities (and behaviour) of students.

Setting challenging goals

Other scholars like John Hattie agree with the emphasis on a tailored and focused instructional method and argue that it should be coupled with challenging goals for achievement.[78] For example, if a class starts out at the beginning of the year behind their peer group, the goals should be to catch up and even get ahead of the others within 12 months. Aiming for 'two-years-in-one' is an approach that can be quite effective as part of a broader effort to inculcate higher expectations of performance among staff and students. As Levin observed, "(i)n practice we often underestimate students' potential…many people can master more demanding content if they have the right support and the right motivation."[79]

In the Talent Code, author Daniel Coyle discusses the effectiveness of the Knowledge is Power Program (KIPP) method in lifting student performance in underprivileged areas of the United States. One key ingredient of their success is to raise student expectations (and teacher expectations of students). "KIPP's most important signal....is college. Or as it is invariably voiced at KIPP, *college!* College is the *spiritus sancti* that is invoked hundreds of times each day, not so much as a place as a glowing ideal." [80]

There is strong evidence against the value of 'tracking' of students into different streams, because it creates self-fulfilling expectations of under-performance among those who are channeled into lower-ranked groups. Similarly, there is a wide consensus now that year repetition does not improve outcomes. Acceleration, on the other hand, has been found to be successful for gifted children (including when compared to the alternative of having 'enrichment' activities within the same grade), so much so that Hattie asks why it is not used more often.[81]

While setting high expectations generally is therefore important, targeting a specific level of achievement – such as a two-years-in-one - can only be successful, however, if the teachers know where the students' starting point is, how they are progressing, and what they need by way of tailored instruction to excel.

Finally, we would note that to support the type of tailored instructional method described here, teachers need to approach their own professional development as continuous learning in context, drawing from direct feedback on student improvement as well as advice from their wider professional community. As Coohe, Raudernbush and Bull put it, they need to view "(i)nstruction [as] a stream, not an event, and it flows in and draws on environments – including other teachers and students, school leaders, parents, professionals, local districts, state agencies and test and text publishers."[82]

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[78] Hattie, J. (2009) *Visible Learning: a synthesis of over 800 meta-analysis relating to achievement*, Routledge, London

[79] Levin, B. (2008) How *to change 5000 schools: a practical and positive approach for leading change at every level*, Cambridge, Harvard Education Press

[80] Coyle, D (2009) *The Talent Code: Greatness Isn't Born. It's Grown. Here*'s How. Batnam

[81] Hattie, JJ. (2009) Visible Learning: a synthesis of over 800 meta-analyses relating to achievement, Routledge, London.

[82] Cohen, D., Raudenbush, S., & Ball, D. (2003). Resources, instruction, and research. Educational Evaluation and Policy Analysis, 25 (2), 1-24.

7.2 Ensuring the right external standards and oversight

Just as teachers need to be held to a standard of competence, so do schools and school systems. The move to greater transparency in school performance data, using some shared national measures, is commendable. NAPLAN provides a rich source of data to schools as well as teachers and enables us to monitor trends over time.

There have been concerns raised in Australia and overseas about the risks of promoting a 'teaching to the test' mentality. This is understandable but should not be overstated. Other assessment methods will be important and there are numerous ways in which parents and students can obtain feedback on student and school performance. It is important, nevertheless, to consider other complementary ways in which to rate progress and a school's 'value add' to student performance.

7.2.1 Measuring school performance

In some jurisdictions, external auditors conduct more rigorous evaluations of school performance that take account of quantitative and qualitative data and examine factors other than educational outcomes. The best known example of this approach is Ofsted in the United Kingdom (see Box 5).

The Office for Standards in Education, Children's Services and Skills (Ofsted)

Ofsted is an independent regulator that inspects providers of services in the childcare, school-level education and adult training. The Education and Inspections Act, requires that Ofsted:

- promotes service improvement

- ensures that services focus on the interests of their users

- sees that services are efficient, effective and promote value for money.

In the schooling sector, Ofsted has all primary, secondary and independent schools in its remit. The body collects evidence from the providers and users and presents its findings to parliament. Reports are also published publically. Ofsted uses a rating system that looks at both current performance and potential for improvement, and gives prominence on its website to those institutions achieving 'outstanding' results.

It carries out numerous inspections in a rolling program. Inspection teams typically observe teachers and classes and have discussions with groups of students, staff and the chair of the school board. They also look at a range of documentation, including the school's analysis of students' attainment and the progress they make, data on attendance and behaviour, evidence of leaders' monitoring and evaluation and plans for improvement. Inspectors also analyse questionnaires completed by parents and carers, as well as questionnaires from students and staff.

The inspection teams focus on specific areas. For example, in one school these might be:

- how effectively the school cultivates positive attitudes to learning

- how well teaching and the curriculum are tailored to students' different abilities and aspirations

- teaching and learning in English

- how effectively middle managers promote better outcomes for students

- the impact of the major rebuilding programme on the school's work.

In addition to inspection reports, Ofsted publishes themed and subject-specific findings and recommendations on wider issues within the care, learning, and skills agenda, as well as statistical information.

Box 5: The Office for Standards in Education, Children's Services and Skills (Ofsted)

We would not propose that a comprehensive inspectorate of this kind is needed in Australia, particularly given that our overall performance is relatively strong by OECD standards, but there may be value in having some elements of an external audit system to assess in more detail the causes of middling or poor performance where this is observed.

We envisage for the Australian context an approach which, rather than starting with a punitive 'name-and-shame' dimension, calibrates the degree of central assistance to and control over schools according to current level of school performance. Importantly, the assessment of school performance would include NAPLAN but would take into account other factors (e.g. absenteeism by students and teachers, trends in enrolments, school resources - see Box 6), many of which are already being measured.

Alternative performance 'scorecard' measures

- Outcomes:
  - Progress (i.e. improvement over time versus absolute levels of proficiency)
  - Year 12 completion rates
  - Destination surveys
- Student engagement:
  - Absenteeism rates
  - Student satisfaction surveys
  - Numbers and types of disciplinary actions (including suspensions)
- Staff satisfaction
- Parent satisfaction

Box 6: Alternative performance 'scorecard' measures

7.2.2 Calibrating 'autonomy' over resources

'Autonomy' has arguably been one of the more faddish concepts that has informed education reforms internationally in the past decade. It is generally used to refer to 'autonomy from government control' but it is not always clear whether that autonomy constitutes relaxed controls over curriculum, teacher employment and remuneration, financial management, enrolment of students, or some combination of these. The common underlying assumption, however, is that greater freedom will deliver improved student outcomes. As we have shown, freedom over enrolment certainly does that for the 'receiving' school, but it comes at a cost for other schools in the system. Moreover, it is less clear whether other types of autonomy deliver a marked and sustained improvement.

With those considerations in mind, we have been cautious about how and where we use the term 'autonomy'. In this section, we maintain that there is less need for directive oversight of high performing schools, but that we should match the larger with investments in lower performing schools with greater accountability (and therefore oversight). We do not support greater autonomy over enrolments than currently exists, and we see value in centrally-directed industrial relations arrangements for teachers and principals to support a thriving professional community and to ensure that the best teachers are deployed where they are most needed.

Linking the degree of oversight to school performance levels

If we are to lift Australia's educational performance by focussing especially on our underperforming 'tail', we need to invest more heavily in underperforming schools. Wherever larger amounts of public funds are involved, the expenditure of these funds needs to be monitored and the impact evaluated. Higher performing schools by contrast would be subject to less intensive oversight and central direction.

Underperforming schools will also need extra assistance from the central authority (i.e. state government or state Catholic Education Commission) to deploy good teachers to that school. Other schools would be less subject to centrally-managed deployments while they are performing well. In this sense, underperforming schools would have less autonomy in decisions over human and financial capital.

This does not mean stifling innovation

Some might argue that under-performing schools need more rather than less autonomy over resource decision-making – specifically so that struggling schools can be given scope to innovate. This is a fair point and we do not disagree with the principle. Researchers have found, however, that to achieve systemic and enduring reform, there needs to be centrally driven and consistent policy approaches backed up by resourcing.[83]

The intent of oversight is to ensure that the schools are staffed and resourced appropriately. But oversight should not extend to second-guessing how things are done in the school; nor should it stifle innovation about school-based approaches to making changes within agreed parameters. Empowering school leaders to make the decisions that will support the school's 'value add' to its student body is crucial, and supporting teachers to exercise the types of judgements implicit in the instructional methods described above is equally important.

7.3 Promoting regional-level collaboration and networked schools

Another key theme to emerge from the literature about high-performing schools concerns the degree of community engagement. The schools that do better are connected to the community and have active engagement not just by parents but by other local stakeholders. It makes sense that the more resources from the community, the wider the range of contributions and the stronger the commitment to improving performance, the better the chances of success.

For reasons outlined earlier, higher-performing schools with a higher-SES parent body tend to have parents who are more willing and able to engage in or otherwise contribute to a school's needs. The schools that most need that input are often least able to access it.

In Australia, because of our competitive school environment and the separate strands of governance between sectors, there is no formal structure that promotes collaboration between schools within a community. At the local level, schools can often agree to share facilities or undertake some joint activities, but there is greater benefit to be derived from a networked school arrangement that can leverage the engagement of the wider community.

It is reasonable for parents to be focussed on the schools that their children attend, but what about those who live in the area but don't necessarily have school-age children? What about local businesses who are keen to nurture the education of children who can then stay in the region and be part of the local workforce? What about those who are keen to see school facilities used for wider community purposes out-of-hours? And then there are those who just want to see all schools do well in the region, not just those who are already well-equipped to succeed. All such interested parties can potentially be engaged in an effort to support their local schools, regardless of sector or current or prior association.

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[83] See for example the case study on Community C in Appendix D.1.3 and Levin, B. (2008) *How to change 5000 schools: a practical and positive approach for leading change at every level*, Cambridge, Harvard Education Press

How do you leverage that interest and thereby assist those schools who need community buy-in the most? We offer three ideas for consideration:

1. **setting regional targets** for performance at the community/regional level – for example, "all schools in this region to achieve at least the average national literacy and numeracy results in Grade 3 within two years".

2. **providing a central fund for collaborative projects** between schools – this fund would underwrite the building of shared facilities (perhaps to be matched through joint fundraising activities) or inter-school programs.

3. **creating regional/community level boards** – these boards would set and monitor the targets, make applications for the funding and provide a forum for discussion about how the wider community can better support the schools in their network.

These ideas point to ways in which community level engagement can be nurtured so that competition between schools is not the prevailing dynamic. Such approaches also provide benefits in the form of compensating for some (generally disadvantaged) schools' lack of social capital and parental engagement.

Boston Public Schools' district-level initiatives support family engagement

The Assistant Superintendent for Family and Students wanted to create a vision of family engagement for the district and to build the district's capacity to support schools' engagement. The result was a district-wide Family Engagement Systems at Work initiative which promotes the contribution of family engagement for improving student outcomes through increased attendance, decreased suspension rates, and other indicators linked to student achievement. The initiative requires teaching staff members to address how they involve families in their instructional practices. Curriculum development work includes tools to help parents understand the content issues their children need to master on a grade-by-grade basis. The district also invites participation by family engagement staff members in its conversations about how to increase students' literacy development.

Westmoreland, H., Rosenberg, H. M., Lopez, M.E. and Weiss, H (2009),"Seeing is Believing: Promising Practices for How School Districts Promote Family Engagement", Harvard Family Research Project, Harvard Graduate School of Education

Box 7: Boston Public Schools' Family Engagement Systems at Work

At a practical level, creating linkages between schools is one way to mitigate the effects of enrolment selection. Parents and students are understandably attracted to the specialist offerings of some schools but, as we have shown, such selective enrolment can detract from the ability of general education schools in the government sector to maintain high standards (i.e. due to 'brain drain'). Under regional arrangements, it may be more feasible for two schools to enter into an arrangement whereby they duplicate or share teaching of some subjects but allow students to switch between campuses for specialised subjects. (This is clearly more practicable in later years of school.)

Such regionally-based structures and approaches can provide a useful framework for proven initiatives that have community involvement at their centre. For example, the Innovative Community Action Network (ICAN) program in South Australia is designed for students at risk of disengaging from schools. It relies on local workplaces, community organisations and mentors to provide alternative environments and support for learning so that the children do not drop out and become socially excluded. Another example (from Canada[84]) is described in Box 8.

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[84]From Levin, B. (2008) *How to change 5000 schools: a practical and positive approach for leading change at every level*, Cambridge, Harvard Education Press

Community capacity building - William Whyte Community School

William Whyte Community School is located in one of the poorest neighbourhoods in Canada and has a high proportion of Aboriginal people. The community has high rates of unemployment, poor housing, low educational attainment and high levels of substance abuse and violence. Over a number of years, school staff and community members have undertaken a range of activities that have helped build capacity and self-reliance. For example they supported the development of a food co-op which became a vehicle for parents to learn about their child's nutrition.

From Levin, B. (2010) *How to change 5000 schools: a practical and positive approach for leading change at every level*, Cambridge, Harvard Education Press

Box 8: William Whyte Community School, Manitoba

7.4 Supporting disadvantaged students

As discussed earlier, it is the student's own background and circumstances, and those of the collective student body, which most significantly impact schooling outcomes. Students from a low SES background, who attend school in a rural or remote area, who are Indigenous, are refugees or have a low level of English tend to do worse than other students.

Schools can and should play a role in minimising the impact of this disadvantage, for example by putting the strongest teachers to those classrooms where the students are most disadvantaged. Governments and other educational authorities can also as can the Government do a lot through the adoption of some of the policy directions outlined above and through appropriately targeted resourcing.

For students with disabilities there are specific needs that cannot be met in any way other than through direct support. It is clear that any new funding model should continue to meet these needs, particularly in under-performing schools where learning can be further compromised by low expectations and/or low SES effects.

The additional needs of students with a disability are not discussed in detail in this section. We acknowledge that their needs, and those of Indigenous students, are multifaceted and deserve more concentrated attention. Such detailed attention was beyond the scope of this report, however. Instead we will focus on a few high-level points about what generally needs to be done to support children experiencing all types of disadvantage at school.[85]

7.4.1 Increased engagement with parents

Schools can and should play an active role in inviting parents to get involved, but success hinges on the school's ability to identify and assist in addressing three underlying issues.

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[85] Early childhood and pre-school education was also out-of-scope for this report, but it is crucially important not to lose sight of the positive impact that early intervention can have. Evidence shows that dramatic disparities in literacy skills between higher and lower SES children emerge by the time children start schooling. Not attending pre-school reduces students' reading scores by 23.28 points on average, nearly the equivalent of a full year of school See Australian Bureau of Statistics (2001) Participation in Education: attending pre-school and low SES groups are 1.4 times more likely to have not attended pre-school than high SES groups (NILS multivariate analysis of 2009 PISA results). Australia has recently mounted a national effort to improve access to pre-school and introduce a national early years learning framework with quality standards for early childhood programs. This is to be highly commended.

Research has shown that socio-economic background has a significant impact on student outcomes, and that parents' degree of involvement in their children's education is the main channel for that effect.[86] Parents' decisions to participate in their child's education are heavily influenced by three views[87]:

1. How they view their role as a parent

2. The degree to which they believe their involvement will influence a positive outcome and

3. Whether or not they believe the school and their child wants them to be involved.

Low SES parents typically face higher barriers to constructing a positive role for themselves in their child's education and have poorer levels of self-efficacy. This stems from their own level of education, and can be shaped by their own negative experiences of school. Language skills, confidence and pressures from other aspects of life can all contribute to weaker levels of engagement.

Schools can play a key role in addressing the three underlying issues that may prevent high levels of parental engagement. In some cases this should start with overcoming pre-conceived ideas about the willingness or ability of parents to contribute to student outcomes that in turn speaks to the need for a positive and engaging school culture. [88] To illustrate this point two examples are provided below in Box 9 and Box 10.

Home Interaction Program for Parents and Youngsters (HIPPY) program

Yipirinya School in Alice Springs offers an education program, auspiced by the Brotherhood of St Laurence and funded by the Commonwealth Government, called HIPPY that covers the Northern Territory Curriculum but also teaches Indigenous languages and culture. Yipirinya School was founded on the initiative of the Indigenous Elders of the Town Camps of Alice Springs and is testimony to the fact that there are positive outcomes from these communities, despite adverse publicity. HIPPY had 15 graduates in 2009 and is growing, with 42 new enrolments in 2010 that continued into this year. The staff at HIPPY Alice Springs know the situations that families are dealing with in the community and are able to adapt and be flexible. HIPPY was what Yipirinya asked for. They wanted to do it. When HIPPY first started it was mainly with families attending Yipirinya School but now it is a broader range of communities and families as the word has spread. A grandmother, from one of the Town Camps who did HIPPY with her grandchild, has encouraged other parents and caregivers to do HIPPY. She has become a real role model for this particular Town Camp. She now works as a home tutor with the parents from this Town Camp. Parents are attending group meetings and doing activities together and with their children.

http://www.hippyaustralia.org.au

Box 9: HIPPY program

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[86] De Fraja, G., Oliveira, T. and Waldfogel, J. (2010), *Must Try Harder: Evaluating the role of effort in educational attainment*, Review of Economics and Statistics, Vol 92, No. 3.

[87] Hoover-Dempsey, K. and Sandler, H (1997), *Why do parents become involved in their children's education?*, Review of Education Research, Volume 67, No. 1.

[88] Kise. J., and Russel, B,. *Differentiated school leadership: effective collaboration, communication and change through personality type*, Corwin Press: California.

Parent Partners – Ritchie County Schools, West Virginia

The Parent Partner Program was set up by Ritchie County Schools to significantly increase parents' involvement in their child's education and progress their district wide school improvement agenda. The district recognised that the traditional approach to parent engagement focusses on what parents should do, not what schools should do to make parent involvement successful.

They set up a project team and started small. After identifying that they had a strong volunteer base in the school system the team decided to build on this. Most parents assisted through traditional volunteer roles (e.g. those that helped out at the school) so to enhance parents' involvement, they looked to develop "non-traditional" roles that involved supporting school goals and children's learning, in any way, at any place and any time. The team then provided a stipend for a coordinator, the 'Parent Partner', at each of the participating schools to organise the volunteers. This coordinator then played a leadership role in the school and the districts, some have since become parent leaders at other schools.

Once the team implemented this first stage, they then focussed on parenting, communication, learning at home, decision-making, and collaborating with the community. They sent out a survey to parents and based on the feedback identified the need to run parent training workshops. One successful workshop focussed on internet safety.

http://www.parentinvolvementmatters.org

Box 10: Parent Partners Program, West Virginia

Under-performing schools are likely to benefit from extra assistance (in the form of resources and other support) to build capacity on the part of the school and among the parent community to engage effectively with each other about improving educational outcomes. Our regional case studies suggest that the National Partnership programs have been successful in supporting schools in these aims and that schools have welcomed, and benefitted from, this type of continued support.

7.4.2 Integrated support for students can fill gaps in their home-based support

Low SES students typically have less access to resources (a place to study, the internet and books) and the emotional and academic support needed to do well at school. There is a legitimate role for governments and not-for-profit providers to help meet these needs, and many schools do this already. Catholic schools often provide fee relief, for example, and supply uniforms free of charge to those who need them. Other schools provide breakfast programs to ensure that students have the energy to concentrate and work hard.

A comprehensive and coordinated approach to delivering this support is necessary if we are going to provide each student with the opportunity to fully benefit from education. A range of such supports and how they assist is set out in Table 7.

Support	Description and example

Support	Description and example
Food, clothing and other material supports	Fee relief and the provision of clothing reduce barriers to access while food programs, libraries and internet access help children learn better. This type of support should be done on a 'by school' basis where warranted. *Example: School Nutrition Program (funded by DEEWR)* *The School Nutrition Program is a breakfast and/or lunch service for school-aged children from remote communities of the Northern Territory which aims to support better school attendance and to help with learning and engagement in education. The Program also provides job opportunities and training for local community members.*[89]
Tutoring	Low SES students should have access to drop-in tutoring sessions either through their school or a community organisation. These work best when one-on-one tutoring sessions are provided, combine recreation with learning and develop student motivation.[90] *Example: Mathematics club, West Melbourne* *A school in West Melbourne runs a mathematics club once a week after school hours. The club is popular with students – around 20-30 regularly attend every week with up to 70 attending during assessment periods. Students see it as an opportunity to get extra help and really improve their results. Most of the students are from low socio-economic backgrounds. One staff member is allocated to run the class and other staff members volunteer their time on a rostered basis. The success of the programs depends on the teachers: they are approachable and have strong relationships with the students.*
Flexible learning programs	Flexible learning programs provide a valuable option for re-engaging young people who have difficulty learning in a classroom setting. A significant number of schools in low SES regions have students enrolled in flexible learning programs.[91] *Example: Jointly funded flexible learning programs - Operation Newstart.* *Operation Newstart is an intensive 8 week early intervention program that aims to help at risk 14-17 year olds make positive changes in their lives. The program involves a partnership between the Department of Education and Early Childhood Development (Victoria), Victoria Police and Save the Children Australia. These three organisations jointly fund the program and work closely to provide skill development and learning in an environment more conducive to the students' interests and need.*
Increased motivation through mentoring	Students' expectations about their own potential can significantly influence their attitude to school, behaviour in class and the effort they apply to their work. Research shows that mentored youth are likely to have fewer absences from school and better attitudes towards school, as well as fewer incidents of hitting others, less drug and alcohol use and improved relationships with their parents.[92] *Examples: Community mentoring program, South Australia* *Community Mentoring enables volunteers in the community to help young people remain connected to their school. Mentors help students plan for their future, gain more from education and become successful members of the community, by sharing their own life experiences, skills and knowledge.*[93]

Table 7: Examples of supports to assist low SES students

[89] Department of Education, Employment and Workplace Relations, The school nutrition program, http://www.deewr.gov.au/Schooling/Pages/TheSchoolNutritionProgram.aspx accessed July 2011.

[90] Goodwin, B. (2010) *Changing the Odds for Student Success: What matters most,* Denver, Mid-continent Research for Education and Learning (McREL).

[91] See Appendix D.1 for the regional case studies.

[92] Jekielek, M., Moore, K., Hair, E., and Scarupa. H. (2002) *Mentoring: a promising strategy for youth development*, Child Trends Research Brief, Washington, DC.

[93] Australian Youth Mentoring Network, Community mentoring program, http://www.youthmentoring.org.au/program_listings.php?selstate=4 accessed July 1 2011.

These strategies are particularly important to employ in small schools and in regional and remote areas. While one advantage of smaller communities is that coordination is easier, access to services can be much more difficult. Our regional case studies revealed that schools with a high concentration of high needs students feel that schools 'cannot do it all' and that they need the support of other agencies – government and non-government – to meet these needs.[94] Where appropriate, schools should be assisted to work with other organisations to locate support services in or near the school.

More integrated funding approaches will also assist coordinated delivery. We learned through our case study research that some schools with high concentrations of high needs students do not apply for funding because it is seen as being too fragmented and limited to short term programs (see Box 11). Also, the administrative burden of the application process can weigh heavily. These schools typically have Indigenous students, refugees and students with other needs; hence they need to apply for different buckets of funding each time to gain a sufficient amount.[95]

Schools' experiences of funding in Community C – Regional Case Studies

A problem for some schools has been that there have been too many funding initiatives. For some there had been 'plenty of money', but for several others funding has been fragmented. A term used by one person consulted was that many of the programs were like seagulls: 'They fly in, sh** everywhere and leave.' An integrated approach to Commonwealth and State funding would resolve many of these issues.

See Appendix D.1.3 for the complete case study

Box 11: Schools' experiences of funding in Community C – Regional Case Studies

7.4.3 Addressing peer effects by promoting diversity in schools

Peers have a significant influence on the behavioural and cognitive development of young people. The NILS model shows that placing a lower performing student into a higher performing school creates a significant positive effect on that student's performance. It is this phenomenon which has led to voucher programs overseas and local scholarship programs for the disadvantaged.

Australia already has a partial voucher system in education in that a significant proportion of the cost of the education of a student tends to follow that student as they move schools, be it across sectors or states. Moreover, parents often enjoy a wide degree of choice in having their children educated outside of their residential area, so there is already some power to 'shop around' without the need to create a separate system like that of the charter schools in the United States. Australia's independent schools often have scholarship programs, though applicants need to be high performers to access their programs.

What is missing is an incentive for higher-SES and higher performing schools to take on lower performing students. This is what can make a difference to a child's expectations and propensity to do well. We do not propose any kind of system that infringes on parental choice or which enforces any kind of quota system on schools. However, there may be merit in exploring a reward-based funding mechanism for higher-performing schools that provides financial incentive to 'value-add' to a child's educational development.

For such an incentive system to work, there must be a few conditions:

1. Principals must be able to determine the degree to which the student body is diversified in terms of the levels of prior performance of its enrolling students. If low-performing students benefit

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[94] ibid.

[95] See Appendix D.1 for the regional case studies.

from being educated alongside high-performing peers, it follows that this effect will become diluted should the average performance level of the student body fall significantly[96]. Therefore discretion by the principal to manage the number of people entering the school under a reward payment scheme is essential.

2. While principal discretion is key, there must be a minimum 'critical mass' of students taken in under such a reward payment scheme and certainty that they are fully integrated as a cohort. This is to ensure that the students are not isolated and have some connection to others in the school rather than being 'streamed' or stigmatised. Evidence shows that streaming, like the wider school peer effect, has a dampening effect on individual achievement when poorer-performing students are put together.

3. There must be a good way to measure 'value-added' to a student and this should involve more than assessing annual grades. If the instructional techniques discussed earlier are employed there will be a rich set of data to draw on to assess whether the student is catching up with others in his or her peer group. Even without such evidence, the student's improvement should be looked at in terms of social relations, school participation, attitudes and behaviour, as well as qualitative assessments by teachers and parents.

A good example in Australia of this type of approach is the Higher Expectations Program in Cape York (see Box 12).

Higher Expectations Program – Cape York Institute

The Higher Expectations Program (HEP) was established in partnership with Macquarie Group Foundation and DEEWR to identify and support Indigenous Cape York students to attend high-performing boarding schools in Queensland. There are currently 30 students from the Cape York region, Yarrabah and Palm Island on the program. With the program's support, nine students have graduated and they have found employment or are currently studying in areas such as health, law, social work, engineering and education. To better prepare staff who work with HEP and other Indigenous students, cultural awareness sessions are offered to schools and other service providers. These sessions help to alleviate the culture shock and transitioning issues which occur when these students leave their remote communities and extended families.

Box 12: Higher Expectations Program, Cape York Institute[97]

Ideally, an initiative like this would be introduced nationally and across sectors to reinforce the point that this is not about simply putting 'government school students into non-government schools'. It could be just as applicable to providing a low performing student from a Catholic school with the opportunity to enter a more exclusive higher-performing government school.

The advantage of such a scheme would extend to creating a more diverse student population where there is a preponderance of one racial group.

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[96] We do not know what the 'tipping point' would be and are not aware of any research into this, but it would be a valuable line of inquiry to pursue. Nevertheless, we are proceeding on the assumption that school leaders are best placed to make judgement calls about the right balance and mix

[97] Cape York Institute, Higher Expectations Program, http://www.cyi.org.au/hep.aspx accessed 22 July 2011

7.4.4 Closing the gap in Indigenous education requires all of the above, and more

Indigenous students perform significantly below non-Indigenous students, even after controlling for other factors such as socio-economic status.

In May 2011 COAG endorsed the Aboriginal and Torres Strait Islander Education Action Plan 2010–2014 which commits all governments in Australia to a unified approach to closing the gap in education outcomes between Indigenous and non-Indigenous students. The Plan identifies national, systemic and local level action and recognises that culture, safety, identity and pride are central to achieving change. A similar strategy was developed in Ontario, Canada to good effect (see Box 13 below).

> **Aboriginal Education Policy Framework - Ontario, Canada**
>
> In Ontario, Aboriginal student performance was significantly below non-Aboriginal students. In response the Education Department developed an Aboriginal Education Policy Framework through extensive consultation. It focussed effort on a group of school districts with high Aboriginal enrolments, created new resources and funds for these areas and strengthened professional development for teachers. The key to the success of the framework has been the commitment to do better by working in partnership with Aboriginal families and communities.

Box 13: Indigenous Education Policy Framework, Ontario Canada[98]

If set targets are achieved, the Plan will lead to significant improvement in early childhood participation amongst Indigenous children and increased school performance and Year 12 attainment. Achieving these targets will mean employing many or all of the methods described above, while also addressing the more profound disadvantage and capability-building challenges of remote Indigenous communities. This is especially the case where issues such as housing and health have an even more pronounced effect on school participation and performance. In such communities, the issue of wider integrated supports takes on greater meaning and importance.

7.4.5 Focussing ESL support on refugees and those with low English proficiency will improve the efficiency and effectiveness of funding

As noted above, the strong performance of ESL students disguises variability in student performance and the disadvantage of some ESL groups. According to research by the NSW Department of Education and Training there are three indicators used to identify ESL[99] students, some of which have a strong negative impact on performance, whilst others only have a small negative effect. The three indicators include[100]:

1. English proficiency

   a. Phase 1: Limited in all social and education circumstances

   b. Phase 2: Limited to familiar social and education circumstances

   c. Phase 2: Occasionally need assistance in specific educational situations

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[98] Levin, B. (2008) *How to change 5000 schools: a practical and positive approach for leading change at every level*, Cambridge, Harvard Education Press.

[99] The NSW report uses the category 'Language background other than English'.

[100] NSW Department of Education and Training (2011) NSW Department of Education and Training Discussion Paper: *Australian School Funding Arrangements* provided by Department of Education and Workplace Relations March 2011.

2. Refugee status – as determined by residency status and visa subclass

3. Length of time in Australia – determined by the first entry date in an Australian school

Based on analysis of NAPLAN data the NSW Department found that there is a hierarchy of disadvantage within the ESL category. The most disadvantaged group of ESL students are those who are refugees, who have limited English proficiency (Phase 1) and have been in an Australian school for less than one year. These combined characteristics result in a high level of disadvantage. Of any one of the three indicators, 'English proficiency Phase 1' has the strongest negative impact and refugee status has the second strongest negative impact (see Figure 36).

Key Disadvantaged Groups	Relative Effect	Impact on Average NAPLAN Results (in bands)
ATSI	-0.443	3 quarters of a band
Refugee	-0.463	3 quarters of a band
ESL Phase 1	-0.901	1 and a half bands
Refugee, ESL, Phase 1 and Newly Arrived	-1.807	3 bands
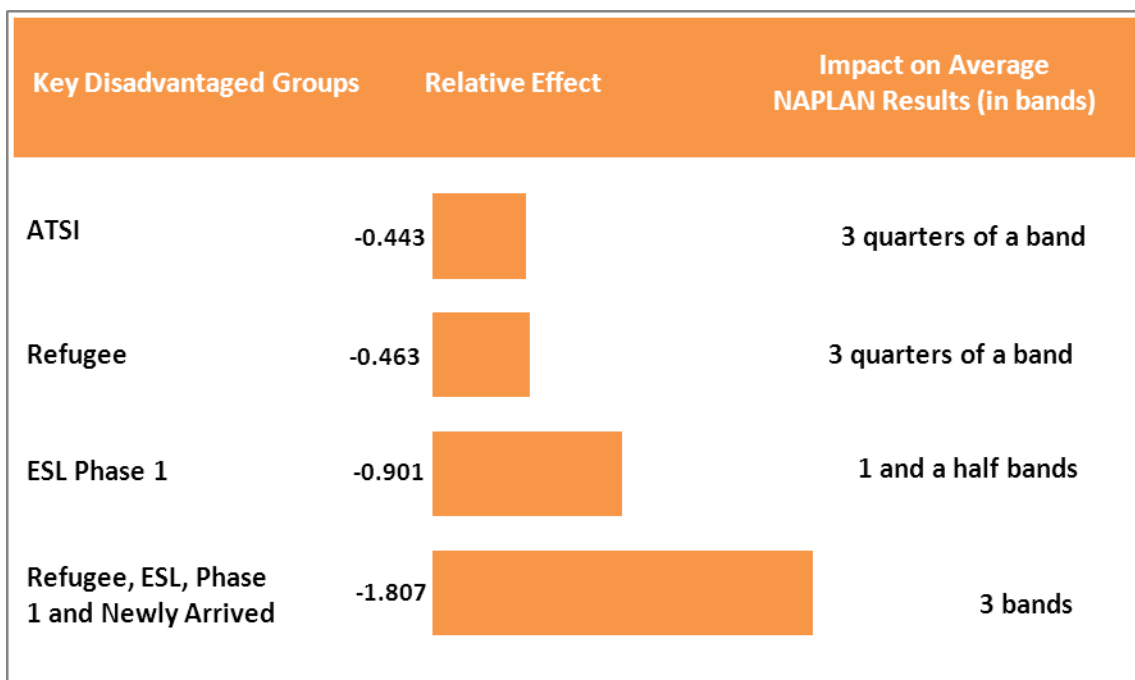
Figure 36: Impact of ESL related measures on 2009 NAPLAN results [101]

It would be worthwhile to investigate the extent to which this hierarchy is consistent across other States and Territories. If so, there would be value in reclassifying the ESL category to better describe the different levels of disadvantage experienced by ESL students. More assistance (e.g. tutoring) could then be directed towards those most likely to benefit – that is, refugee and ESL Phase 1 students.

[101] NSW Department of Education and Training (2011) NSW Department of Education and Training Discussion Paper: *Australian School Funding Arrangements*, provided by Department of Education and Workplace Relations March 2011

7.5 Investing in under-performing schools where there is a concentration of disadvantage

In addition to supporting disadvantaged students, support is needed for underperforming schools to achieve our target of the performance/equity frontier and reverse the vicious cycle of decline in some schools.

School level under-performance tends to be driven by disadvantage, including both student disadvantage and school disadvantage (such as higher average costs due to low enrolments or poor facilities) and weaknesses in the schools themselves.

As Table 8 shows, students in underperforming schools (poor to fair schools) suffer from higher levels of disadvantage, which reduce students' PISA scores by 93.40 points on average. This is because, in general, underperforming schools have non-selective enrolment practices. They also often have fewer resources than other schools in the school market, which leads to a difference of almost 50 points in students' scores between underperforming schools and 'great to excellent' schools.

Drivers of performance and underperformance	Poor to fair schools (underperforming)	Fair to good schools	Good to great schools	Great to excellent schools
	PISA score <440	PISA score 440-480	PISA score 480-520	PISA score 520+
School characteristics (a proxy for resources[102])	+18.08 points	+31.94 points	+42.55 points	+65.07 points
Student disadvantage (e.g. SES, ESL etc)	-93.40 points	-79.13 points	-66.98 points	-46.82 points

Table 8: 4 tier scale of performance and drivers of (under)performance[103]

Weaknesses within schools are also driving underperformance. Besides some highly-motivated individuals, staff members are often disengaged and suffer low morale. Principals generally have no decision-making authority over enrolments and limited autonomy over teacher recruitment. These schools also often lack strong leadership and a shared commitment to the school.

Bearing in mind the follow-on effects of such school malaise and declining performance, we propose that future reforms of disadvantaged schools should focus on:

1. Targeted improvements to school infrastructure and amenity

2. Creating an orderly learning environment that makes school safe, enjoyable and gives students the opportunity to learn

3. A positive culture of high expectations will help schools 'beat the odds'.

These strategies aim to lift the school's reputation, reinforce reform efforts directed at improving school culture and student expectations, and improve the learning environment for teachers and students alike.

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[102] School characteristics captures factors such as student-teacher ratio and computers per student

[103] National Institute of Labour Studies' own analysis of the PISA 2009 database

School leadership is discussed separately in section 7.6, although it is worth noting here that it also contributes significantly to school outcomes) and particularly in turning around under-performing schools).

Before entering into a discussion of each of these strategies, it's useful to examine one of the case studies (see Box 14) as a part of this review. The issues, frustrations and intervention strategies discussed in this example are indicative of other experiences across the country.

Regional Case Study - Community A

Community A is a relatively long standing 'working class' community where a large percentage of the population has been employed in manufacturing industries. In 2004 – 2005 there was a sense of crisis across the community that the government school sector was failing:

- The schools outcomes in the state wide reading tests were in the bottom 10 per cent for the state. Mathematics in particular was 'a black hole'. The year 12 completion rates were 30 per cent.

- Absenteeism rates averaged 22.4 days for primary and above 35 for years 9 and 10. Both were close to double the state averages.

In addition it appeared that a very large number of students (up to 1,000) were leaving the municipality every day to attend non-government and government schools outside the municipality. Consultations with the regional and school based personnel suggested that the following factors contributed to poor outcomes:

- Demographic change across the area had caused or contributed to major falls in the enrolment levels of many of the schools. As a result there were too many schools and many had very low enrolment levels. Declining enrolments also reduced the schools' capacity to offer viable programs and there were few attempts to work with each other or the local TAFE institute.

- School personnel, and especially those in primary schools, felt that a dilapidated looking school has the impact of turning away parents. Schools need to look well-built and kept and have a sense of order and security.

- A culture of low expectations had grown across the schools and was pervasive amongst the teaching staff. There were few expectations that students could succeed and the patterns of absenteeism amongst students and staff, high rates of early school leaving and poor student outcomes went unchallenged. Several of the personnel interviewed also noted that a welfare mentality had begun to substitute for a culture of scholarship.

- School leadership in general was not strong. Many of the school leaders had only worked in the schools in the area and had allowed the culture of low expectations to go unchallenged. The leaders did not know how to deal with the situation and were unable to change staff attitudes and behaviours.

- Despite obvious signs of the problems existing for some time they were largely neglected at the system level. The schools were given a lot of resources and encouraged to improve. However, there were no major interventions that attempted to get to the seat of the problems.

- A final factor is that the school personnel individually and collectively did not know how to address the problems. They lacked the operational, occupational and strategic know how to reform the schools.

See Appendix D.1.1 for the full case study.

Box 14: Regional Case Study - Community A

7.5.1 Targeted improvements to school infrastructure and amenity to arrest and reverse school decline

Under-performing schools commonly wear the hallmark of their despair in their buildings and facilities. Such outward manifestations of defeat drive away enrolments and increase average school costs, further compounding the issue.[104]

Disadvantaged schools often have safety issues that relate to the behaviour of some of the students. Sadly the students themselves can need the protection of the school to keep them safe from others outside. In this sense, simply providing good fencing can make a significant difference.

There are numerous examples of new schools being built in struggling areas that act as a draw card and 'ray of hope' for parents seeking a safe and decent school for their children. The closure of failing schools and their replacement with newer institutions has proven to be successful in many regions and, indeed, in other countries.

The impact of new infrastructure is only felt for a short time, however, unless other tangible improvements are made. Therefore, it makes sense to prioritise school infrastructure investment in underperforming schools *as part of a broader reform effort*, to signal a clear intent to turn the school's performance around.

For example, in one of our regional case studies (see Appendix D.1.1 for the complete case study) school personnel, and especially those in primary schools, felt that a dilapidated looking school has the impact of turning away parents. Therefore, many primary schools have used BER funds to build fences that give a greater sense of schools as safe and presentable environments.

7.5.2 Creating an orderly learning environment makes school safe, enjoyable and gives students the opportunity to learn

If turning around underperforming schools begins with infrastructure and amenity, the next step is to send a clear signal to students and staff about what it means to be a part of the school and the learning environment. Hattie's meta-analysis of student achievement demonstrates that an orderly learning environment has the second biggest impact (equal to 0.85) on student achievement of any of the school-level factors (Figure 37).[105] This is a sizeable impact: any factors that have an effect of 0.40 or above are a strong influence on student achievement, strong enough to see "real-world change" in student results.

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[104] See Appendix C.2 for the regional case studies.

[105] Note: in the original analysis Hattie reported an effect size d = 0.34. Hattie's number includes results of a meta-analysis that simply measured influence of behavioural issues on student achievement. Goodwin's revised figure of 0.85 takes into account the additional impact of effective classroom strategies to manage behaviour, which is more appropriate for our analysis.
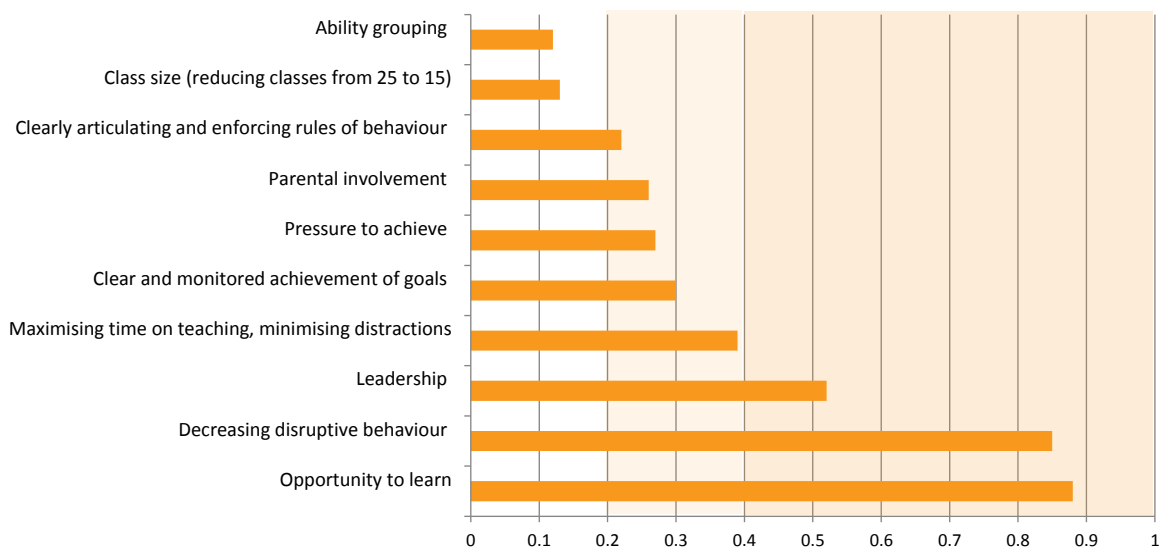
Figure 37: Selected school-level influences on achievement[106]

It's not surprising that decreasing disruptive behaviour ranks so highly in its impact on student performance. The advantages of an orderly learning environment are not often seen in high performing schools, but in underperforming schools the absence of consistent behavioural management strategies creates a lot of disruption.

At a school level, clearly articulating and enforcing rules of behaviour results in an effect size of d = 0.22. This is much smaller than the immediate, direct effect of discipline in the classroom, but nonetheless it has a reasonable impact on student performance. School-wide behavioural policies provide clear guidance to teachers on what's appropriate and give them confidence that other staff and school leaders will support their decisions in the classroom. This eliminates a lot of the stress associated with behavioural management.

A key turning point then, is for schools to agree to behavioural policies and ensure they are consistently followed.

It's also important to consider how underperforming schools can make the school environment safe and enjoyable. Bullying is also a serious problem in under-performing schools. School violence discourages students' attention, results in lower academic performance and has a significant impact on a young person's esteem and wellbeing. Evidence has shown that victims of bullying often lack support from schools, families and friends. Measures that have successfully reduced bullying include:

1. Teacher training to support students with behavioural issues and monitoring their progress

2. Introducing anti-bullying values into the school ethos

3. Rewarding student achievement.[107]

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[106] Hattie (2009) in Goodwin, B. (2010) *Changing the Odds for Student Success: What matters most,* Mid-continent Research for Education and Learning (McREL)

[107] Pereznieto, P., Harper C., Clench, B. and Coarasa, J. (2010) *The Economic Impact of School Violence: A report for Plan International*, Plan, Overseas Development Institute, www.oid.org.uk accessed 1 July 2011

7.5.3 A positive culture of high expectations will help schools 'beat the odds'

The benefits of a positive culture are twofold: it has a positive impact on student performance and behaviour *and* staff performance and morale.[108] By contrast, poor cultures drag down both the performance of staff and students.

Our regional case studies reveal that poor school culture is costing low-performing schools. Research by Mid-continent Research and Education Learning identified that many low-performing schools reported that they were doing many of the 'right' things: offering challenging curriculum, encouraging teacher collaboration and so on. However, there was one thing that differentiated them from schools that 'beat the odds' and that was school culture. The beat-the-odds schools worked to create a culture of high expectations of student achievement on the part of both teachers and the students themselves. They developed a shared vision of success and clearly identified necessary changes. This vision in turn set high standards for student (and staff) performance *and* behaviour.

Levin observes also that the 'right' school culture is: focussed on achieving the school's key priorities; attuned to the needs of students and the community; collegial and supportive of people, yet ambitious about what can be achieved; and reliant on communication instead of authority to build commitment. This type of culture is created by identifying the school's values, modelling those values (this includes people's behaviours and processes) and monitoring progress and making adjustments.

One way to ignite change is through a strengths-based approach called Appreciative Inquiry[109]. Appreciative Inquiry (AI) has been used to great effect in Norway and England (see Box 16) for example. It is built from the understanding that when we focus on problems people tend to feel defensive and energy is lost attending to yesterday's problems and causes.

Leading through Appreciative Inquiry – Ringshaug Primary School, Norway

Ringshaug Primary School began using AI as an approach to school development in 2004, and essentially focuses attention on what is working well. It then looks to reinforce those positive effects by sharing of information and 'scaling up' of successful innovations toe the whole-of-school where it makes sense to do so. The decision to use AI was based on the school leaders' interest in transitioning the school from 'good to great' as the school already had high scores on both staff and student satisfaction evaluations. The 2005 staff survey responses showed that the AI approach had a significant positive impact on school culture, staff motivation, the level of collaboration the school and skill:

- 89 percent of staff (45 out of 51) said they agreed to some extent or agreed completely that they have a greater sense of solidarity

- Almost the same percentage agreed that they are more committed to their vision

- 84 percent said they agreed to some extent or agreed completely with the statement, "I am more motivated to collaborate with all my colleagues"

- 75 percent agreed to some extent or completely with the statement, "We have improved our skills to draw upon each other's talents and resources".

Box 15: Leading through Appreciative Inquiry, Ringshaug Primary School[110]

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[108] Goodwin, B. (2010) *Changing the Odds for Student Success: What matters most,* , Mid-continent Research for Education and Learning (McREL)

[109] See Ludema, J.D., Whitney, D., Mohr, B.J. & Griffin, T. (2003), The Appreciative Inquiry Summit: A practitioner's guide for leading large-group change, Berrett-Koehler Publishers Inc. and Cooperrider, D., Whitney, D. (2005). Appreciative Inquiry: A Positive Revolution in Change. Berrett-Koehler Publishers Inc

[110] Nesje, R (2007) Bright eyes give energy! The Impact of Appreciative Inquiry in Schools over Time, *AI Practitioner: the international journal of AI best Practice*, February edition.

How can we assist under-performing schools to turn around their culture? Our regional case studies reveal that under-performing schools often tend to have a culture of 'welfare dependency'. This was inherent in staff attitudes and in the way in which extra resources were used by schools. Consequently, providing additional funding might not be the best way to support schools in this aim. Instead thought could be given to attracting high quality leaders and supporting leaders in their steps to improve the school culture and to raise expectations by, for example, providing leadership coaches or mentors. This is discussed in more detail in the following section.

7.6 Bringing it all together: strong leadership to drive school improvement

Educationalists and academics have written extensively on school leadership. This is because everyone knows that it's important – school leadership makes a real difference to student performance, second only to classroom teaching in its influence on student results.[111] However, effective leaders are also something of an enigma – we know a good leader when we see one but we've been relatively unsuccessful in enhancing the effectiveness of current school leaders.[112]

Ben Levin suggests that we need to simplify and prioritise what leaders should do, instead of placing unrealistic expectations on what they can achieve. This view is supported by a number of other prominent researchers.[113] Instead, Levin suggests that leaders need to focus on seven key practicalities if they are to lead improvements in student outcomes. They include:

1. Establishing a vision and goals

2. Building a strong team

3. Creating and supporting the right culture

4. Communicating vision, direction and accomplishment

5. Recruiting, developing and retaining leaders

6. Building internal and external support

7. Maintaining a focus on teaching and learning.

We've consolidated these seven practicalities into three themes: direction, people and support, and trust.

Direction: establish a vision, goals and targets and focus on teaching and learning

The importance of developing a shared school vision and school-wide goals is well established.[114] Goals should be few in number and easy to understand and remember. If effort is not prioritised, or goals are not commonly referred to, real change will not be achieved.

Buy-in is also very important. The support and commitment of teachers, parents, the community and other stakeholders is integral to setting a school's strategic direction. As is evident from the case studies,

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[111] Levin, B. (2008) *How to change 500 schools: a practical and positive approach for leading change at every level*, Cambridge, Harvard Education Press.

[112] ibid.

[113] See for example Fullan, M. (2008). *The six secrets of change*. Jossey-Bass, and Leithwood, K A., Aitken, R and Jantz, D. (2006), Making schools smarter: leading with evidence, Corwin Press

[114] Levin, B. (2008) *How to change 5000 schools: a practical and positive approach for leading change at every level*, Cambridge, Harvard Education Press.

some school leaders will need assistance to develop their vision and goals as they don't necessarily have the skills or support to ignite school-wide renewal.

John Hattie in 'Visible Learning' discusses two types of leadership exercised by principals: instructional leadership and transformational leadership. The former refers to those principals who focus on creating a learning environment free of disruption, a system of clear learning objectives and higher expectations for teachers and students. Transformational leadership refers to those principals who engage with their staff in ways that inspire them to new levels of energy, commitment, and moral purpose such that they work collaboratively to overcome challenges and reach ambitious goals. While both types of leadership had positive impacts on student outcomes, the evidence from his meta-analysis supports the power for 'instructional leadership' over 'transformational leadership'.[115]

Specifically, the dimensions of 'instructional' leadership that had the greatest effect were:

- Promoting and participating in teacher learning and development

- Planning, coordinating and evaluating teaching and the curriculum (e.g. direct involvement in the support and evaluation of teaching through regular classroom visits and provision of formative and summative feedback to teachers)

- Strategic resourcing (aligning resources to priority teaching goals)

- Establishing goals and expectations and

- Ensuring an orderly and supportive environment, both inside and outside the classroom.

This is not to say that the dimensions of 'transformational' leadership, which relate more to providing inspiration and motivation, are not important. Indeed, we would argue that they are intrinsic to creating a positive school ethos that puts achievement of student potential at its core. But it underlines the earlier points about focus on goal-setting and instructional method, promoting an orderly environment and targeting resources to need.

It also highlights the range of responsibilities shouldered by principals and the oft-expressed comment from those interviewed for our case studies that 'leadership' needs to be a shared concept. We propose that that burden be shared 'outwards' through peer relationships and a tie-in to a professional community, notably at the regional level, and 'inwards' through the involvement of the more expert teachers in guiding the continuous improvement of school performance.

People: recruit and develop leaders and build strong teams

We've seen already that strong experienced leaders are critical to a school's success. The question is then how can we recruit, develop and retain strong leaders? Recruitment of school leaders is similar to teacher recruitment and faces the same problems associated with lower pay and professional status.[116] In some schools, it may be necessary to provide additional resources as salaries are often significantly lower than other schools. Efforts could also be directed to improving the status of school leaders. As discussed earlier this should be more than a marketing exercise (although public recognition of school leaders through awards etc. is useful). Instead it should be about building on the professional networks of school leaders, promoting a professional ethos and providing the right supports.

The Finnish National Board of Education funds a professional development program for 200 principals each year.[117] The new principals' personal development and the development of their approach to leadership and work organisation in his/her educational institution are studied. The training draws on relevant research and evaluation, and the outcomes included development of a continuing professional

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[115] Hattie, J. (2009) Visible Learning: a synthesis of over 800 meta-analysis relating to achievement, Routledge, London

[116] See Appendix D.1 for the regional case studies.

[117] Ministry for Education (2007,*Improving school leadership, Finland County Background report,* OECD,2007

education plan for the principals. Similar investments in school leadership have been made in Australia (e.g. the Bastow Rural School Leaders Program in Victoria). These efforts are to be commended and should be evaluated and extended where appropriate, with an eye also to improving opportunities for peer-to-peer support and learning across states and sectors.

Even if a school has a strong leader, he or she cannot change an organisation on their own; principals need strong teams and a culture of team work. Developing a strong team involves getting the right mix of people (either by attracting new people or building internal talent) and building a culture which focusses on and celebrates people's commitment to the school's goals. This ties closely with the previous discussion on developing a positive culture of high expectations.

Building trust and support: communication and engagement with staff, parents, the community and other stakeholders

As we saw earlier, two-way communication with staff, parents, students and the community is a crucial element of successful leadership. It is also key to building understanding, trust and commitment which are necessary for the duration of the school improvement process. All schools consulted in the regional case studies identified the need to build community links, including those with parents and with community agencies. While this is a whole school responsibility it is a particular challenge for under-performing schools that may require dedicated resources.

As the public 'face' of the school, principals have a particular responsibility to engage with the community – to both listen and inform. It is not evident to us that there is much attention given to the need to develop skills to support such engagement among teachers who aspire to be leaders. There are numerous examples of schools that make good use of websites and other mechanisms to engage with the parent community, but principals need to be able to develop clear strategies for how they engage with a wider community of interest. This is particularly the case with under-performing schools that need to build their reputation through buy-in from nearby residents and potential employers of these schools' graduates.

While many leaders would have the right instincts and networks to successfully engage with that wider group, we wonder whether there would be benefit in providing more support to develop and execute such 'stakeholder engagement' strategies. The regional governance mechanisms we propose above would provide a forum in which to make connections and participate in community-level discussions. Leaders may welcome the opportunity for advice and support about how to make the best use of such forums. Moreover, such formal mechanisms complement other one-on-one or less formal interactions that can secure buy-in to a school's development and improvement.

8 Concluding remarks

This report has attempted to provide a clear picture of how Australia's school system is performing by international standards. It has been shown to produce strong results – very strong by world standards – but these findings need to be tempered by the following facts:

- Our performance is slipping in relative terms, across all levels

- The equity of school outcomes in Australia is not what it could (or should) be

- The strong performance nationally disguises a wide degree of variation between schools and between sectors.

Once SES factors are taken into account, the variability in performance between schools and sectors is much less evident. And in considering the value-add that schools can provide a strong message emerges from the data that a lot of 'high quality' schools could arguably be better described as 'schools with high quality' students. This situation has come about as a result of schools' preferences (where they can be exercised) to select students on the basis of past academic achievement.

We have every reason to make certain that students entering our school systems have better life chances when they leave. In this era, better life chances rest on having a long attachment to schooling, strong educational outcomes, and the skills to continue learning, analysing, solving, communicating and adapting. This in turn means that, while children are at school, they need to have an expectation of achievement and to be provided with tailored instruction and support to realise their potential.

We have cautioned against pursuing this goal with a sector-by-sector approach. Notwithstanding that the highest concentrations of disadvantage are in the government sector, we have argued that the driving goal should be to lift the performance of all schools. Rather than set a specific target, we think it is realistic to aim for all schools to be along or beyond what we have called the 'frontier line' on the chart that compares relative performance against two dimensions of equity and reading scores.

While we cannot document with precision and methodological integrity where the different school sectors and jurisdictions sit on that chart, we can fairly confidently speculate how the results break out. Suffice to say that a small minority would be on our 'frontier line' at this point and a substantial number of schools would fall into the top right quadrant.

If a country like Canada can achieve high performance with strong equity outcomes, particularly after a period of fairly middling performance, Australia should be able to do likewise. Researchers and policy-makers know what it takes to achieve this lift and we know that there are many commendable and well-directed efforts to move us on that path.

According to the evidence, effort and resources should focus on six 'levers' of influence. These are:

1. Improving the quality of teachers and teaching
2. Ensuring the right external standards and oversight
3. Promoting regional-level collaboration and networked schools
4. Supporting disadvantaged students
5. Investing in under-performing schools
6. Strong leadership to drive improvement.

These levers should be applied according to need. While there is a general requirement to have good school leaders and quality teaching, clearly there should be targeted effort to support disadvantaged students and improve the outcomes from under-performing schools, especially where these are experiencing the compounding effects that arise from concentrations of disadvantage.

One way of thinking about this is to consider government's role in compensating for the absence of sufficient capability to underpin strong school performance. The illustration below (Figure 37) represents a reasonably well-resourced, well-performing school. It has good teachers, bright students, with a parent body and wider community that are willing and able to invest in the school and engage in student improvement projects.
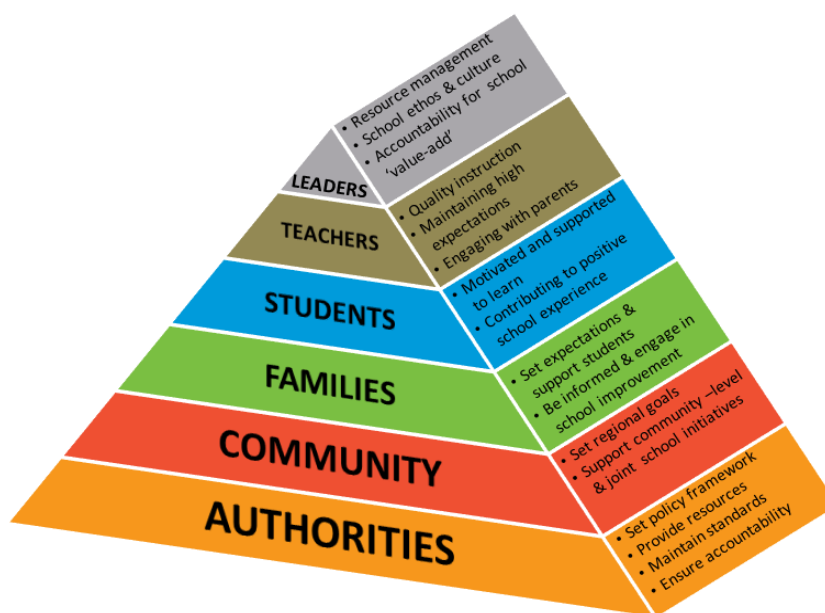
Figure 38: The capability and capacity of a well-performing school

The second illustration (Figure 39) represents a struggling school. It is in a community with low social capital, and has a student body showing poor performance on average. Parents do not have the capacity to support their children to the same degree as others. Good leaders and teachers may be hard to come by but are desperately needed in a school like this.
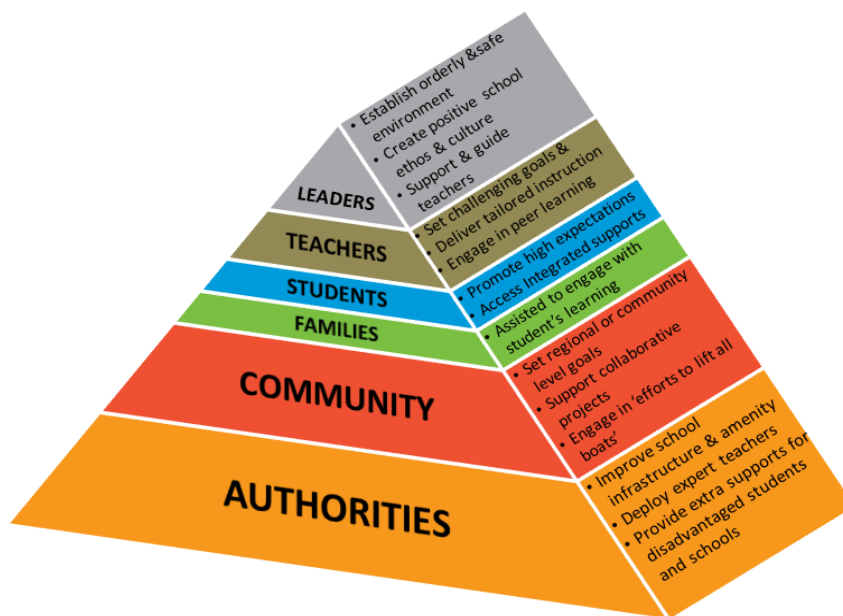
Figure 39: The capability and capacity of a struggling school

The principle underpinning our proposed approach to applying the six levers is that *where the students and families lack capacity, the community, school authorities and governments can step in to compensate*. Similarly, *good leaders and good teachers need to be incentivised to go where they are most needed*.

What does this mean in a practical sense for targeting public funds? The first point is to reiterate that most of the levers identified are being used to very good effect around Australia. To achieve a national lift in performance and improved equity, however, they need to be employed in a more comprehensive, integrated and sustainable way across all sectors and jurisdictions.

This means that current investment in those reform efforts that align with the six levers should continue, supplemented in some cases with funding to deepen and embed such efforts. For example, funding for teacher quality improvements should be maintained and could expand to enable reduced contact hours at the primary level especially (that in turn allows for more peer review and support, focus on data-driven lesson planning and time for more engagement with parents). Support for disadvantaged students should continue with consideration given to other services (e.g. after school tutoring) that could further compensate for a resource- and time-poor family environment. The pursuit of nationally-agreed outcomes, supported by effective and transparent measures of progress should also continue but with additional investment in developing agreed measures for school performance.

There is an argument to re-direct resources away from some areas and into the six levers. The data in this report has raised some important questions about how we measure school performance (i.e. in terms of 'value-add' rather than student scores) that in turn implies a need to re-think the extent to which schools that are already well-resourced, and which are doing well in large part due to selective enrolment practices, should be publically subsidised. At minimum we would suggest some thought be given to incentivising such schools to take on manageable cohorts of under-performing students and providing retrospective reward-based funding once 'value-add 'has been demonstrated.

We also argue for investment in community- or regional-level governance arrangements that put schools back into the heart of wider community-building efforts. Increasingly people travel further to be educated, but at the same time, there are numerous examples of 'good' schools sitting side-by-side with

'bad' schools. Many Australians would be saddened by that sight for what it says about who is getting 'a fair go' as much as they would be concerned about 'blights' on the community landscape. Regardless of one's perspective, it is not hard to make the argument that it is in a community's interests for all schools to thrive and be a shared resource – for parents to have real choice, for the community to have school students who are engaged in learning and readily employable, and for there to be a focal point for civic collaboration.

This does not need to involve a new layer of government. There would be some minimum expectations of a community council or board, such as setting regional targets and recommending funding for between-school collaborations. Beyond that, the community could focus on what is most important to them.

Finally, we see value in targeted investment in infrastructure, primarily for under-performing schools that are struggling to provide a safe and positive learning environment for students. Such investments might also extend to technology that supports data-driven methods.

This is a rare opportunity to get the right policy and funding mechanisms in place to both anchor and shape a comprehensive, sustainable and well-integrated reform effort. Australia is in a good position and is already doing many of the right things; we are not coming from behind. But there is considerable room for improvement and without that lift, we will find ourselves lagging behind other nations in educational outcomes and compounding the existing inequities in our society.
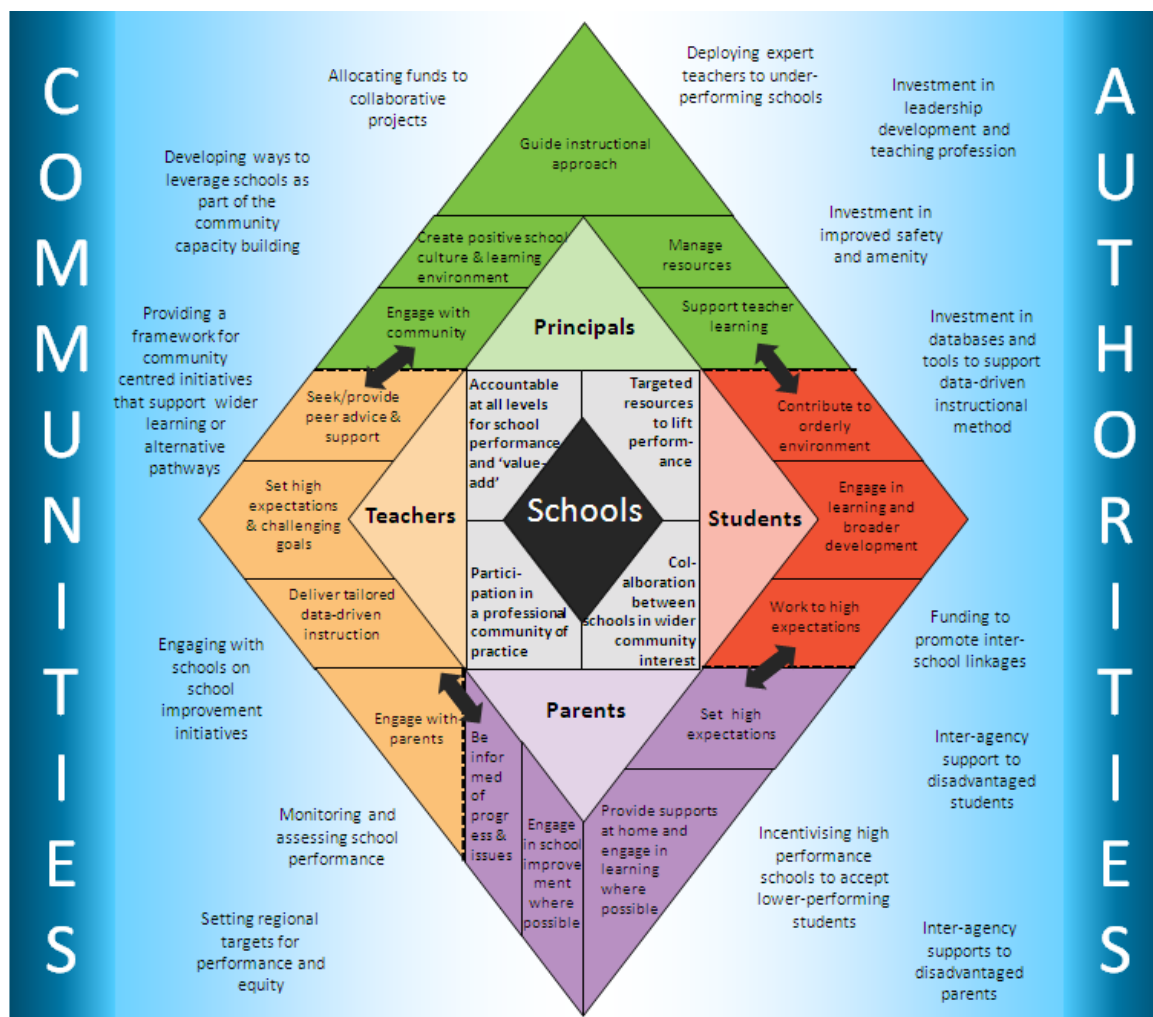
Figure 40: A comprehensive, integrated, sustainable approach to reform

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Appendix A   International Comparisons

A.1   An alternative international benchmark – TIMSS[118]

In 2007, Australia participated in the Trends in International Mathematics and Science Study (TIMSS). Carried out every four years at Year 4 and Year 8, TIMSS provides data about trends in mathematics and science achievement over time. In Australia, TIMSS is part of the Ministerial Council on Education, Early Childhood Development and Youth Affairs' (MCEECDYA's) National Assessment Program.

- Australia's average Year 4 mathematics score in TIMSS 2007 was significantly higher than the TIMSS average and higher than the achieved score in 2003

- While Australia's score at Year 8 showed a statistically significant decrease of 13 score points from that of TIMSS 1995, there was no significant change from TIMSS 2003. The 2007 score was not significantly different than the TIMSS average

- Australia's average Year 4 science score in TIMSS 2007 was not significantly different from the score in 2003, but was significantly above the TIMMS average

- Australia's science score at Year 8 showed a statistically significant decrease of 12 score points from that of TIMSS 2003. However, it was above the TIMSS average.

PISA looks at underlying skills, whereas TIMSS looks at curriculum content. Most policy-makers prefer the former, and certainly comparisons of curriculum content are much more difficult from a methodological perspective. We have therefore used PISA data for our international education outcomes and analysis.

	Year 4		Year 8	
Mathematics	• Hong Kong • Singapore • Chinese Taipei • Japan • Kazakhstan • Russian Federation	• England • Latvia • Netherlands • Lithuania • United States • Germany	• Chinese Taipei • Republic of Korea • Singapore • Hong Kong • Japan	• Hungary • England • Russian Federation • United States
Science	• Singapore • Chinese Taipei • Hong Kong • Japan	• Russian Federation • Latvia • England • United States	• Singapore • Chinese Taipei • Japan • Republic of Korea • England • Hungary	• Czech Republic • Slovenia • Hong Kong • Russian Federation

Table 9: Countries that scored significantly higher than Australia in TIMSS 2007

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[118] ACER, 2007, Highlights from TIMSS 2007 from Australia's perspective

A.2   Australia has experienced a significant decline in performance over the past decade. This decline has varied by state/territory.

The decline has been greatest in South Australia and Tasmania (at 31 points well over twice the national decline of 13 points), and quite high in New South Wales, the ACT and Western Australia (23, 21 and 16 points respectively). Performance has been relatively stable in the Northern Territory, Victoria and Queensland (Figure 41).
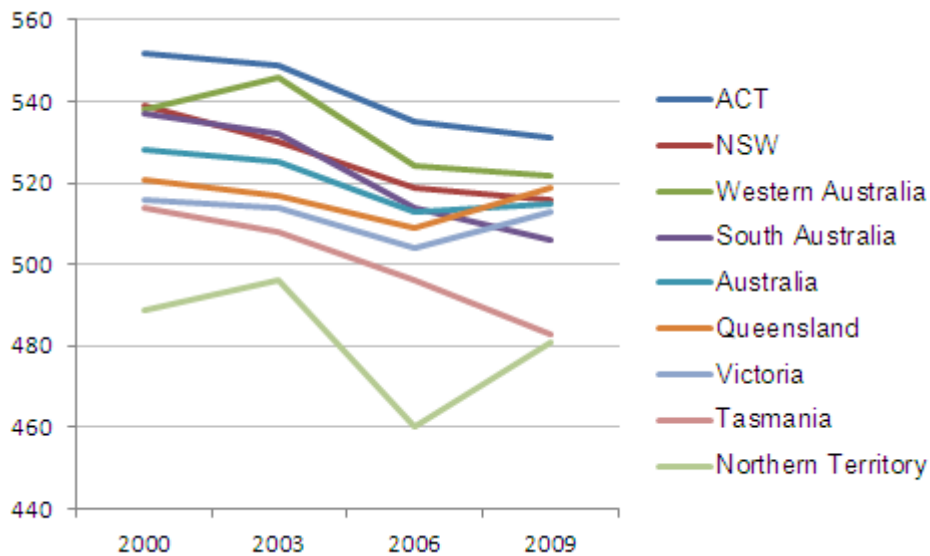
Figure 41: State and territory PISA reading scores

A.2.1 Only four other OECD countries have had significant declines over this period

Australia is one of only four OECD countries (the others being Ireland, Sweden and the Czech Republic) to have recorded a significant decline in reading performance since 2000 (see Table 10)[119]. In the Czech Republic and Ireland it was relatively even at all levels of performance; in Sweden it was greatest at the lowest performance levels.

 We note that the Swedish school system has placed a greater emphasis on school choice, and competition between schools during this period.

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[119] Note that, as mentioned above, decline in mathematics achievement at the 8th grade was observed for Australia in the TIMSS survey between 1995 and 2007, but for 4th grade mathematics there was a significant increase in achievement. (Mullis, I, Martin, M. and Foy, P.) *TIMSS 2007 International Mathematics Report*, TIMSS and PIRLS International Study Centre, Boston.
OECD *PISA 2009 Results: Learning Trends. Changes in Student Performance since 2000 Volume* V, Table V.2.3.

	Percentile			
	10th	**25th**	**75th**	**90th**
Australia	-10	-8	-18	-18
Czech Republic	-11	-20	-12	-12
Sweden	-24	-19	-16	-10
Ireland	-10	-12	-11	-10

Table 10: Change in scores corresponding to the 10th, 25th, 75th and 90th percentiles of reading performance between 2000 and 2009[120]

A.2.2 What "other advanced OECD countries" can Australia be compared to?

In international comparisons it is common to compare Australia to the OECD average. However, the OECD average contains a number of countries that are not readily comparable to Australia (e.g. Mexico; Chile; Turkey; Portugal) because of their different economic and social circumstances. We therefore have used a smaller group of eight more directly comparable countries as the focus of some more detailed comparisons. These are: Canada; Estonia; Finland; Iceland; the Netherlands; Norway; Sweden; and the United Kingdom.

Of the six socio-economic indicators reported by the OECD for PISA 2009, the one that accounts for the highest proportion of the variance in reading achievement is the proportion of students whose PISA 2009 index of economic, social and cultural status is below -1. Each of the eight countries is very similar to Australia on this indicator, with all nine countries (including Australia) having quite low proportions of very disadvantaged 15 year-olds, and all having less than half the average proportion for OECD countries as a whole. Each is no more than a quarter of a standard deviation higher or lower than Australia's value of 3.4 (see Appendix A).

While this indicator is not as commonly used as a basis for selecting countries to compare educational outcomes, it has a sounder empirical basis than comparisons based on GDP per capita, population, national governance or similar language and cultural traditions (to cite some alternative criteria that are used in such selections).

By way of example, the proportion of students whose PISA 2009 index of economic, social and cultural status is below -1 accounts for 46% of the variance in 2009 reading achievement (calculated from PISA 2009 Volume 1, Table I.2.20). The share of prime-age adults in the population with a tertiary qualification accounts for a similar proportion (45%), but it is more likely to be a consequence of educational achievement at age 15 than a cause.

GDP per capita accounts for only six per cent of the variation in 15 year-olds' reading achievement across OECD countries, and cumulative educational expenditure per student between the ages of six and 15 for only nine per cent of the variation. The proportion of immigrant youth in the population and the size of the 15 year-old cohort (as a proxy for population size) account for only trivial proportions of the variation among countries in reading achievement.

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[120] OECD *PISA 2009 Results: Learning Trends. Changes in Student Performance since 2000 Volume* V, Table V.2.3.

Country	Proportion of students whose PISA 2009 index of economic, social and cultural status is below -1
Norway	2.4
Australia	3.4
Iceland	3.5
Canada	3.7
Finland	3.9
Sweden	5.1
United Kingdom	5.6
Netherlands	6.5
Estonia	6.7
Denmark	7.2
Japan	7.9
Germany	8.2
Austria	8.4
New Zealand	8.6
Belgium	9.0
Czech Republic	9.2
Slovenia	10.2
Slovak Republic	10.4
United States	10.4
Ireland	10.4
Switzerland	11.1
Israel	12.7
France	13.9
Korea	15.8
Luxembourg	16.1
Greece	17.7
Hungary	19.1
Poland	20.7
Italy	21.4
Spain	29.0
Portugal	33.5
Chile	37.2
Turkey	58.0
Mexico	58.2
Average	14.8

Country	Proportion of students whose PISA 2009 index of economic, social and cultural status is below -1
Standard deviation	13.8

1. Shaded cells indicate scores that are within one quarter of a standard deviation of Australia

Table 11: Share of students in their country whose PISA index of economic, social and cultural status is below -1 (%)[1]

A.2.3 The level of underperformance varies by socio-economic status, location and many other factors

Using the PISA 2009 data we can see that the level of underperformance (defined as below Level 2) varies greatly. Figure 42 to Figure 47 shows that underperformance is greatest; in Tasmania and the Northern Territory; in the government sectors as a whole compared to the non-government sectors; in remote locations; in the lowest SES quartile students and for those that speak a language other than English at home. Interestingly it is about the same for native born and foreign born students, but significantly less for first generation migrants.
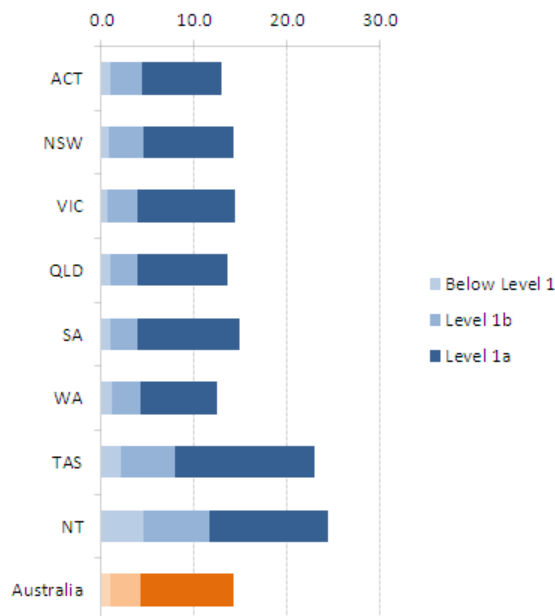
Figure 42: Percentage of 'underperforming' students by state/territory[121]

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[121] Thomson, Sue (2011) *Challenges for Australian Education: Results from PISA 2009 the PISA assessment of students' reading, mathematical and scientific literacy,* ACER Project Publishing Department – Table 3.41
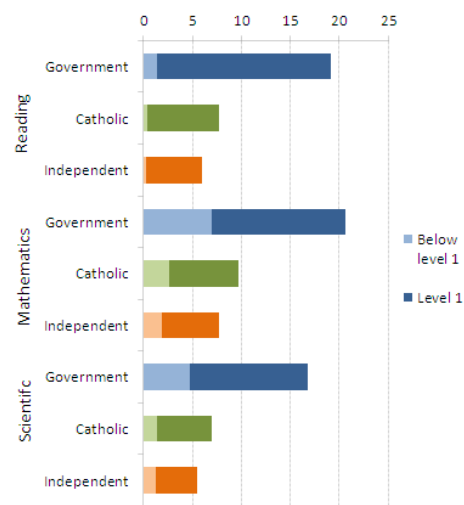
Figure 43: Percentage of 'underperforming' students by school system[122]
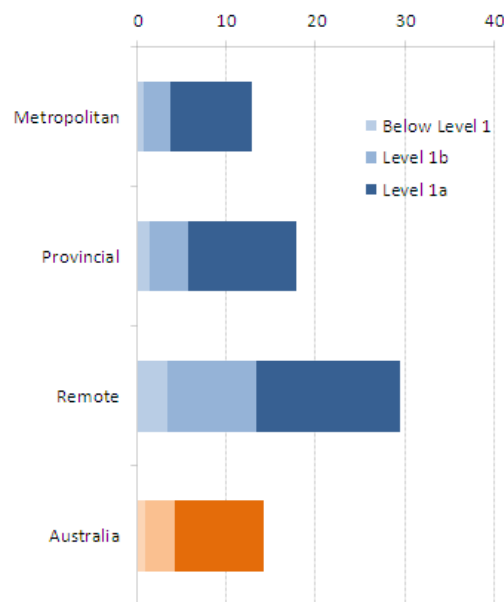
Figure 44: Reading literacy percentage of 'underperforming' students by location[123]

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[122] *ibid* – Figures 3.5, 5.8, 6.12

[123] *Ibid.* Figure 3.7
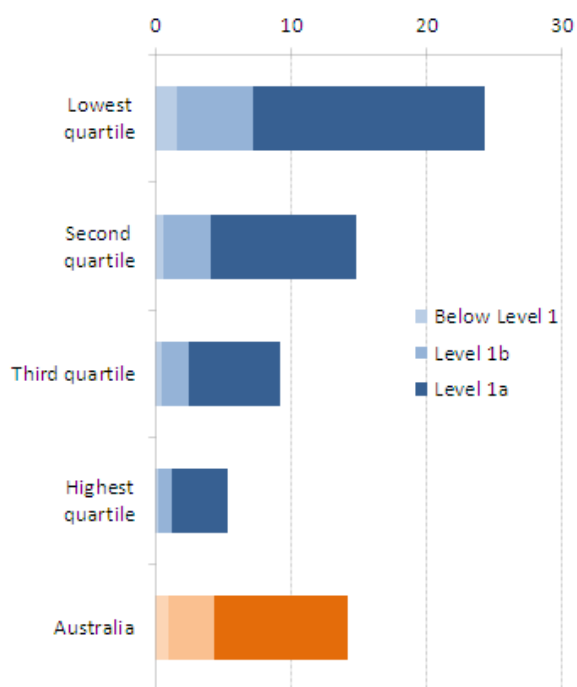
Figure 45: Reading literacy percentage of 'underperforming' students by SES quartile[124]
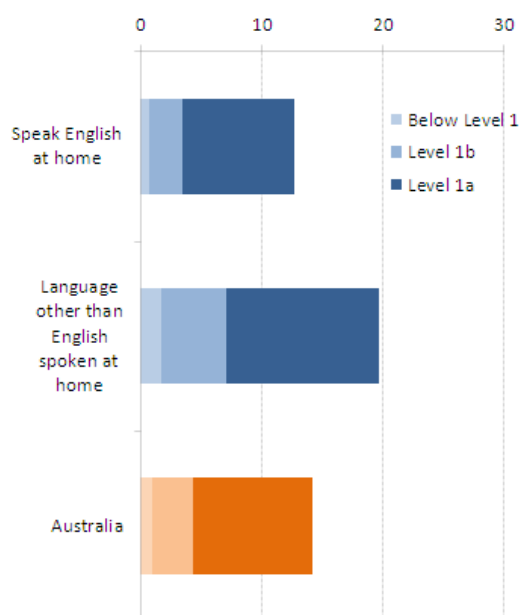
Figure 46: Reading literacy percentage of 'underperformance' by language background[125]

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[124] *Ibid.* Figure 3.8

[125] *Ibid* - Figure 3.10
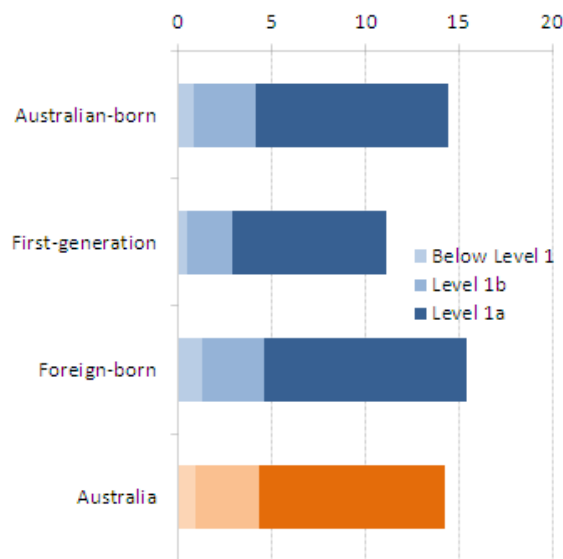
Figure 47: Reading literacy percentage of 'underperforming' students by immigrant status[126]

A.3 Our attainment rates, while strong, are stalling compared to the OECD average

Education participation and attainment data is reported to the OECD using the International Standard Classification of Education (ISCED). Within ISCED upper secondary education refers to all qualifications and programs at ISCED 3; tertiary education refers to qualifications (and programs) at ISCED 5 and 6.

Australian data on upper secondary participation and attainment reported to the OECD includes Year 12 or its equivalent within the school sector and AQF Certificate III within the vocational education and training sector. Note that this does not correspond to the current definition of Year 12 or its equivalent that has been adopted within the National Partnership on Youth Transitions, in which AQF Certificate II qualifications are regarded as the equivalent of Year 12 for purposes of recording educational attainment.

Australian data on tertiary attainment that is reported to the OECD includes AQF diploma- and degree-level qualifications.

A.3.1 Participation in post compulsory education is at best equal to the OECD average

The OECD estimates post-compulsory educational participation in two ways: using administrative data and Labour Force Survey (LFS) data. Four estimates of post-compulsory participation are provided here:

- total educational participation for the 15-19 age group based upon administrative data;
- total participation for the 15-19 age group based upon LFS data;
- secondary education participation;
- total education participation at age 17 based on administrative data.

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[126] *ibid* - Figure 3.9

However it is measured, post-compulsory educational participation in Australia is either below or at best equal to the OECD average. Australia's post-compulsory participation rates are better than the United Kingdom's and about the same as Canada's, but are exceeded by other countries with comparable socio-economic structures: Estonia, Finland, Iceland, the Netherlands, Norway and Sweden (see Table 12).

Among comparison countries, Canada and Sweden show a similar trend of static educational participation by 15-19 year-olds since 2000, and the United Kingdom shows a decline in participation. The trend in Finland, Iceland, the Netherlands and Norway has been for educational participation among 15-19 year-olds to rise over the period.

	Educational participation, age 15-19[1]	Educational participation, age 15-19[2]	Secondary education participation, age 17[1,3]	Total educational participation, age 17[1]	25-34 year-olds with at least upper secondary education[4]	Tertiary-qualified 25-34 year-olds[5]
Australia	82	80	78	84	82	42
Canada	80	80	80	88	92	56
Estonia	84	89	92	92	85	36
Finland	87	90	95	95	90	38
Iceland	84	85	83	83	69	33
Netherlands	90	91	87	93	82	40
Norway	87	78	92	92	84	46
Sweden	86	87	98	98	91	41
United Kingdom	73	76	74	76	77	38
OECD average	**82**	**85**	**83**	**86**	**80**	**35**

Table 12: Post-compulsory participation and attainment, 2008 (Percentages of the relevant age group)

Source: OECD Education at a Glance 2010.
1. Based upon administrative data
2. Based upon Labour Force Survey data
3. 17 is the typical age of Year 12 in Australia
4. 25-34 year-olds with a qualification at ISCED level 3 or higher
5. 25-34 year-olds with a qualification at ISCED level 5 or 6

A.3.2 Tertiary attainment rates are well above the OECD average

The upper secondary attainment rate by Australian 25-34 year-olds of 82% is close to the OECD average of 80%. Among a group of quite similar OECD countries it is above that of Iceland and the United Kingdom, close to that of the Netherlands and Norway, and well below Canada, Finland and Sweden (Table 12).

The tertiary attainment rate among Australian 25-34 year-olds (42%) is well above the OECD average (35%). Among a group of quite similar OECD countries only Canada and Norway have higher tertiary attainment rates among the age group (Table 12).

Since 2001 the upper secondary attainment rate among 25-34 year olds has risen at a much faster rate in Australia than in the OECD as a whole, and at a faster rate than in similar OECD countries for which consistent data is available. The relatively rapid growth in upper secondary attainment among 25-34 year-olds in the period is likely to be due to growth in qualifications awarded by the vocational education and training sector, rather than to any increase in school qualifications.
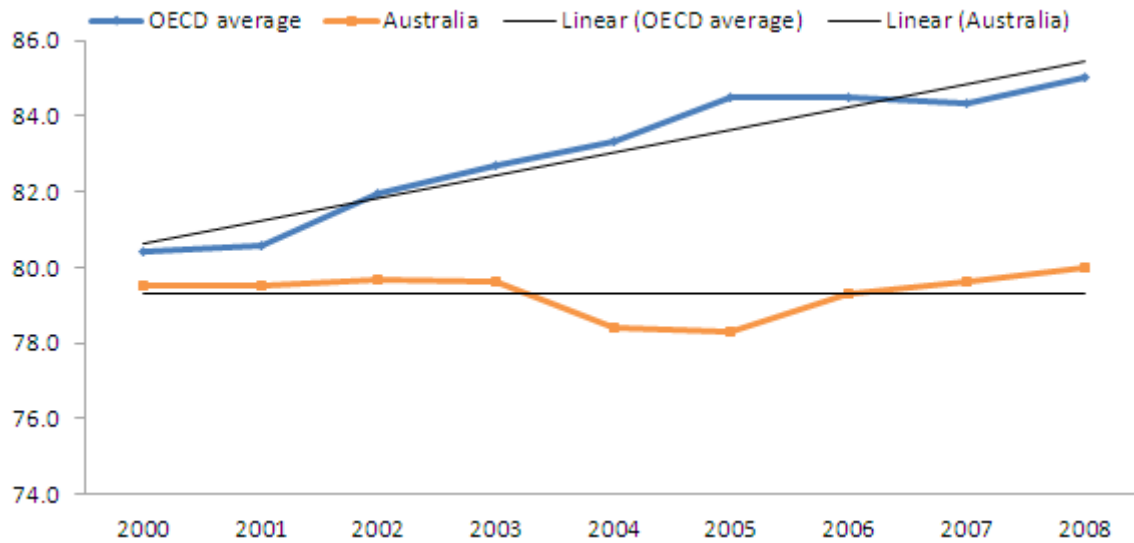
Figure 48: Educational participation 15-19 year-olds, Australia compared to the OECD average, 2000-2008 – labour force survey data
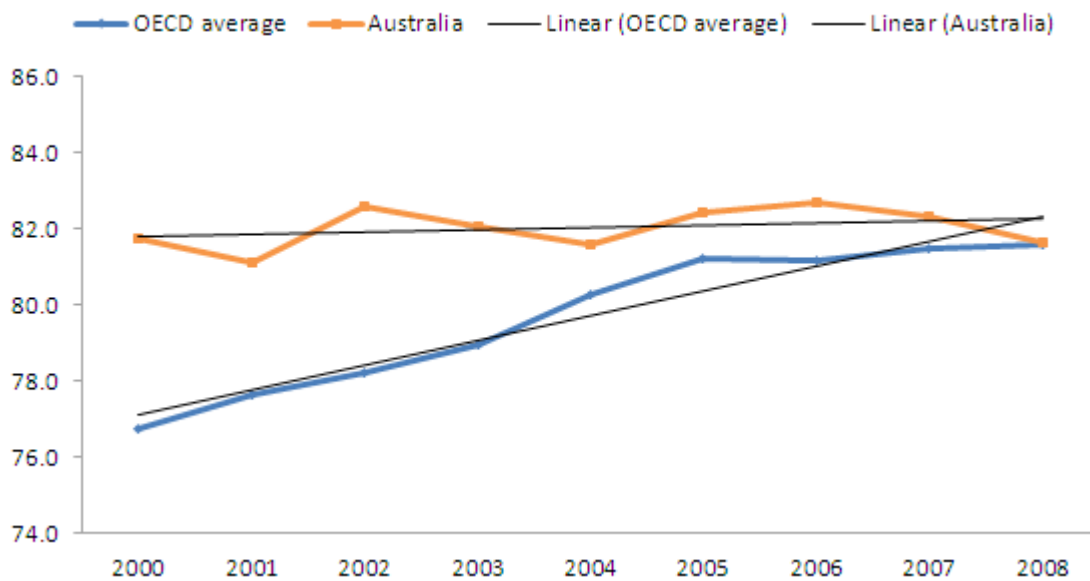
Figure 49: Educational participation 15-19 year-olds, Australia compared to the OECD average, 2000-2008 – administrative data.

Sources: OECD Education at a Glance 2010, Table C3.4a; Education at a Glance 2010, Tables C1.2 and C3.2a

A.3.3 While we may come close to meeting COAG targets, the quality of this achievement is questionable

The National Partnership Agreement on Youth Attainment and Transitions set a target of 90% of 20-24 year-olds attaining Year 12 or a Certificate II by 2015, and 90% attaining Year 12 or Certificate III by 2020:

  ◦ In 2010, 85.6% of the target age group attained Year 12 or a Certificate II and 84.5% attained Year 12 or Certificate III (Table 13)

- If trends observed between 2001 and 2010 were to continue unchanged, 88.9% of the age group can be predicted to attain Year 12 or a Certificate II by 2015, and 90.8% to have attained Year 12 or Certificate III[127] .

- Over the 2000-2010 period, schooling's contribution to both targets can be estimated to have been essentially flat, with most of the increase coming from an increase in the proportion of the age group with vocational education and training qualifications.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Year 12 or Certificate II	79.1	80.0	80.4	81.3	81.2	81.9	83.5	84.2	84.5	85.6
Year 12 or Certificate III	77.1	78.3	78.9	80.3	79.9	80.7	82.3	83.2	83.5	84.5
Certificate II	37.4	38.3	38.6	38.6	39.6	38.9	41.3	42.2	40.7	42.5
Estimated Year 12[1]	41.7	41.7	41.8	42.7	41.6	43.0	42.2	42.0	43.8	43.1
Certificate III[1]	32.7	34.2	34.6	35.6	36.3	35.8	37.8	39.6	38.0	39.2
Estimated Year 12[1]	44.4	44.1	44.3	44.7	43.6	44.9	44.5	43.6	45.5	45.3

Source: ABS Education and Work 2010, Cat. No. 6227.0.
1Estimated by subtracting the proportion with Certificate II (or Certificate III) from the proportion with Year 12 or Certificate II (or Year 12 or Certificate III). Year 12 retention estimated in ABS Schools Australia Cat. No, 4221.0 are also relatively flat over the period. (see Table 7.1a), although with some increase after the 2008-09 global financial crisis.

Table 13: 20-24 year olds with Year 12 or Certificate II and Year 12 or Certificate III, 2001-2010 (%)
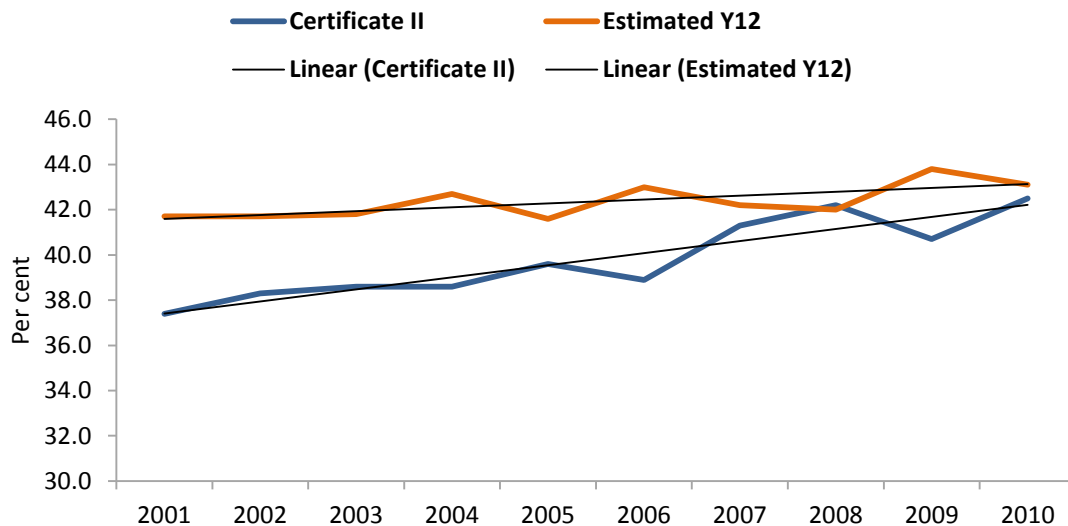
Figure 50: Certificate II attainment and estimated Year 12 attainment, 20-24 year-olds, 2001-2010

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[127] In both cases the prediction is based upon a simple linear extrapolation of the 2001-2010 trend. The apparent disparity of the proportion with Year 12 or Certificate III being predicted to exceed the proportion with Year 12 or Certificate II arises because the rate of attainment of Certificate III qualifications rose more sharply than the rate of attainment of Certificate II qualifications over the period.
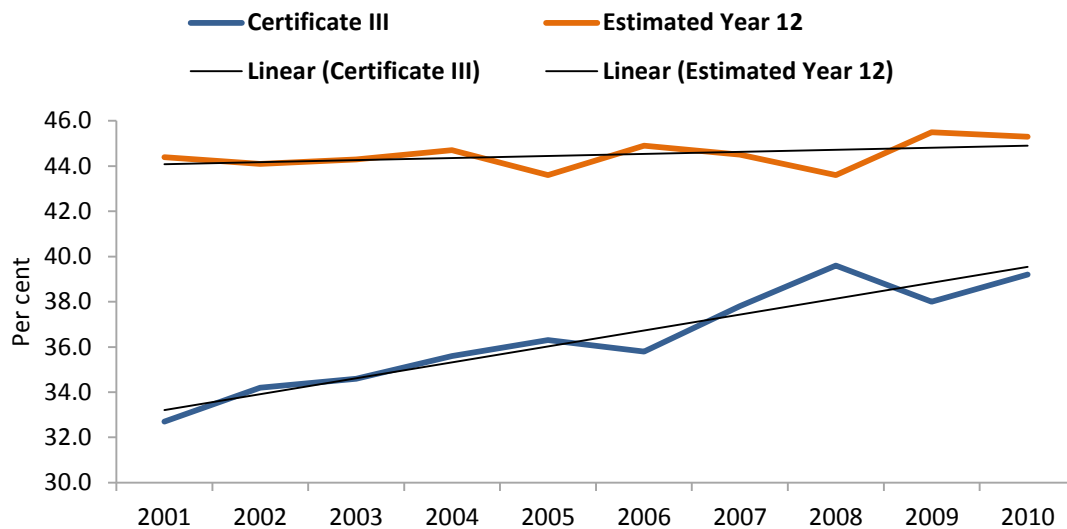
Source: ABS Education and Work 2010, Cat. No. 6227.0. Table 7.1

Figure 51: Certificate III attainment and estimated Year 12 attainment, 20-24 year-olds, 2001-2010

Indicator 9 of the National Education Agreement refers to the proportion of 18-24 year-olds engaged in full-time employment, education or training at or above Certificate III:

- Between 2008 and 2010 the proportion of 18-24 year-olds fully engaged in employment or in education or training at or above Certificate III level fell by around four percentage points and the proportion of the age group not fully engaged rose proportionally (Table 14).

- This is the result of a fall of close to five percentage points in the proportion of the age group in full-time employment not being matched by an equal or greater rise in the proportion of the age group fully engaged through education and training. There was some increase in apparent Year 12 retention rates as a result of the 2008-09 global financial crisis, but this was insufficient to offset the decline in teenage full-time employment opportunities.

- Indicator 10 of the National Education Agreement refers to the proportion of young people participating in post-school education or training six months after school.

- Between 2008 and 2010 the proportion of 15-19 year-old school leavers who had completed Year 12 who were engaged in full-time education and training rose by around one percentage point; the proportion of school leavers who had not completed Year 12 who were engaged in full-time education and training rose by around two percentage points (Table 15).

- In neither case was the increase sufficient to prevent a fall (of around five percentage points) in the proportion of school leavers who were fully engaged. Again, this is because sharp falls in the proportion of school leavers in full-time work was not sufficiently compensated for by increased participation in full-time post-school education and training.

	Fully engaged through full-time employment [1]	Fully engaged through full-time education/ training at or above Certificate III level [1]	Mix of full-time or part-time employment or education/training at or above Certificate III level [2]	Total fully engaged [3]	Not fully engaged	Total persons

	Fully engaged through full-time employment [1]	Fully engaged through full-time education/ training at or above Certificate III level [1]	Mix of full-time or part-time employment or education/training at or above Certificate III level [2]	Total fully engaged [3]	Not fully engaged	Total persons
2008	45.7	27.5	3.1	76.3	23.7	100.0
2009	41.1	28.9	2.7	72.7	27.3	100.0
2010	40.9	28.7	3.0	72.6	27.4	100.0

Source: ABS *Education and Work* 2010, Cat. No. 6227.0.

[1] Excludes persons in both full-time employment and full-time education/training.

[2] Comprises persons in full-time employment and full-time education/training at Certificate III level or above; and part-time employment and part-time education/training.

[3] Fully engaged comprises persons in full-time employment; full-time education/training at Certificate III level or above; or both part-time employment and part-time education/training at Certificate III level or above.

Table 14: Persons aged 18-24 years who are fully engaged in employment, education or training at or above Certificate III level, 2008-2010 (%)

	Completed Yr 12		Did Not Complete Yr 12		Total			
	Full-Time Education/ Training	Total fully engaged [1]	Full-Time Education/ Training	Total fully engaged1	Full-Time Education/ Training [1]	Total fully engaged1	Not Fully Engaged	Total
2008	52.8	82.5	9.9	60.4	36.9	74.3	25.7	100
2009	55.3	78.6	10.0	52.5	37.6	68.4	31.6	100
2010	54.1	77.3	12.3	55.9	39.4	69.8	30.2	100

Source: ABS Education and Work 2010, Cat. No. 6227.0.

[1] Fully Engaged comprises persons in full-time education/training; full-time employment; or both part-time education/training and part-time employment

Table 15: School leavers aged 15-19 years participating in post-school education or training, 2008-2010 (%)

A.3.4 Year 12 apparent retention rates have risen slowly over the past five years

The apparent retention rates to Year 12 across Australia peaked in 1992 and have only recently returned to these levels (see Figure 20). The 1992 level shows the effect of the 1990 recession – and the lag effect of employment and the extent to which the global financial crisis contributed to the recent rise is unknown.

Across the long period of economic growth there was a fall in apparent retention rates followed by a gradual recovery to the 1992 level. Figure 21 shows that the gap between the apparent retention rate for males and females has remained constant over this time, while Figure 22 shows that Indigenous retention rates have increased from just above 30% in 1998 to approximately 45% in 2009.

By OECD standards Australia has fared poorly in achieving an increase in the Year 12 retention rate over the past two decades. The extent of this lag and the reasons for it are disputed. There is parallel participation in TAFE and other Registered Training Organisations (RTOs). However, Australia does have a relatively school-centric provision of education for the school age cohort, as illustrated by the census

data of 2006. The vast majority of 17 year olds enrolled in full-time education were in schools (Figure 19).
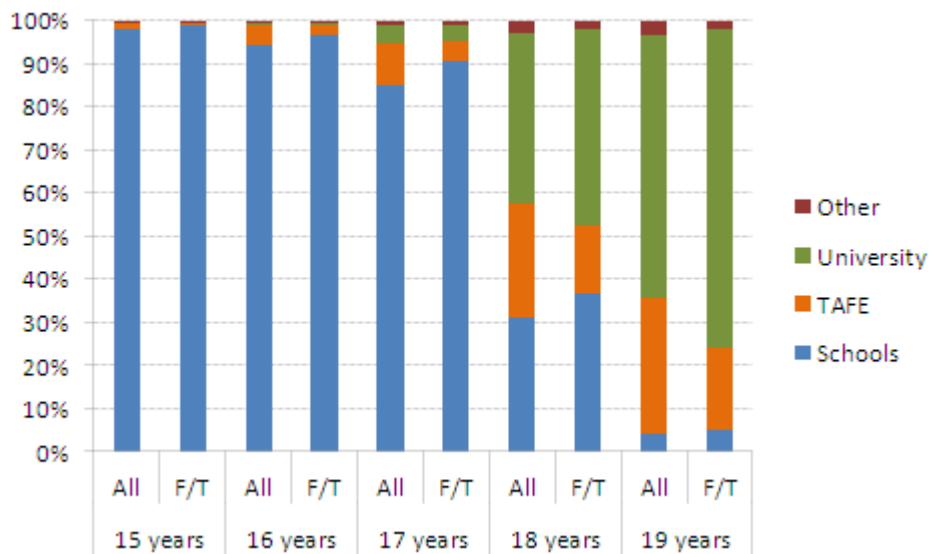
Figure 52: Teenage full and part-time enrolments across education sectors x age, 2006
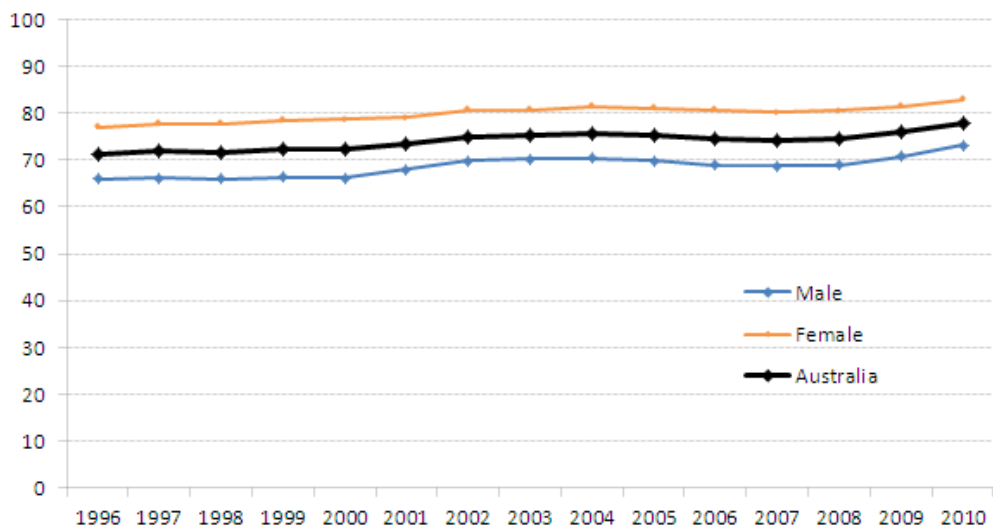
Figure 53: Apparent retention rates by gender

A.3.5 Equity in student outcomes

Attending a school with disadvantaged socio-economic status is associated with lower reading performance: this effect is in addition to the impact upon performance of the socio-economic status of students themselves. For disadvantaged Australian students the fall in performance that results from attending a disadvantaged school is higher than in all similar OECD countries except the Netherlands and the United Kingdom.

	Between school variance in	As a percentage of the average variance in student performance across OECD countries	Index of academic

	student performance	Variance in student performance between schools	Between school variance explained by:		
			The SES of students	The SES of students and schools	
2009					
Australia	2,692	31.1	13.5	21.0	73.9
Canada	1,877	21.7	6.2	9.6	78.3
Estonia	1,557	18.0	4.3	8.2	78.2
Finland	665	7.7	1.7	1.8	91.3
Iceland	1,348	15.6	3.4	3.7	85.9
Netherlands	5,107	59.0	3.2	26.7	35.4
Norway	874	10.1	2.0	2.7	89.7
Sweden	1,877	21.7	10.0	14.7	81.5
United Kingdom	2,775	32.0	15.0	24.7	70.7
OECD average	3,616	41.7	8.5	23.8	61.4
2000					
Australia	2,221	20.6	11.6	14.9	79.9
Canada	1,934	17.6	6.3	8.9	79.8
Estonia	m	m	m	m	m
Finland	591	5.3	1.0	1.0	92.3
Iceland	732	7.4	1.8	2.0	91.4
Netherlands	m	m	m	m	m
Norway	1,040	12.1	4.0	4.6	90.4
Sweden	786	8.5	4.4	5.8	90.8
United Kingdom	m	m	m	m	m
OECD average	3,324	34.3	7.5	21.6	64.1

Sources: OECD (2007) PISA 2006 Volume 2: Data/Données, Table 4.1f; OECD (2010) PISA 2009 Results: Overcoming Social Background. Equity in Learning Opportunities and Outcomes Volume II, Table II.5.1; OECD (2010)

1. The index of academic inclusion is calculated as 100*(1-rho), where rho stands for the intra-class correlation of performance, i.e. the variance in student performance between schools, divided by the sum of the variance in student performance between schools and the variance in student performance within schools.

Table 16: Variation of reading performance explained by SES

Disadvantaged Australian students who attend a school with average or mixed socio-economic status increase their reading performance significantly compared to what might be expected on the basis of their individual socio-economic status, and this increase is greater than in other similar OECD countries.

Disadvantaged Australian students who attend a school with advantaged socio-economic status increase their reading performance significantly compared to what might be expected on the basis of their individual socio-economic status, and this increase is greater than in all other similar OECD countries except the Netherlands.

		Strength of the relationship (Percentage of variance in student performance explained by the PISA ESCS)		
Year	**Domain**	**Australia**	**OECD average**	**Equity**[1]
2000	Reading	17.4	15.8	=
2003	Reading	14.2	15.5	=

		Strength of the relationship (Percentage of variance in student performance explained by the PISA ESCS)		
2006	Reading	11.8	12.3	=
2009	Reading	12.7	14.0	=
2000	Mathematics	17.1	15.2	=
2003	Mathematics	13.7	16.8	>
2006	Mathematics	11.5	14.4	>
2009	Mathematics	*n.a.*	*n.a.*	*n.a.*
2000	Science	14.3	15.1	=
2003	Science	14.6	16.4	=
2006	Science	11.3	14.4	>
2009	Science	*n.a.*	*n.a.*	*n.a.*

Table 17: The relationship between achievement and the PISA index of economic, social and cultural status (ESCS), 2000-2009

Sources: OECD (2007) *PISA 2006 Volume 2: Data/Données,* Tables 4.4c, 4.4e, 4.4d; OECD (2010) *PISA 2009 Results: Overcoming Social Background. Equity in Learning Opportunities and Outcomes Volume II*, Table II.1.2

1. Key: **=**: Australian equity not statistically different from the OECD mean; **>**: Australian equity significantly greater than the OECD mean; **<**: Australian equity significantly less than the OECD mean

	Schools with disadvantaged socio-economic status					Schools with average or mixture of socio-economic status					Schools with advantaged socio-economic status				
		Students in the bottom quarter of ESCS		Students in the top quarter of ESCS			Students in the bottom quarter of ESCS		Students in the top quarter of ESCS			Students in the bottom quarter of ESCS		Students in the top quarter of ESCS	
	Percentage of students	Percentage of students	Difference between observed and predicted reading performance[2]	Percentage of students	Difference between observed and predicted reading performance[2]	Percentage of students	Percentage of students	Difference between observed and predicted reading performance[2]	Percentage of students	Difference between observed and predicted reading performance[2]	Percentage of students	Percentage of students	Difference between observed and predicted reading performance[2]	Percentage of students	Difference between observed and predicted reading performance[2]
Australia	33.0	57.8	**-15.4**	10.6	**-31.5**	38.3	34.5	**11.0**	33.9	**-19.2**	28.7	7.7	**48.6**	55.5	**18.9**
Canada	19.0	37.3	**-8.9**	5.3	**-37.5**	59.6	56.4	**8.6**	54.4	-3.7	21.4	6.2	**26.9**	40.3	**17.9**
Estonia	20.1	37.0	-5.8	7.2	**-24.8**	54.9	55.4	4.7	48.4	**-10.9**	24.9	7.6	**34.9**	44.5	**23.1**
Finland	15.9	26.1	1.0	6.0	16.9	62.5	65.0	-0.2	54.0	-4.9	21.6	8.8	-9.9	40.0	1.2
Iceland	20.4	39.1	-2.8	7.2	-9.9	47.3	48.2	-1.1	40.4	**-12.3**	32.3	12.8	10.4	52.4	**9.1**
Netherlands	21.5	40.9	**-19.9**	4.8	**-94.3**	54.7	51.9	12.6	47.4	**-22.9**	23.7	7.2	**95.0**	47.7	**42.9**
Norway	12.4	22.3	0.0	3.9	**-23.8**	71.6	72.6	-3.8	65.5	-6.7	16.1	5.1	4.6	30.7	11.9
Sweden	19.8	34.1	-9.0	6.4	-18.0	60.7	60.4	-2.1	55.6	**-12.9**	19.6	5.5	**33.6**	37.9	**21.6**
United Kingdom	26.5	48.3	**-16.5**	7.7	**-61.5**	50.2	45.4	**9.7**	44.2	**-11.7**	23.3	6.4	**38.3**	48.1	**25.0**
OECD average	27.6	50.9	**-17.7**	7.7	**-53.6**	46.2	42.5	**13.8**	39.7	**-17.7**	26.2	6.6	**57.0**	52.6	**20.8**

Table 18: Reading performance of advantaged and disadvantaged students and their schools' socio-economic background

Source: OECD (2010) *PISA 2009 Results: Overcoming Social Background. Equity in Learning Opportunities and Outcomes Volume II*, Table II.5.10
1. Schools with an average or mixture of socio-economic intake are not statistically significantly different from the country average. Schools with an advantaged (disadvantaged) socio-economic intake are above (below) the country average.
2. Predicted on the basis of the student's individual socio-economic status. Bold figures indicate that the difference is statistically significant.

A.3.6 The relationship between a school's average socio-economic status and resources is greater than in similar OECD countries

There is a relationship between the socio-economic status of students that attend a school and the resources of that school. Schools with students from a low socio-economic background typically have fewer resources, including being more likely to experience teacher shortages. This has the potential to exacerbate inequity.

Australia follows a similar pattern, with Australian schools with lower average socio-economic status tending, when compared to schools with higher socio-economic status (Table 19):

- To have larger teacher shortages

- To have fewer full-time teachers

- To have less responsibility for resource allocation

- To have lower quality educational resources, and

- To be smaller.

When compared to other similar OECD countries, Australia tends to demonstrate a stronger relationship between schools having lower than average socio-economic status and:

- Teacher shortages

- Lower responsibility for resource allocation, and

- The quality of the school's educational resources.

When schools containing advantaged students (those in the top SES quartile) and disadvantaged students (those in the bottom SES quartile) are compared, Australian PISA data (Table 19) shows that:

- There is a large and significant gap between the average SES of schools with advantaged and disadvantaged students in favour of those with advantaged students (i.e. there is a strong concentration of advantaged students together in the same schools and of disadvantaged students together in the same schools);

- This gap is greater in Australia than in any other similar OECD countries: some 30% above Finland, but similar to the gap in the Netherlands and the United Kingdom;

- The gap between the quality of the educational resources in schools with advantaged and disadvantaged students is large and significant, favours schools with advantaged students, is around twice the OECD average, and is larger than in any similar OECD country;

- Teacher shortages are significantly greater in schools attended by disadvantaged students, with the gap being over twice the OECD average and larger than in all similar OECD countries other than Iceland.

	School average index of economic, social and cultural status[2]			Index of quality of educational resources[2]			Index of teacher shortage[2]		
	Advantaged students	Disadvantaged students	Difference[4]	Advantaged students	Disadvantaged students	Difference[4]	Advantaged students	Disadvantaged students	Difference[4]
Australia	0.71	-0.61	**1.32**	0.25	-0.18	**0.42**	-0.23	0.15	**-0.38**
Canada	0.60	-0.59	**1.19**	0.12	-0.08	**0.20**	-0.10	0.10	**-0.19**
Estonia	0.59	-0.58	**1.16**	0.08	-0.05	0.13	-0.01	0.05	-0.06
Finland	0.53	-0.45	**0.98**	0.08	-0.04	0.12	0.02	0.02	0.00
Iceland	0.52	-0.58	**1.09**	0.03	-0.02	0.05	-0.23	0.20	**-0.42**
Netherlands	0.67	-0.60	**1.27**	0.06	-0.04	0.10	-0.04	-0.03	-0.01
Norway	0.49	-0.47	**0.96**	0.11	-0.06	0.16	-0.16	0.07	**-0.23**
Sweden	0.58	-0.51	**1.10**	0.17	-0.14	**0.32**	-0.09	0.07	-0.15
United Kingdom	0.70	-0.59	**1.29**	-0.01	0.02	-0.04	-0.12	0.06	**-0.19**
OECD average	0.71	-0.64	**1.34**	0.11	0.11	-0.08	-0.10	0.07	**-0.17**

Table 19: Characteristics of schools attended by advantaged and disadvantaged students, 20091

Source: OECD (2010) PISA 2009 Results: Overcoming Social Background. Equity in Learning Opportunities and Outcomes Volume II, Table II.2.3

1. Advantaged (disadvantaged) students are those on the top (bottom) quarter of the socio-economic background distribution within their own country
2. Positive values indicate more favourable characteristics
3. Negative values indicate more favourable characteristics
4. Values that are statistically significant are indicated in bold

	Index of teacher shortage	Percentage of full-time teachers	Percentage of certified teachers among all full-time teachers	Percentage of teachers with university-level degree (ISCED 5A) among all full-time teachers	Index of school responsibility in resource allocation	Index of school curriculum responsibility	Index of quality of school's educational resources	Computer/student ratio	Student/teacher ratio	School size
Australia	**-0.28**	**-0.21**	**-0.05**	0.02	**0.54**	0.11	**0.31**	0.01	-0.07	**0.29**
Canada	**-0.16**	0.01	**0.14**	0.03	**0.32**	**0.14**	**0.18**	-0.05	0.09	**0.16**
Estonia	-0.05	**0.14**	0.00	0.00	-0.04	-0.07	0.10	-0.09	**0.43**	**0.52**
Finland	0.03	**0.17**	-0.01	-0.01	**0.23**	0.01	**0.13**	-0.01	0.08	**0.31**
Iceland	**-0.37**	**0.20**	**0.39**	**0.30**	**-0.11**	**-0.07**	**0.06**	**-0.41**	**0.40**	**0.37**
Netherlands	0.05	**-0.34**	**-0.12**	**0.62**	0.01	-0.03	0.06	-0.16	**0.38**	**0.42**
Norway	**-0.23**	-0.05	0.04	**0.15**	**0.12**	-0.03	**0.14**	-0.02	**0.19**	**0.30**
Sweden	**-0.12**	**0.05**	0.01	-0.04	**0.30**	-0.04	**0.26**	0.13	0.12	**0.16**
United Kingdom	**-0.15**	**-0.36**	0.05	-0.03	**0.16**	**0.10**	0.00	0.01	-0.10	**0.14**
OECD average	**-0.13**	**-0.07**	**0.04**	**0.15**	**0.16**	**0.06**	**0.13**	**-0.08**	**0.15**	**0.28**

Table 20: Simple correlation between schools' average socio-economic background and their resources, 2009[1]

Source: OECD (2010) PISA 2009 Results: Overcoming Social Background. Equity in Learning Opportunities and Outcomes Volume II, Table II.1.2

1. Values in bold are significantly different from the OECD average

Appendix B Variability in Performance

B.1 Multilevel analysis of the PISA dataset

The PISA data used for the estimation involves a hierarchical structure comprising students at the first level who are nested in schools at the second level. The sampling design of the PISA data is such that schools are selected to participate and then students belonging to these schools are randomly drawn to participate the standardised tests and answer a questionnaire. The PISA data is a particularly rich source because it gathers information at the second level through a school questionnaire answered by the principal of each school.

Having information at both levels enables us to distinguish between within school and between school variations and thus offers more control for the effect on students' scores of unobserved heterogeneity (diversity) arising from school differences. Indeed, we can expect that two students picked randomly in the same school would be more alike than two students selected from different schools.

Students belonging to the same schools are likely to share similar socio-economic characteristics to a greater extent than students from different schools. Similarly, students in the same school are expected to share the same teachers for some subjects, benefit from the same facilities (both on quantitative and qualitative grounds) and environment. Because of these effects, we would expect the score of students belonging to the same school to be more alike than for students in different schools. Treating each student observation as independent would lead to potentially large bias in the estimation of the determinants of their score. We therefore use multilevel models to address this issue and investigate schools effects on scores as well as student effects. Being able to look at what happens at the second level represented by the schools gives our estimation result more scope to investigate policy implications related to social disadvantages.

In what follows we present preliminary estimation results based on fairly general definitions of social disadvantage and investigate a range of social issues and their impact on student scores.

The structure of the estimations is as follows. We first estimate a simple model including only an intercept and controlling for school effects for the purpose of illustrating the between school variance of student scores. We then move on to have a preliminary look at the effect of parents' socio-economic status on students' scores. Since we only use one regressor the model has a very limited explanatory power. The aim of this model is simply to see whether, before accounting for any other factors, some schools contribute to flatten or exacerbate the effect of parents' socio-economic status on students' scores besides the school effect arising from other factors. Finally we undertake the proper estimations, evaluating the determinants of students' scores and testing whether the school effect on student socioeconomic background subsists. The results from these latter models are used to infer the potential effect of reducing social disadvantage on the distribution of students' scores through counterfactual analysis.

Altogether, we start from a model involving raw data on scores where the minimum is controlled for. This produces a first picture of the variability of mean scores at school level (illustrated by Figure 54, Figure 55, Figure 56), that is the overall school effect on scores. Then we identify and isolate the socio-economic composition of the pupils based on a composite index of their parents' socioeconomic and cultural standing (ESCS) and look at what it implies in terms of scores, studying its levels and variations. This is illustrated by Figure 57 where we highlight the school effect on the relationship between scores and pupils' socio-economic status independent from the overall school unobserved heterogeneity

(random intercept). The next set of estimations involves adding some controls for students and schools characteristics. The results of these estimations enable us to identify and quantify the determinants of individual PISA scores. From these estimations, we proceed to compute the residual school effect on scores that remains after controlling for students' and schools' observed characteristics. This leads to an updated graph of school effects on scores where the variability has shrunk because of the controls added but has not altogether disappeared. The updated score variability across schools is illustrated in Figure 58, Figure 59 and Figure 60. These figures show that, even after controlling for a large number of determinants of scores, there remain unobserved school effects whereby, everything else held constant, some schools perform significantly better (worse) than others. We use the measure of the unobserved school effect to separate schools into four categories based on the quartiles of school effects. We observe that the data on which counterfactuals are based centres above the actual population mean by about 6 score points, mainly due to the fact that multilevel regression drops observations that do not have complete information. This is encountered more frequently among subjects with lower scores. Dividing the data in quartiles restricts all comparisons between each of the four subsamples so that any adverse effects from the missing observations are reduced. We finally use this measure of schools' intrinsic quality to build counterfactual analysis whereby we compute the expected scores for students (identified through their socio-economic background for instance) according to the quality of the school they attend. Hence, for a given social disadvantage we can infer what can be gained in terms of score attainment from improvements in the quality of the schools the students attend.

B.1.1 Illustration of the variability of assessment scores between schools, PISA 2009

We first estimate a simple model including only an intercept and controlling for school effects, that is by estimating an extra random intercept for each school. The purpose of this simple model is to look at what sort of score variation we are up against and how much of it comes from between school effects and within school between students' effects. The results of this simple model allow us to map schools according to the intrinsic intercept we estimate for them. The table of results for this model is given in Table 24.

According to the basic model with random intercept only, 23.2% (25.4% on population weighted estimates) of the total variance of reading scores comes from variations between schools (this figure is given by the computation of the *Variance Partition Coefficient* in the result tables).

The three following figures (Figure 54, Figure 55 and Figure 56) represent the estimated plausible values in respectively Reading, Mathematics and Science at the school level, each school being ranked according to the value of its estimated random intercept. The green line represents the intercept obtained for each school. The intercept being random and assumed to follow a normal distribution, we also display the 95% confidence interval around the intercept of each school. These graphs identify schools that are underperforming compared to the overall mean and those which are over performing. Several top schools appear to produce expected scores in reading above 600 which is considerably higher than the overall mean of 508.97. The effect is even larger for Mathematics scores and Science. On the other end of the spectrum, the schools performing worse have estimated intercepts up to 140 points less than the overall mean in reading with similar differences observed for Mathematics and Science. This means that between the highest achieving schools and the lowest, one observes score differences between schools amounting to up to 300 points. Given the scale of the standardised tests marks, these differences are very large.
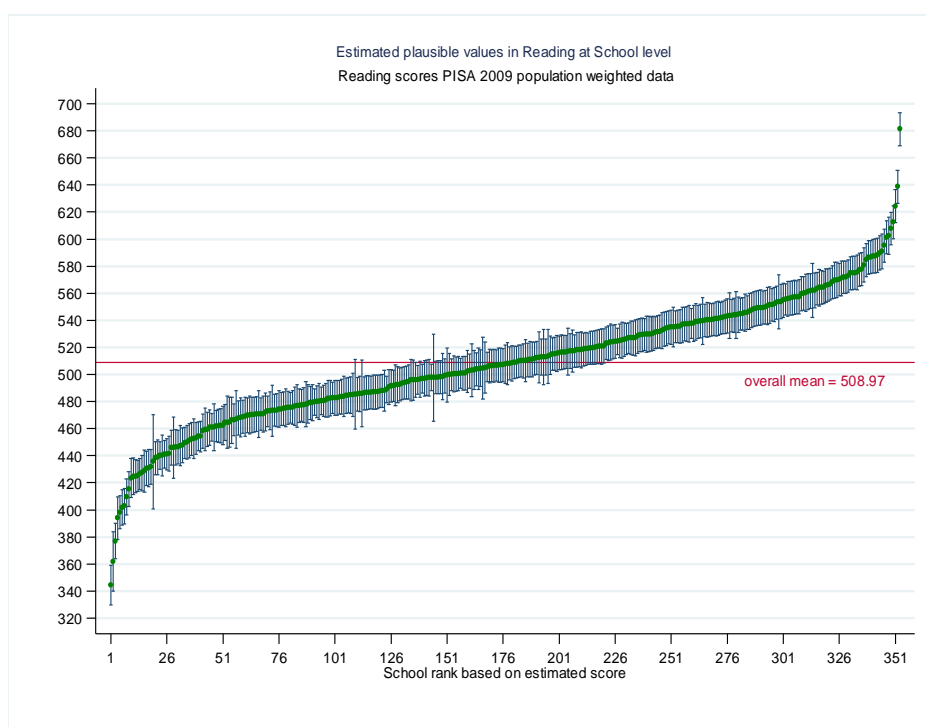
Figure 54: Estimated plausible values in Reading at school level (PISA 2009)
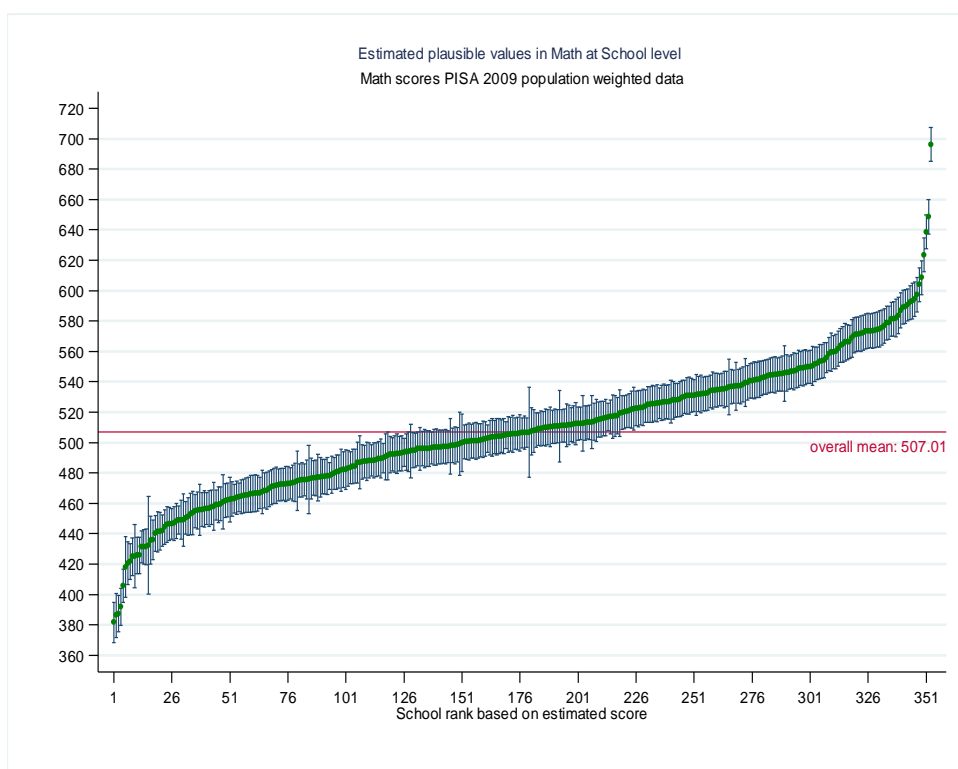
Figure 55: Estimated plausible values in Mathematics at school level (PISA 2009)
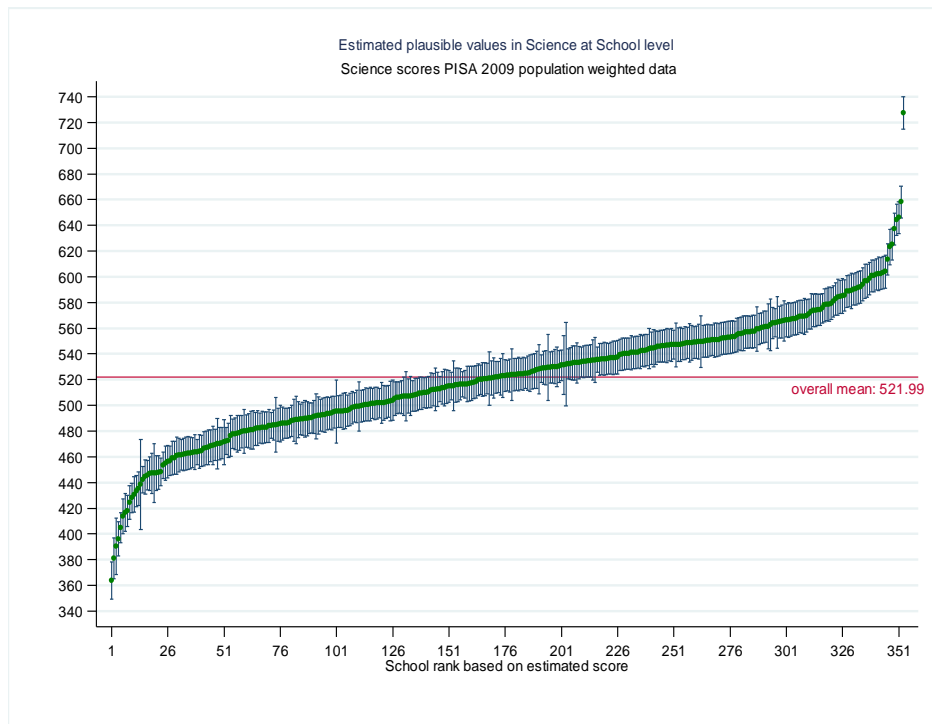
Figure 56: Estimated plausible values in Science at school level (PISA 2009)

Figure 57 shows the estimated relationship between the variance of the school slopes for socio-economic status and the deviations from the population mean ESCS for all three scores. It shows that the variance of the effect of ESCS is larger for schools with a larger proportion of students at both ends of the spectrum: the effect of socio-economic status is more variable at school level when the proportion of students with very low or very large ESCS is large. For schools mostly composed of students of average ESCS, the variability of slope coefficients (effect of ESCS) is reduced. It is worth noting that while the variance is increased at both ends, the variability of these coefficients is larger for schools with lower ESCS than it is for schools with higher ESCS students.
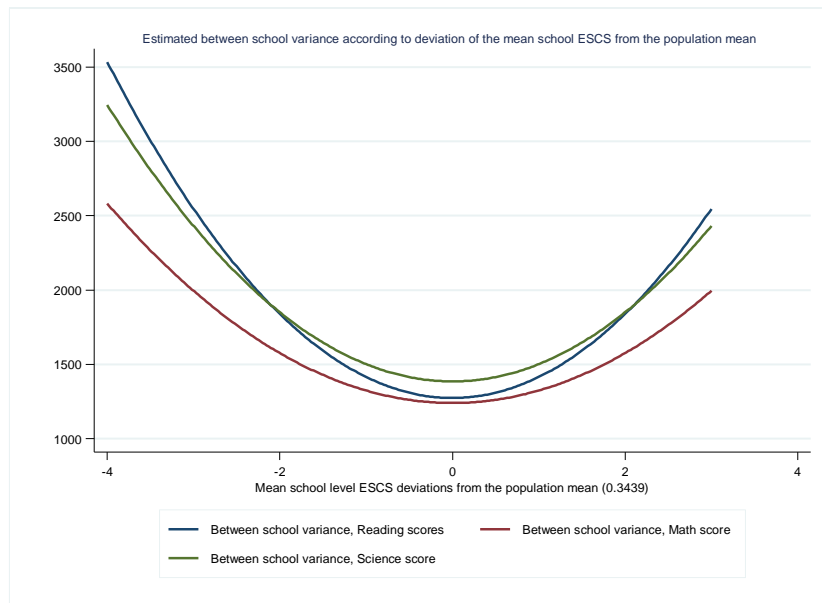
Figure 57: Estimated between school variance according to deviations of the mean school ESCS from population mean (PISA 2009)

B.1.2 Residual between-school variations: the effect of 'school unobserved quality'

Once students and school effects are taken into account, the variance partition coefficient reduces to 5.6% for reading scores, 7.2% for mathematics scores and 7.3% for science. In other words, from the original model depicting a proportion of total variance of 25% due to between school variability, between 5.6% (for reading) and 7.3% (for science) of the total variance is explained by schools' unobserved heterogeneity. This is what is left of the between school variance after controlling for such things as school average ESCS, student ratio (which was not significant), school type, geographical location, state, etc. Figure 58 illustrates the school variability through the plots of schools' estimated random intercept from the preferred model (Model4) for reading scores (along with corresponding confidence intervals). Figure 59 and Figure 60 illustrate the school variability for Mathematics and Science scores respectively. The gap between low and high score achieving schools has naturally reduced given that we now control for many students and school characteristics. Yet, for reading scores, the low achieving schools are associated with gaps amounting to up to 40 points compared to the overall average while the high achieving schools outperform the overall average by up to 60 points. In other words, there still remains a gap of 100 points between high and low achieving schools that is not due to the characteristics we included in the model. These remaining differences between schools can be interpreted as differences in 'school quality' or 'value added.'
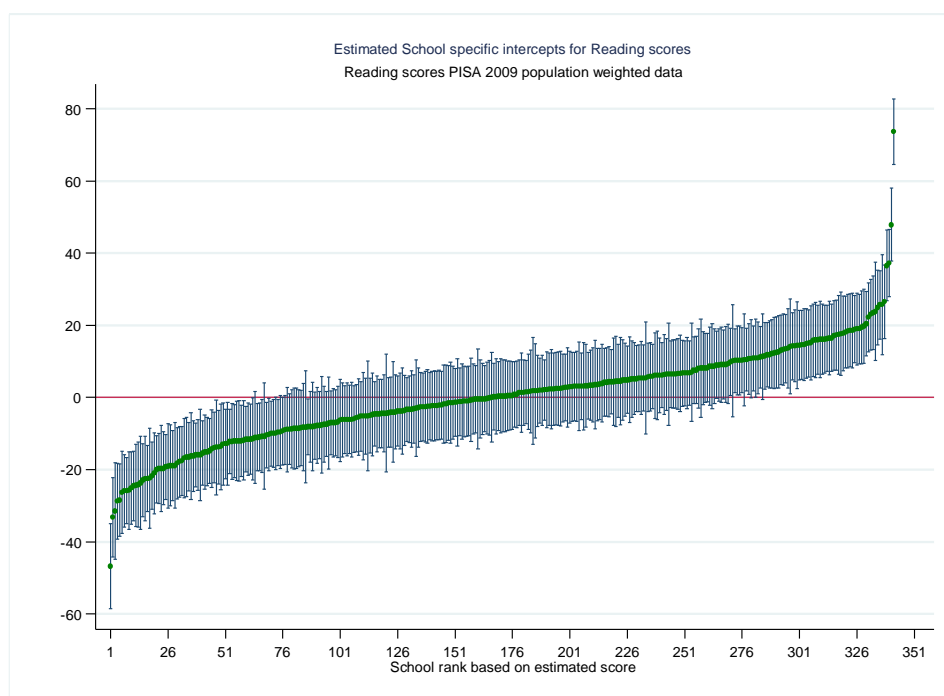
Figure 58: Estimated school effects after control for students' and school' characteristics, Reading scores (PISA 2009)
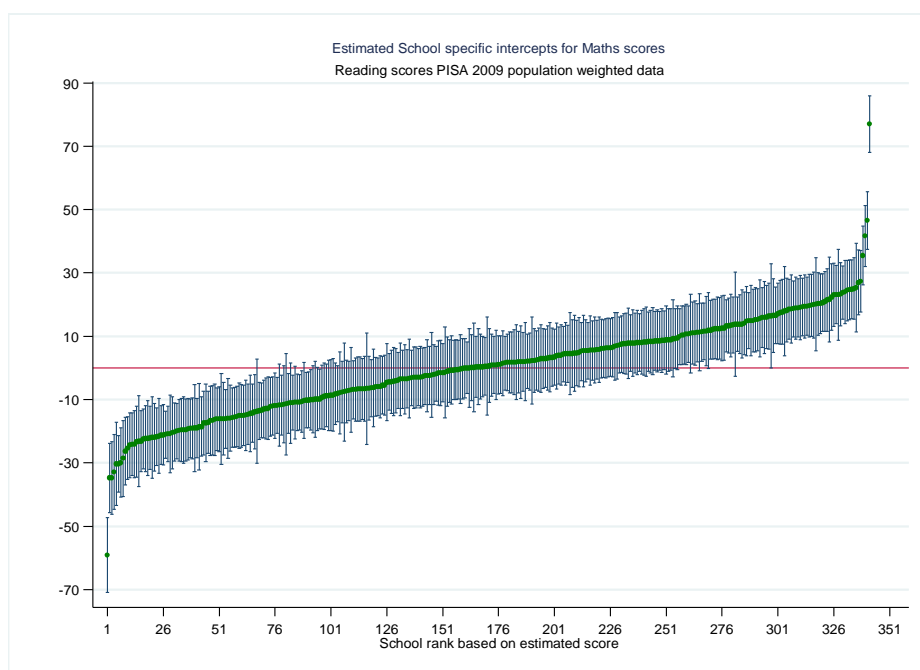
Figure 59: Estimated school effects after control for students' and schools' characteristics, Mathematics scores (PISA 2009)
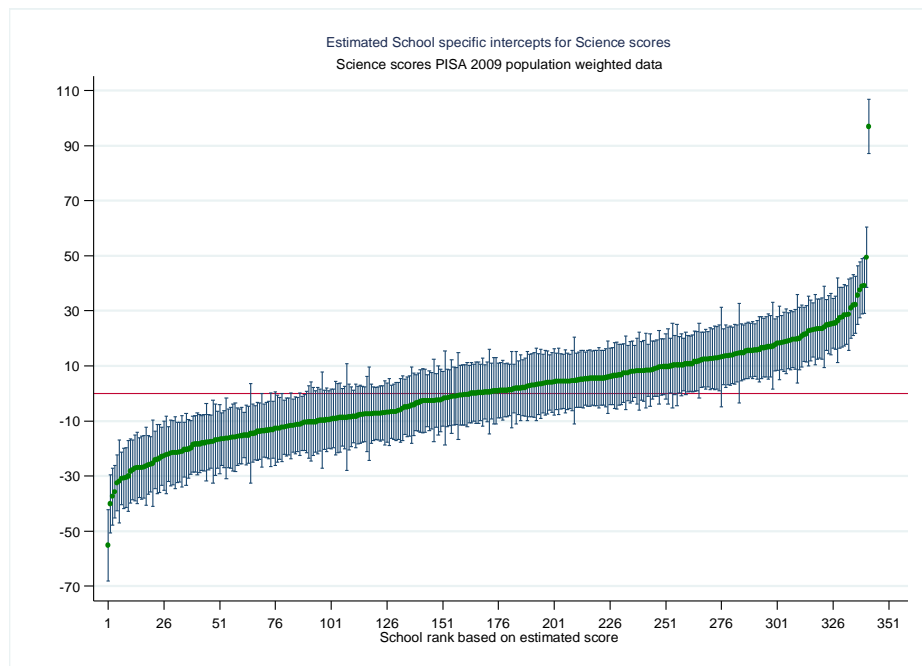
Figure 60: Estimated school effects after control for students' and schools' characteristics, Science scores (PISA 2009)

B.1.3 Government, Catholic and independent schools and their students, counterfactual analysis

Using Figure 14 depicting the estimated model for the PISA scores, we use the first two components associated to students and schools characteristics and infer the expected students' scores according to several scenarios. First we assume a student with characteristics corresponding to the population average of government school students (population weighted means) attending a school with the government school population average characteristics. Let's denote this type of student a 'government school student' and this type of school a 'government school'. Likewise we can define with similar terms a 'Catholic school student, a 'Catholic school', an 'independent school' student and an 'independent school' so that the 'Catholic school student' is a student assuming the average characteristics of the population average Catholic school students and so on. Our scenarios consist in mixing the three types of students and the three types of schools and infer the corresponding scores. We have 'pure' scenarios corresponding to a government school student in a government school, a Catholic school student in a Catholic school and an independent school student in an independent school. Once we infer the corresponding scores to these 'pure' scenarios, we investigate the extent to which scores are altered if say a government school student were to attend a Catholic school or a Catholic school student were to attend a government school and so on. The results are given in the following three series of tables and figures. Since the number of independent schools in the sample is limited (63 in PISA 2009 against 73 Catholic schools and 217 government schools), the second table of each series represents the results when Catholic schools and independent schools are grouped into a single category. The red numbers correspond to the 'pure' scenarios. The first line of the first table reads as follows: the red number corresponds to the expected score for an average government school student attending a government school. The next number is the expected score of the same student if he or she attended a private school and the last number is his or her expected score if he or she attended an independent school. These results are summarised in Figure 61 and Figure 62.

Reading scores	School		
student:	government	Catholic	independent
government	503.7	521.0	527.5
Catholic	516.7	534.0	540.5
independent	531.4	548.7	555.2

Reading scores	School	
student:	government	independent & Catholic
government	503.7	524.7
independent & Catholic	523.3	544.4

Table 21: reading scores by school types and types of their students (PISA 2009)

Mathematics scores	School		
student:	government	Catholic	independent
government	505.0	516.1	524.4
Catholic	516.8	527.9	536.2
independent	530.9	542.0	550.4

Mathematics scores	School	
student:	government	independent & Catholic
government	505.0	520.9
independent & Catholic	523.1	539.1

Table 22: mathematics scores by school types and types of their students (PISA 2009)

Science scores	School		
student:	government	Catholic	independent
government	517.4	531.0	539.2
catholic	530.1	543.7	552.0
independent	545.4	559.0	567.3

Science scores	School	
student:	government	independent & Catholic
government	517.4	535.8
independent & Catholic	537.0	555.5

Table 23: science scores by school types and types of their students (PISA 2009)
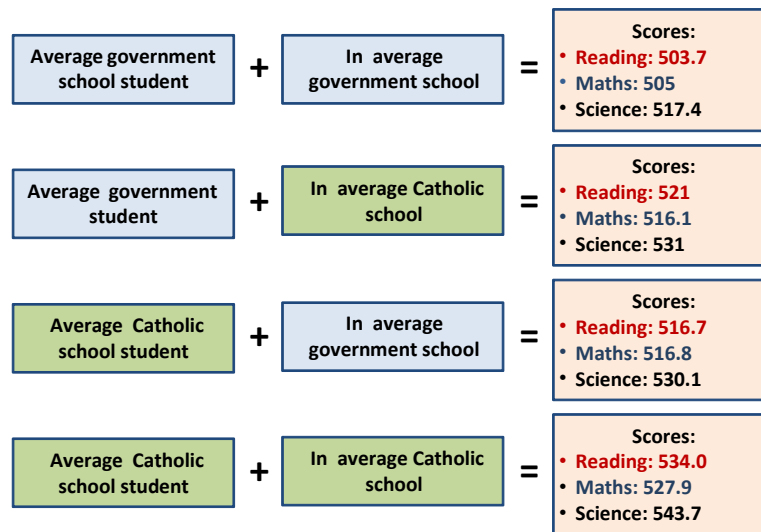
Figure 61: comparative analysis of students' scores, government vs. Catholic students and schools (PISA 2009)
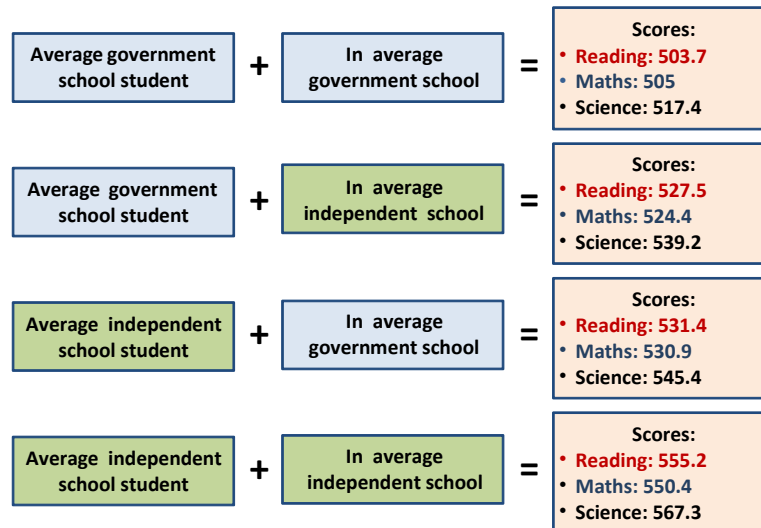
Figure 62: comparative analysis of students' scores, government vs. independent students and schools (PISA 2009)

Comparing Catholic and government schools, we observe that the average students in Catholic schools obtain reading scores that are about 6% higher than an average government school student in a government school (534 against 503.7). For mathematics and science scores, the gap is respectively 4.5% and 5%. When considering an average government school student assumed to be benefitting from the average characteristics of a Catholic school, his or her reading score would improve from 503.7 to 521, which is an improvement of 3.4%. For mathematics scores we estimate an improvement of 2.2% (505 to 516.1), 2.6% for science scores (517.4 to 531). Interestingly, the opposite operation consisting in estimating the drop in scores for the average Catholic school student assumed to be benefitting from the average government school characteristics gives almost identical figures (in absolute value). Indeed while the government school student placed in a Catholic school would improve his or her reading score by 3.4 %, the average Catholic student placed in a government school would experience a drop in reading score of 3.2%. Likewise, Catholic school students placed in a government school would see their mathematics and science scores drop by respectively 2.1% and 2.5%. We obtain very similar results on a different scale when comparing government and independent schools and students. These figures indicate the expected score improvements to be expected for government school students if they were

benefitting from the same resources as Catholic schools or independent schools. For reading scores they show that out of the 30 points difference between government school students in government schools and Catholic school students in Catholic schools, about 60% can be attributed to differences in school observable characteristics which are mainly driven by variables associated to resources and average ESCS of the school. The symmetry of this result is interesting to point out where *Catholic students* would experience the same percentage drop in reading score through being subjected to government schools characteristic. Finally these results can be generalised to comparisons between government and independent schools and are stable whether one looks at reading scores or mathematics or science.

As we have pointed out in the estimation results, another important source of variation in students' scores comes from schools' unobservable characteristics which we interpret as school quality and which explains, after we take all observable characteristics into account, a residual 7% of the total variability of scores in reading (see estimation results above). Therefore, we looked at the distribution of these school effects by school type. The next series of figures represent these distributions for, respectively reading, mathematics and science scores. For each subject, we plotted the distribution for government schools separately since there are a lot more of these schools compared to Catholic and independent schools.
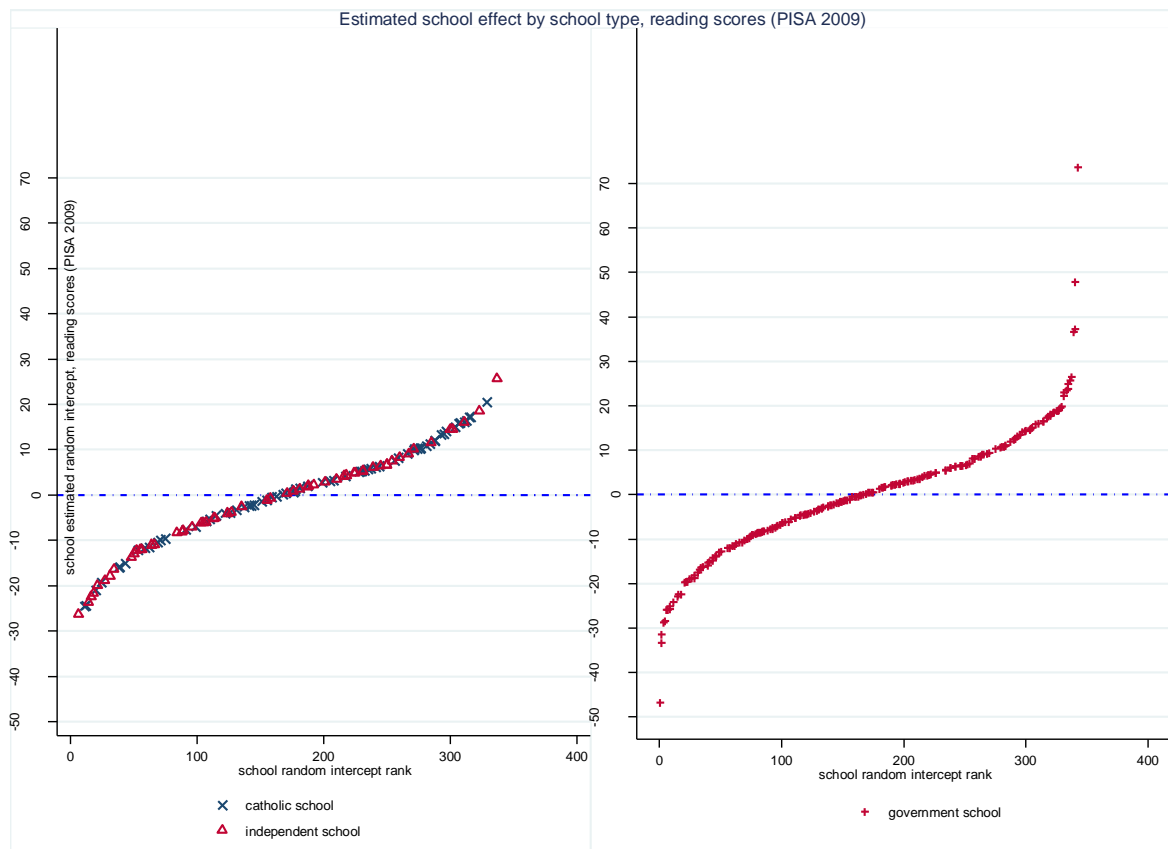
Figure 63: Estimated school effect by school type, Reading scores (PISA 2009)
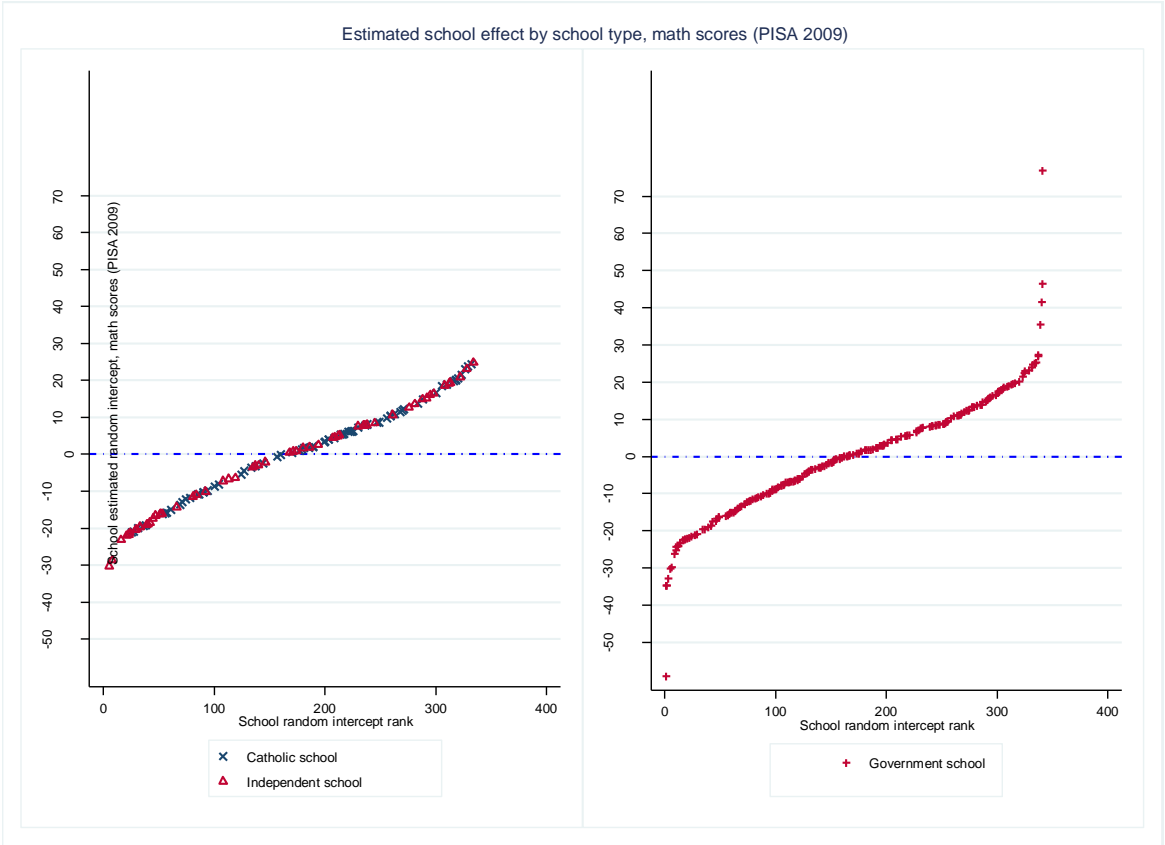
Figure 64: Estimated school effect by school type, Mathematics scores (PISA 2009)
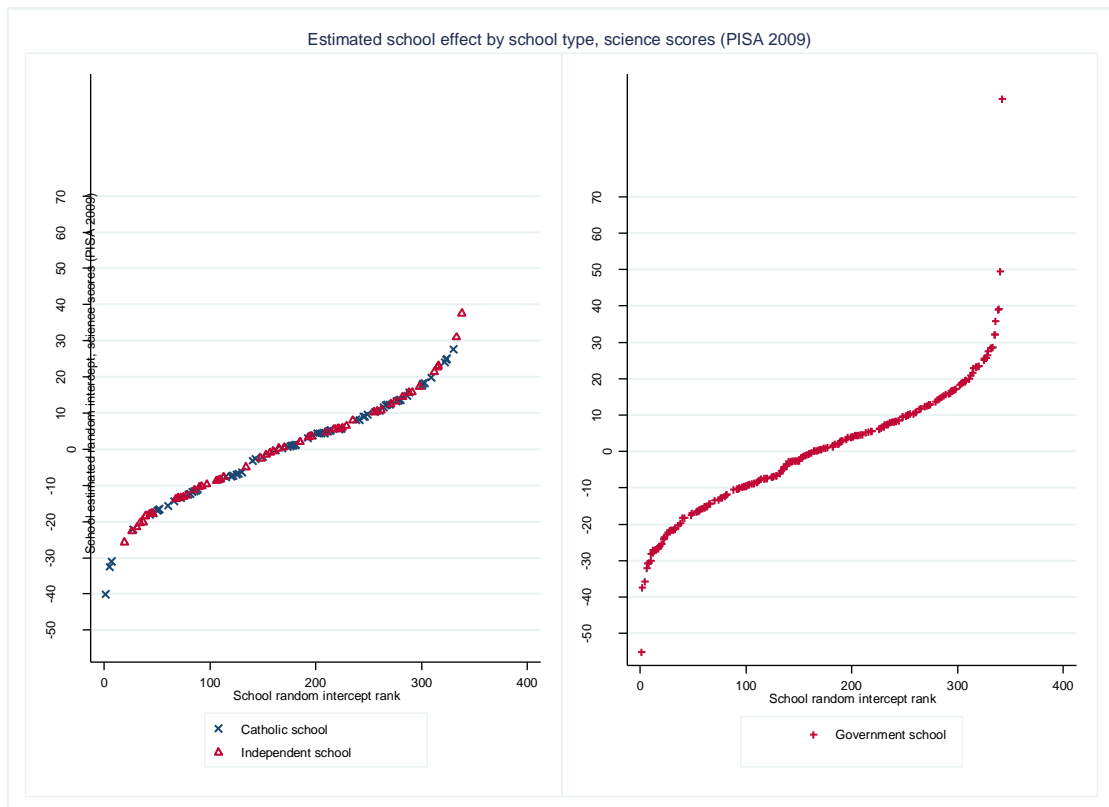
Figure 65: Estimated school effect by school type, Science scores (PISA 2009)

We observe that Catholic and independent school effects have smaller amplitude both on the negative and positive sides. In all scores, government schools show both cases where the negative deviation from the overall mean of scores is much larger than that of non-government schools. Yet, they also exhibit larger positive deviations from the overall mean compared to non-government schools. We performed a series of Kolmogorov-Smirnov tests in order to statistically compare these distributions across school types for all scores. We first tested whether the school effect ('school quality') was significantly smaller or larger for government schools against the non-government schools (that is Catholic and independent schools taken as a single category). We find that government and non-government schools' distribution of the estimated unobservable school effects are not significantly different for all scores (reading, mathematics and science). In other words, when comparing government and non-government schools' estimated 'quality' distributions, there appears to be no significant differences. We performed similar tests, isolating Catholic and independent schools and comparing their estimated 'quality' with the government schools. This second series of tests are to be interpreted with caution since we have a relatively small number of Catholic and independent schools if we take them separately. With this word of caution in mind, it appears that for reading and science scores, the estimated school 'quality' does not significantly differ between government, Catholic and independent schools. However, for mathematics scores it appears that the government schools' estimated 'quality' is significantly lower than that of the Catholic schools but significantly higher than that of independent schools (with the associated results that for mathematics scores, Catholic schools return a significantly higher quality than independent schools).

A further analysis of the third and fourth moments of the distributions of estimated 'school quality' shows that government schools' quality distribution is slightly positively skewed compared to non-government schools but also have larger kurtosis (fatter tails) which seems to imply that while the

distributions of school 'quality' per se are not significantly different (with the exception of mathematics scores), government schools would potentially exhibit slightly higher quality (for reading scores) but more quality variability. We suspect that part of this result is due to the fact that a number of government schools in the sample are highly selective (based on students' quality) and that may be responsible for the slight skewness of the distribution. While interesting, this result must be interpreted with caution as the number of Catholic and independent schools is relatively small and the statistics used are less precise with small samples.

Variables	Reading	Mathematics	Science
Constant	508.97***	507.01***	521.99***
	(3.89)	(3.55)	(3.72)
Variance level 2 (school)	2436.49***	2205.22***	2472.56***
	(-346.09)	(-289.91)	(-363.93)
Variance level1 (student)	7150.04***	5893.29***	7263.30***
	(-149.19)	(-114.19)	(-147.34)
Observations	14251	14251	14251
No. of Schools	353	353	353
Variance partition coefficient	0.254	0.272	0.254

Standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 24: Random intercept estimation of reading, mathematics and science scores, restricted model with constant only

Variables	Reading	Mathematics	Science
Socio-economic index (deviation from population mean: 0.3439)	34.290***	33.111***	35.859***
	(1.2399)	(1.0772)	(1.2121)
Constant	510.69***	510.41***	523.90***
	(2.0477)	(1.9957)	(2.1224)
Estimated variance random slope coefficient for ESCS	141.246***	83.80***	116.171***
	(38.355)	(28.727	(36.041)
Estimated variance of school random intercept	1,274.21***	1240.482***	1,385.367***
	(114.289)	(108.021)	(122.280)
Estimated covariance ESCS_random intercept	-33.420	-11.537	-48.898
	(47.005)	(40.788)	(47.646)
Estimated variance of within school effect	6,763.186***	5,495.31***	6,797.013***

Variables	Reading	Mathematics	Science
	(83.050)	(67.515)	(83.459)
Observations	13,933	13,933	13,933
No. of schools	353	353	353
R square	0.031	0.031	0.031
Ll	-81634	-80203	-81672
ll_0 random int only	-84,227.13	-82,797.59	-84,293.79

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 25: Random slope estimation of reading, mathematics and science scores, restricted model with socio-economic index and constant only

Variables – Reading	Model 1 (OLS)	Model 2	Model 3	Model 4
Age (pop mean: 15.76)	20.690***	18.611***	18.936***	19.037***
	(2.4695)	(2.4479)	(2.4460)	(2.4452)
Male	-24.733***	-24.442***	-24.329***	-24.282***
	(1.9698)	(1.9783)	(1.9757)	(1.9748)
Indigenous	-23.830***	-23.316***	-23.408***	-23.180***
	(3.0426)	(3.0150)	(3.0165)	(3.0173)
Did not attend ISCED 0	-15.200***	-14.455***	-14.542***	-14.756***
	(3.9839)	(3.9074)	(3.9062)	(3.9065)
Attended more than 1 year of ISCED 0	2.2611	1.9310	2.0625	1.9956
	(1.4944)	(1.4667)	(1.4708)	(1.4712)
Mother did not complete Year 12	-6.2935***	-5.7574***	-5.7522***	-5.7793***
	(1.6547)	(1.6238)	(1.6235)	(1.6231)
Father did not complete Year 12	-5.1140***	-5.6499***	-5.6326***	-5.5907***
	(1.6665)	(1.6355)	(1.6348)	(1.6345)
Mother works part time (reference: FT)	8.8412***	8.4915***	8.3657***	8.4213***
	(1.7479)	(1.7152)	(1.7161)	(1.7157)
Mother is unemployed (reference: FT)	-7.0622*	-6.5485	-6.6545	-6.7881*
	(4.1440)	(4.0672)	(4.0662)	(4.0653)
Mother not in the labour force (reference: FT)	1.6029	1.7836	1.4998	1.5531
	(1.9656)	(1.9303)	(1.9304)	(1.9302)
Father works part time (reference: FT)	-2.3092	-1.7303	-1.6081	-1.7793
	(2.9258)	(2.8682)	(2.8680)	(2.8674)
Father unemployed (reference: FT)	-0.4790	-0.2975	-0.3209	-0.4089
	(4.2325)	(4.1503)	(4.1481)	(4.1476)
Father not in the labour force (reference: FT)	2.3292	1.7484	1.9042	1.8198
	(3.0729)	(3.0151)	(3.0136)	(3.0134)

Variables – Reading	Model 1 (OLS)	Model 2	Model 3	Model 4
Father is a Blue Collar Worker	-5.3624***	-4.5053***	-4.7487***	-4.8360***
	(1.7234)	(1.6899)	(1.6899)	(1.6900)
Mother is a Blue Collar Worker	-5.2413**	-5.2479**	-5.3918**	-5.3895**
	(2.6388)	(2.5917)	(2.5903)	(2.5901)
Student was not born in Australia	-8.4507***	-7.5534***	-7.9035***	-7.8901***
	(2.8001)	(2.7559)	(2.7562)	(2.7562)
Mother was not born in Australia	6.1035***	5.6100***	5.3761***	5.3765***
	(1.9905)	(1.9578)	(1.9581)	(1.9576)
Father was not born in Australia	2.1242	2.1001	1.8366	1.7675
	(1.9600)	(1.9326)	(1.9334)	(1.9329)
Student speaks a language other than English at home	-19.235***	-22.261***	-21.820***	-21.808***
	(3.0663)	(3.0372)	(3.0357)	(3.0355)
Single parent family (reference: nuclear family)	-0.2173	1.0199	0.9472	0.8579
	(2.0107)	(1.9790)	(1.9775)	(1.9772)
Mixed family (reference: nuclear family)	-23.362***	-22.549***	-22.618***	-22.576***
	(6.4711)	(6.3468)	(6.3433)	(6.3434)
Student does not have a desk	-8.7355***	-8.1009***	-8.0309***	-7.9781***
	(2.9960)	(2.9393)	(2.9381)	(2.9382)
books0_25 (reference: more than 100 books)	-32.644***	-32.319***	-32.492***	-32.426***
	(2.2585)	(2.2157)	(2.2154)	(2.2155)
books26_100 (reference: more than 100 books)	-14.544***	-14.705***	-14.854***	-14.856***
	(1.7348)	(1.6986)	(1.6982)	(1.6980)
No quiet place to study	-6.5841***	-6.6858***	-6.4501***	-6.3321***
	(2.4935)	(2.4447)	(2.4441)	(2.4438)
No internet at home	-15.334***	-16.099***	-15.987***	-16.047***
	(3.7675)	(3.6986)	(3.6977)	(3.6973)
Do not read for enjoyment	-62.277***	-61.796***	-61.869***	-61.786***

Variables – Reading	Model 1 (OLS)	Model 2	Model 3	Model 4
	(1.8596)	(1.8278)	(1.8271)	(1.8271)
Read 30 minutes or less for enjoyment per day	-27.304***	-26.902***	-26.906***	-26.877***
	(1.7865)	(1.7488)	(1.7484)	(1.7484)
Minutes of class time reading per week (pop mean: 237.26)	-0.09108***	-0.09237***	-0.09213***	-0.09201***
	(0.01583)	(0.01541)	(0.01540)	(0.01540)
Minutes of class time mathematics per week (pop mean: 240.04)	0.05850***	0.06011***	0.06015***	0.06002***
	(0.01425)	(0.01387)	(0.01387)	(0.01386)
Minutes of class time science per week (pop mean: 219.05)	0.04980***	0.05004***	0.04993***	0.05010***
	(0.008658)	(0.008416)	(0.008415)	(0.008414)
School average minutes of reading class	-0.03900	-0.05898	-0.04602	-0.02535
	(0.05549)	(0.07816)	(0.07723)	(0.07854)
School average minutes of mathematics class	-0.08393	-0.01220	-0.05307	-0.08697
	(0.05702)	(0.08046)	(0.07919)	(0.08037)
School average minutes of science class	0.1631***	0.08698**	0.1196***	0.1432***
	(0.02951)	(0.04095)	(0.04420)	(0.04532)
Student ESCS (pop mean: 0.3439)	9.3579***	9.9413***	9.8782***	9.6231***
	(1.4894)	(1.4313)	(1.4312)	(1.4551)
School average ESCS (school mean: 0.315)	65.245***	37.891***	42.558***	67.842***
	(8.3719)	(5.8635)	(6.0074)	(13.331)
Male interacted with School ESCS	8.8835**	6.9740*	6.9276*	6.9104*
	(3.6755)	(4.0234)	(4.0021)	(3.9947)
provincial	2.9877	2.7779	3.6598	3.0560
	(2.0418)	(3.2041)	(3.2738)	(3.2396)
remote	4.8092	0.3009	1.7243	2.1271
	(5.0959)	(7.3104)	(8.0126)	(7.9281)

Variables – Reading	Model 1 (OLS)	Model 2	Model 3	Model 4
More than 40% of students are ESL	-0.5031	0.9347	0.5872	0.05974
	(2.8309)	(4.7814)	(4.6204)	(4.5823)
Computers _per student pop mean: 0.1729)	23.790***	35.798***	24.069*	24.675**
	(7.6375)	(12.474)	(12.526)	(12.344)
Principal thinks shortage of qualified teachers	5.5729***	5.6135**	6.1732**	5.5407**
	(1.6385)	(2.7218)	(2.6930)	(2.6676)
Additional instruction for ESL students	0.3086	-0.9746	-0.1858	-0.07904
	(1.7068)	(2.8482)	(2.7631)	(2.7751)
Preparatory instruction for ESL students	5.3431***	7.3306**	6.0669**	5.6636**
	(1.7458)	(3.0191)	(2.9163)	(2.8715)
Mixed school (reference: government school)	-5.2504***	-3.2304	-3.5076	-4.3724
	(2.0367)	(3.4932)	(3.3869)	(3.3494)
Independent school (reference: government school)	-15.668***	-12.697**	-15.272***	-15.143***
	(3.1612)	(5.3993)	(5.3293)	(5.2589)
Student/teacher ratio (pop mean: 13.197)	0.5622	0.8367	0.6887	0.5883
	(0.4010)	(0.6647)	(0.6653)	(0.6575)
Constant pressure from parents about academic performance	5.2815***	7.3027**	4.6432	5.2191*
	(1.8647)	(3.1881)	(3.0869)	(3.0799)
Absenteeism hinders students' performance as stressed by Principal	-11.749***	-12.426***	-11.309***	-11.785***
	(1.8632)	(3.1575)	(3.0543)	(3.0118)
School never offers standard tests	-5.0463***	-3.3647	-4.8268*	-4.7640*
	(1.6813)	(2.7811)	(2.7810)	(2.7419)
NSW (reference ACT)	21.033***		7.3113	23.438**
	(6.4594)		(5.5577)	(10.313)
VIC (reference ACT)	38.131***		17.861***	39.657***
	(6.7920)		(5.8006)	(10.774)

Variables – Reading	Model 1 (OLS)	Model 2	Model 3	Model 4
QLD (reference ACT)	39.354***		23.314***	41.567***
	(6.4917)		(5.7356)	(10.385)
SA (reference ACT)	29.928***		13.289**	32.134***
	(6.6946)		(6.2612)	(10.578)
WA (reference ACT)	36.778***		18.039***	39.073***
	(6.8559)		(6.2944)	(10.822)
TAS (reference ACT)	13.828**		0.3514	14.904
	(6.8179)		(6.6132)	(10.893)
NT(reference ACT)	18.980***		9.6346	19.619*
	(6.3500)		(8.4595)	(10.108)
nsw_sescs (interaction state and school escs)	-20.432**			-22.492
	(8.4172)			(13.758)
vic_sescs	-35.000***			-36.605**
	(9.0089)			(14.679)
qld_sescs	-26.613***			-27.874*
	(9.0416)			(14.884)
sa_sescs	-31.349***			-32.963**
	(9.1763)			(14.979)
wa_sescs	-39.244***			-38.635**
	(9.7892)			(15.770)
tas_sescs	-4.0565			-2.1906
	(10.670)			(17.238)
nt_escs	3.2527			4.1306
	(4.6123)			(4.5607)
Constant	536.7006***	566.2014***	553.5606***	535.2688***
	(9.5066)	(11.7206)	(12.0308)	(14.5412)
var(cons)		350.75***	299.76***	283.23****

Variables – Reading	Model 1 (OLS)	Model 2	Model 3	Model 4
		(41.7398)	(37.4404)	(36.1227)
var(residuals)		4,813.5***	4,812.92***	4,811.74***
		(68.6341)	(68.6139)	(68.5982)
Observations	10,198	10,198	10,198	10,198
No of Schools		342	342	342
R-squared	0.377	0.4695	0.4748	0.4767
F	95.883			
Log likelihood	-57,981	-57,898	-57,880	-57,873
Restricted Log likelihood (fixed intercept only)	-60,396			
Restricted Log likelihood (random intercept only)		-84,227	-84,227	-84,227
Variance Partition Coefficient		0.068	0.059	0.056

Standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 26: Estimations results on Reading scores, PISA 2009

95% confidence intervals for the random intercept (level 2 residuals, between school variance) and the within school variance (level 1 variance: students departure from school mean) in models 2, 3 and 4

	Model 2	Model 3	Model 4 (preferred)
Between school variance estimates:	350.75	299.76	283.23
Confidence interval (95%)	[277.79; 442.89]	[234.67; 382.90]	[220.59; 363.66]
Within School variance estimates	4,813.5	4,812.92	4,811.74
Confidence interval (95%)	[4680.84; 4949.92]	[4680.30; 4949.30]	[4679.15; 4948.09]

Variables – Mathematics	Model 1 (OLS)	Model 2	Model 3	Model 4
Age (pop mean: 15.76)	20.694***	18.733***	19.125***	19.189***
	(2.3505)	(2.3156)	(2.3134)	(2.3131)
Male	19.383***	20.555***	20.634***	20.631***
	(1.8749)	(1.8735)	(1.8706)	(1.8703)
Indigenous	-19.733***	-19.088***	-19.237***	-19.171***
	(2.8961)	(2.8536)	(2.8536)	(2.8548)
Did not attend ISCED 0	-21.515***	-20.464***	-20.721***	-20.821***
	(3.7920)	(3.6928)	(3.6911)	(3.6918)
Attended more than 1 year of ISCED 0	-4.5712***	-5.0856***	-5.1631***	-5.2052***
	(1.4224)	(1.3876)	(1.3904)	(1.3909)
Mother did not complete Year 12	-4.5204***	-4.0389***	-3.9491**	-3.9858***
	(1.5750)	(1.5347)	(1.5341)	(1.5339)
Father did not complete year 12	-5.1609***	-5.6370***	-5.6251***	-5.5848***
	(1.5862)	(1.5456)	(1.5447)	(1.5447)
Mother works part time (reference: FT)	12.487***	12.131***	12.016***	12.059***
	(1.6637)	(1.6213)	(1.6216)	(1.6215)
Mother is unemployed (reference: FT)	-2.3813	-2.5563	-2.5749	-2.6300
	(3.9444)	(3.8438)	(3.8422)	(3.8420)
Mother not in the labour force (reference: FT)	3.7427**	3.7616**	3.5246*	3.5527*
	(1.8709)	(1.8246)	(1.8243)	(1.8244)
Father works part time (reference: FT)	-0.1624	-0.4966	-0.2747	-0.3469
	(2.7849)	(2.7105)	(2.7099)	(2.7097)
Father unemployed (reference: FT)	-6.0870	-5.5265	-5.5173	-5.5710
	(4.0286)	(3.9220)	(3.9195)	(3.9195)
Father not in the labour force (reference: FT)	2.8281	1.4960	1.6648	1.6227
	(2.9249)	(2.8493)	(2.8475)	(2.8477)

Variables – Mathematics	Model 1 (OLS)	Model 2	Model 3	Model 4
Father is a Blue Collar Worker	-3.7110**	-3.1300*	-3.3369**	-3.3783**
	(1.6404)	(1.5971)	(1.5968)	(1.5971)
Mother is a Blue Collar Worker	-0.7927	-0.7654	-0.9055	-0.9250
	(2.5117)	(2.4496)	(2.4479)	(2.4480)
Student was not born in Australia	-11.677***	-11.000***	-11.420***	-11.359***
	(2.6652)	(2.6056)	(2.6052)	(2.6055)
Mother was not born in Australia	6.0254***	5.5753***	5.3200***	5.2821***
	(1.8946)	(1.8509)	(1.8507)	(1.8506)
Father was not born in Australia	0.7318	0.7075	0.3824	0.3257
	(1.8656)	(1.8276)	(1.8278)	(1.8277)
Student speaks a language other than English at home	2.2166	-0.4001	0.1090	-0.006206
	(2.9186)	(2.8730)	(2.8708)	(2.8713)
Single parent family (reference: nuclear family)	-1.6874	-0.9012	-0.9327	-0.9468
	(1.9138)	(1.8707)	(1.8690)	(1.8690)
Mixed family (reference: nuclear family)	-16.460***	-16.723***	-16.694***	-16.619***
	(6.1594)	(5.9983)	(5.9942)	(5.9950)
Student does not have a desk	-13.183***	-11.674***	-11.744***	-11.799***
	(2.8517)	(2.7779)	(2.7763)	(2.7768)
books0_25 (reference: more than 100 books)	-36.479***	-35.909***	-36.063***	-36.058***
	(2.1497)	(2.0941)	(2.0934)	(2.0938)
books26_100 (reference: more than 100 books)	-17.805***	-17.706***	-17.855***	-17.856***
	(1.6512)	(1.6050)	(1.6043)	(1.6044)
No quiet place to study	-6.5590***	-6.9232***	-6.6577***	-6.5510***
	(2.3734)	(2.3104)	(2.3094)	(2.3095)
No internet at home	-15.215***	-15.689***	-15.797***	-15.924***
	(3.5860)	(3.4958)	(3.4943)	(3.4945)
Do not read for enjoyment	-38.741***	-38.286***	-38.393***	-38.297***

Variables – Mathematics	Model 1 (OLS)	Model 2	Model 3	Model 4
	(1.7700)	(1.7277)	(1.7267)	(1.7269)
Read 30 minutes or less for enjoyment per day	-15.292***	-14.832***	-14.874***	-14.821***
	(1.7004)	(1.6524)	(1.6517)	(1.6519)
Minutes of class time reading per week (pop mean: 237.26)	-0.1021***	-0.1027***	-0.1024***	-0.1025***
	(0.01507)	(0.01455)	(0.01455)	(0.01455)
Minutes of class time mathematics per week (pop mean: 240.04)	0.06300***	0.06401***	0.06405***	0.06403***
	(0.01357)	(0.01309)	(0.01309)	(0.01309)
Minutes of class time science per week (popmean: 219.05)	0.06494***	0.06527***	0.06512***	0.06514***
	(0.008241)	(0.007946)	(0.007944)	(0.007944)
School average minutes of reading class	-0.05230	-0.03571	0.009733	0.01473
	(0.05282)	(0.07985)	(0.07796)	(0.07955)
School average minutes of mathematics class	-0.01959	0.01193	-0.03732	-0.06609
	(0.05427)	(0.08225)	(0.07995)	(0.08139)
School average minutes of science class	0.1186***	0.06647	0.06734	0.09896**
	(0.02809)	(0.04246)	(0.04523)	(0.04662)
Student ESCS (pop mean: 0.3439)	11.565***	11.761***	11.682***	11.749***
	(1.4177)	(1.3520)	(1.3517)	(1.3746)
School average ESCS (school mean: 0.315)	69.569***	43.103***	50.125***	69.215***
	(7.9686)	(6.0347)	(6.1088)	(13.738)
Male interacted with School ESCS	1.9229	-0.1559	-0.2821	-0.1599
	(3.4984)	(3.8408)	(3.8179)	(3.8146)
provincial	8.1799***	8.1007**	8.0503**	7.4605**
	(1.9434)	(3.3394)	(3.3632)	(3.3472)
remote	1.8537	2.6084	-2.2935	-2.3402
	(4.8505)	(7.5777)	(8.2010)	(8.1584)

Variables – Mathematics	Model 1 (OLS)	Model 2	Model 3	Model 4
More than 40% of students are ESL	7.6050***	7.7775	8.4312*	7.9956*
	(2.6945)	(4.9916)	(4.7573)	(4.7457)
Computers _per student (pop mean: 0.1729)	31.119***	51.585***	29.714**	29.982**
	(7.2696)	(13.015)	(12.877)	(12.764)
Principal thinks shortage of qualified teachers	6.5611***	5.0710*	7.1112**	6.5193**
	(1.5596)	(2.8433)	(2.7739)	(2.7637)
Additional instruction for ESL students	0.8442	-0.3518	0.3464	0.3333
	(1.6246)	(2.9744)	(2.8459)	(2.8737)
Preparatory instruction for ESL students	3.1498*	4.8351	4.4261	4.0166
	(1.6617)	(3.1568)	(3.0064)	(2.9780)
Mixed school (reference: government school)	-12.914***	-10.140***	-11.590***	-11.832***
	(1.9386)	(3.6525)	(3.4919)	(3.4734)
Independent school (reference: government school)	-21.792***	-17.035***	-21.710***	-21.086***
	(3.0089)	(5.6566)	(5.5017)	(5.4626)
Student/teacher ratio (pop mean: 13.197)	0.5165	0.9477	0.4553	0.3466
	(0.3817)	(0.6942)	(0.6854)	(0.6814)
Constant pressure from parents about academic performance	7.4736***	10.737***	7.2138**	7.1622**
	(1.7749)	(3.3373)	(3.1844)	(3.1963)
Absenteeism hinders students' performance as stressed by Principal	-13.149***	-13.862***	-12.904***	-13.096***
	(1.7735)	(3.2959)	(3.1437)	(3.1180)
School never offers standard tests	-3.4229**	-1.7988	-3.8710	-3.9892
	(1.6003)	(2.9056)	(2.8643)	(2.8401)
NSW (reference ACT)	14.565**		3.3316	13.947
	(6.1482)		(5.7384)	(10.637)
VIC (reference ACT)	33.571***		13.949**	32.853***
	(6.4648)		(5.9848)	(11.108)

Variables – Mathematics	Model 1 (OLS)	Model 2	Model 3	Model 4
QLD (reference ACT)	39.313***		23.683***	40.094***
	(6.1790)		(5.9180)	(10.718)
SA (reference ACT)	31.968***		17.922***	31.929***
	(6.3722)		(6.4528)	(10.901)
WA (reference ACT)	41.544***		26.434***	41.546***
	(6.5257)		(6.4810)	(11.152)
TAS (reference ACT)	16.276**		2.4675	14.776
	(6.4895)		(6.8209)	(11.240)
NT(reference ACT)	25.886***		17.194**	26.501**
	(6.0442)		(8.7258)	(10.429)
nsw_sescs (interaction state and school escs)	-13.776*			-11.720
	(8.0118)			(14.225)
vic_sescs	-32.864***			-32.786**
	(8.5750)			(15.175)
qld_sescs	-30.414***			-29.351*
	(8.6061)			(15.409)
sa_sescs	-25.146***			-23.246
	(8.7343)			(15.487)
wa_sescs	-29.868***			-26.208
	(9.3177)			(16.291)
tas_sescs	-15.371			-6.4125
	(10.156)			(17.800)
nt_escs	-3.7398			-1.3953
	(4.3901)			(4.3138)
Constant	502.29***	526.48***	514.56***	500.78***
	(9.0487)	(12.101)	(12.282)	(14.945)
var(cons)		416.477***	346.336***	334.326***

Variables – Mathematics	Model 1 (OLS)	Model 2	Model 3	Model 4
		45.8351	39.86595	38.8918
var(residuals)		4,289.05***	4288.20***	4,287.63***
		61.17032	61.14163	61.133
Observations	10,198	10,198	10,198	10,198
No of Schools		342	342	342
R-squared	0.349	0.427	0.436	0.438
F	84.854			
Log likelihood	-57,478	-57,343	-57,320	-57,316
Restricted Log likelihood (fixed intercept only)	-59,666			
Restricted Log likelihood (random intercept only)		-82,798	-82798	-82,798
Variance Partition Coefficient		0.089	0.075	0.072

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 27: Estimations results on Mathematics scores, PISA 2009

95% confidence intervals for the random intercept (level 2 residuals, between school variance) and the within school variance (level 1 variance: students departure from school mean) in models 2, 3 and 4

	Model 2	Model 3	Model 4 (preferred)
Between school variance estimates:	416.48	346.34	334.33
Confidence interval (95%)	[335.67; 516.74]	[276.39; 434.00]	[266.17; 419.94]
Within School variance estimates:	4,289.05	4288.20	4,287.63
Confidence interval (95%)	[4,170.82; 4,410.64]	[4170.03; 4409.73]	[4,169.47; 4,409.14]

Variables – Scientific Literacy	Model 1 (OLS)	Model 2	Model 3	Model 4
Age (pop mean: 15.76)	21.434***	18.795***	19.133***	19.151***
	(2.5749)	(2.5331)	(2.5313)	(2.5308)
Male	12.572***	13.621***	13.649***	13.695***
	(2.0539)	(2.0491)	(2.0468)	(2.0464)
Indigenous	-26.391***	-24.646***	-24.866***	-24.788***
	(3.1725)	(3.1214)	(3.1224)	(3.1235)
Did not attend ISCED 0	-16.673***	-15.405***	-15.580***	-15.689***
	(4.1540)	(4.0400)	(4.0386)	(4.0391)
Attended more than 1 year of ISCED 0	0.03776	-0.1356	-0.09154	-0.1678
	(1.5582)	(1.5179)	(1.5213)	(1.5218)
Mother did not complete Year 12	-6.7137***	-6.3096***	-6.2853***	-6.3072***
	(1.7254)	(1.6790)	(1.6786)	(1.6783)
Father did not complete Year 12	-4.1693**	-5.1776***	-5.1252***	-5.1017***
	(1.7377)	(1.6909)	(1.6902)	(1.6900)
Mother works part time (reference: FT)	7.9225***	7.2397***	7.1351***	7.1711***
	(1.8225)	(1.7737)	(1.7743)	(1.7741)
Mother is unemployed (reference: FT)	-6.5277	-5.6254	-5.8423	-5.8620
	(4.3209)	(4.2053)	(4.2040)	(4.2035)
Mother not in the labour force (reference: FT)	6.5756***	6.5274***	6.2567***	6.2783***
	(2.0495)	(1.9962)	(1.9961)	(1.9960)
Father works part time (reference: FT)	4.0456	4.3433	4.5738	4.4646
	(3.0508)	(2.9654)	(2.9650)	(2.9647)
Father unemployed (reference: FT)	-9.0114**	-8.3567*	-8.4282**	-8.5313**
	(4.4132)	(4.2909)	(4.2886)	(4.2883)
Father not in the labour force (reference: FT)	3.0536	1.4518	1.6250	1.5550
	(3.2041)	(3.1172)	(3.1157)	(3.1156)

Variables – Scientific Literacy	Model 1 (OLS)	Model 2	Model 3	Model 4
Father is a Blue Collar Worker	-4.6053**	-4.1511**	-4.3997**	-4.4477**
	(1.7969)	(1.7473)	(1.7472)	(1.7473)
Mother is a Blue Collar Worker	-4.2450	-4.3168	-4.4382*	-4.4497*
	(2.7514)	(2.6799)	(2.6784)	(2.6784)
Student was not born in Australia	-9.0853***	-7.5090***	-8.0586***	-8.0743***
	(2.9197)	(2.8505)	(2.8505)	(2.8507)
Mother was not born in Australia	3.0959	2.5399	2.3014	2.2901
	(2.0755)	(2.0249)	(2.0250)	(2.0247)
Father was not born in Australia	-1.2231	-1.3421	-1.6028	-1.6550
	(2.0437)	(1.9993)	(1.9999)	(1.9997)
Student speaks a language other than English at home	-16.606***	-20.142***	-19.554***	-19.574***
	(3.1972)	(3.1428)	(3.1412)	(3.1415)
Single parent family (reference: nuclear family)	-3.3919	-2.4083	-2.4660	-2.5162
	(2.0965)	(2.0465)	(2.0450)	(2.0449)
Mixed family (reference: nuclear family)	-25.921***	-27.480***	-27.544***	-27.287***
	(6.7474)	(6.5623)	(6.5586)	(6.5590)
Student does not have a desk	-7.7736**	-7.2036**	-7.0774**	-7.0135**
	(3.1240)	(3.0391)	(3.0378)	(3.0381)
books0_25 (reference: more than 100 books)	-35.720***	-34.645***	-34.823***	-34.752***
	(2.3549)	(2.2910)	(2.2905)	(2.2908)
books26_100 (reference: more than 100 books)	-16.933***	-16.597***	-16.750***	-16.755***
	(1.8089)	(1.7560)	(1.7554)	(1.7553)
No quiet place to study	-6.1763**	-6.8064***	-6.5703***	-6.5001**
	(2.5999)	(2.5276)	(2.5269)	(2.5268)
No internet at home	-12.615***	-13.622***	-13.592***	-13.656***
	(3.9284)	(3.8245)	(3.8234)	(3.8233)
Do not read for enjoyment	-58.074***	-57.419***	-57.466***	-57.405***

Variables – Scientific Literacy	Model 1 (OLS)	Model 2	Model 3	Model 4
	(1.9390)	(1.8901)	(1.8893)	(1.8894)
Read 30 minutes or less for enjoyment per day	-25.528***	-25.333***	-25.289***	-25.254***
	(1.8628)	(1.8078)	(1.8073)	(1.8073)
Minutes of class time reading per week (pop mean: 237.26)	-0.09470***	-0.09626***	-0.09594***	-0.09580***
	(0.01651)	(0.01592)	(0.01591)	(0.01591)
Minutes of class time mathematics per week (pop mean: 240.04)	0.05829***	0.05959***	0.05968***	0.05961***
	(0.01486)	(0.01433)	(0.01432)	(0.01432)
Minutes of class time science per week (popmean: 219.05)	0.06499***	0.06514***	0.06502***	0.06509***
	(0.009028)	(0.008694)	(0.008692)	(0.008691)
School average minutes of reading class	-0.003789	0.02388	0.05964	0.07660
	(0.05786)	(0.08640)	(0.08538)	(0.08722)
School average minutes of mathematics class	-0.04930	-0.05564	-0.07106	-0.1074
	(0.05945)	(0.08899)	(0.08755)	(0.08924)
School average minutes of science class	0.1301***	0.08772*	0.07838	0.1039**
	(0.03077)	(0.04584)	(0.04954)	(0.05115)
Student ESCS (pop mean: 0.3439)	11.350***	11.792***	11.734***	11.531***
	(1.5530)	(1.4792)	(1.4790)	(1.5039)
School average ESCS (school mean: 0.315)	78.734***	51.366***	57.086***	82.054***
	(8.7293)	(6.5224)	(6.6903)	(15.071)
Male interacted with School ESCS	3.4650	2.2009	2.2545	2.3616
	(3.8324)	(4.1965)	(4.1779)	(4.1747)
provincial	11.172***	9.8986***	11.702***	10.955***
	(2.1290)	(3.6033)	(3.6838)	(3.6725)
remote	10.193*	3.7742	6.1369	6.6376
	(5.3135)	(8.1825)	(8.9823)	(8.9502)

Variables – Scientific Literacy	Model 1 (OLS)	Model 2	Model 3	Model 4
More than 40% of students are ESL	3.3995	4.0626	3.8339	3.2154
	(2.9518)	(5.3848)	(5.2109)	(5.2073)
Computers _per student (pop mean: 0.1729)	8.9235	27.404*	8.1365	7.5329
	(7.9635)	(14.042)	(14.104)	(14.005)
Principal thinks shortage of qualified teachers	5.7873***	5.0116	6.0487**	5.6383*
	(1.7085)	(3.0670)	(3.0384)	(3.0326)
Additional instruction for ESL students	4.5782**	4.1913	3.9459	4.0802
	(1.7797)	(3.2086)	(3.1172)	(3.1532)
Preparatory instruction for ESL students	1.3586	4.2924	2.8454	2.3084
	(1.8203)	(3.4048)	(3.2931)	(3.2678)
Mixed school (reference: government school)	-8.7344***	-6.8736*	-6.8116*	-7.3546*
	(2.1236)	(3.9394)	(3.8249)	(3.8114)
Independent school (reference: government school)	-25.178***	-22.925***	-25.555***	-24.639***
	(3.2961)	(6.0993)	(6.0265)	(5.9944)
Student/teacher ratio (pop mean: 13.197)	-0.005469	0.3712	0.1104	-0.02861
	(0.4181)	(0.7489)	(0.7508)	(0.7477)
Constant pressure from parents about academic performance	4.1041**	7.2986**	4.2889	3.8535
	(1.9443)	(3.5989)	(3.4881)	(3.5074)
Absenteeism hinders students' performance as stressed by Principal	-10.136***	-11.531***	-9.8739***	-10.230***
	(1.9428)	(3.5556)	(3.4434)	(3.4213)
School never offers standard tests	-5.0388***	-4.2378	-5.5349*	-5.5874*
	(1.7531)	(3.1342)	(3.1374)	(3.1163)
NSW (reference ACT)	20.808***		7.1382	22.595*
	(6.7351)		(6.2858)	(11.671)
VIC (reference ACT)	30.085***		9.9136	31.441***
	(7.0819)		(6.5556)	(12.186)

Variables – Scientific Literacy	Model 1 (OLS)	Model 2	Model 3	Model 4
QLD (reference ACT)	41.302***		23.273***	44.298***
	(6.7689)		(6.4824)	(11.759)
SA (reference ACT)	29.580***		12.911*	32.144***
	(6.9805)		(7.0682)	(11.959)
WA (reference ACT)	39.927***		25.240***	42.198***
	(7.1486)		(7.0990)	(12.234)
TAS (reference ACT)	12.130*		-3.0355	12.526
	(7.1090)		(7.4714)	(12.331)
NT(reference ACT)	14.462**		4.7165	15.200
	(6.6211)		(9.5580)	(11.442)
nsw_sescs (interaction state and school escs)	-18.360**			-20.445
	(8.7766)			(15.607)
vic_sescs	-32.231***			-35.501**
	(9.3936)			(16.650)
qld_sescs	-35.862***			-38.099**
	(9.4276)			(16.907)
sa_sescs	-31.983***			-33.994**
	(9.5681)			(16.993)
wa_sescs	-24.616**			-25.004
	(10.207)			(17.874)
tas_sescs	-12.133			-8.2342
	(11.126)			(19.529)
nt_escs	0.9657			3.2757
	(4.8092)			(4.7199)
Constant	520.30***	549.14***	534.72***	517.54***
	(9.9125)	(13.074)	(13.452)	(16.395)
var(cons)		479.493	415.934	403.592

Variables – Scientific Literacy	Model 1 (OLS)	Model 2	Model 3	Model 4
		52.539	47.053	46.001
var(residuals)		5,135.189	5,133.679	5,132.111
		73.199	73.154	73.128
Observations	10,198	10,198	10,198	10,198
No of Schools		342	342	342
R-squared	0.346	0.435	0.442	0.443
F	83.914			
Log likelihood	-58,408	-58,257	-58,238	-58,233
Restricted Log likelihood (fixed intercept only)	-60,576			
Restricted Log likelihood (random intercept only)		-84,294	-84,294	-84,294
Variance Partition Coefficient		0.085	0.075	0.073

Standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 28: Estimations results on Science scores, PISA 2009

95% confidence intervals for the random intercept (level 2 residuals, between school variance) and the within school variance (level 1 variance: students departure from school mean) in models 2, 3 and 4.

	Model 2	Model 3	Model 4 (preferred)
Between school variance estimates:	479.4929	415.934	403.5915
Confidence interval (95%)	[386.82; 594.36]	[333.22; 519.18]	[322.79; 504.62]
Within School variance estimates:	5135.189	5133.679	5132.111
Confidence interval (95%)	[4993.71; 5280.68]	[4992.283; 5279.08]	[4990.77; 5277.46]

B.1.4 Differences across sectors

Australia has one of the most competitive school markets in the world. Table 29 shows that Australian principals report a higher level of competition for students than principals from any other countries.

	Two or more other schools	One other school	No other schools
Australia	90.2	5.6	4.3
Canada	66.5	18.1	15.4
Estonia	57.5	23.7	18.9
Finland	43.9	13.6	42.5
Iceland	35.8	15.0	49.2
Netherlands	76.2	21.0	2.9
Norway	22.3	17.8	59.9
Sweden	52.1	17.2	30.7
United Kingdom	78.0	10.9	11.2
United States	69.7	8.9	21.4
OECD Average	61.2	14.7	24.1

Table 29: Percentage of students in schools where the principal reported the number of schools competing for students in the same area[128]

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[128] OECD (2010), *What Makes a School Successful: School choice: school level*, Table IV.3.8a.

	Government or public schools[1]		Government-dependent private schools[2]		Government-independent private schools[3]		Difference in performance on the reading scale between public and private schools[4]	PISA ESCS			Difference in performance on the reading scale between public and private schools after accounting for the SES of:	
	Percentage of students	Performance on the reading scale	Percentage of students	Performance on the reading scale	Percentage of students	Performance on the reading scale		Public schools	Private schools	Difference 4	Students	Students and schools
Australia	61	497	24	530	15	558	**-44**	0.15	0.61	**-0.46**	**-23**	3
Canada	94	521	3	569	3	574	**-50**	0.46	1.04	**-0.58**	**-31**	-11
Estonia	97	501	2	c	1	c	-11	0.14	0.36	-0.22	-5	6
Finland	96	536	4	542	0	c	-7	0.36	0.52	-0.16	-1	1
Iceland	99	498	1	c	0	c	c	0.71	c	c	c	c
Netherlands	35	515	65	502	0	c	13	0.32	0.23	0.09	10	3
Norway	99	503	1	c	0	c	c	0.47	c	c	c	c
Sweden	90	494	10	529	0	c	**-35**	0.29	0.71	**-0.43**	**-17**	2
United Kingdom	94	492	0	c	6	553	**-62**	0.16	0.92	**-0.76**	**-27**	20
OECD average	85	489	11	511	4	523	**-30**	-0.06	0.37	**-0.44**	**-14**	7

Table 30: Reading performance and type of school

Source: OECD, *PISA 2009 Results: What Makes a School Successful? Resources, Policies and Practices, Volume IV*, Table IV.3.9
1. Schools which are directly controlled or managed by: i) a public education authority or agency or ii) a government agency directly or a governing body, most of whose members are either appointed by a public authority or elected by public franchise.
2. Schools which receive 50% or more of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
3. Schools which receive less than 50% of their core funding (i.e. funding that supports the basic educational services of the institution) from government agencies.
4. Public minus private. Government-dependent and government-independent schools combined.

B.1.5 Multilevel analysis allows us to gain a better understanding of the impact the state and territory systems have on predicted outcomes

The multilevel analysis conducted by NILS allows us to determine the varying impact that the state/territories have on predicted scores, while controlling for all other factors.

It should be noted that the results presented earlier for state performance were not adjusted for the socio-economic background of students, or for other factors.

The multilevel analysis indicates that there is significant variation in the impacts of the states. Figure 66 shows the impact that the various states and territory government systems has on the predicted impact of reading scores.

The results show that moving a student from the ACT to any other state (except Tasmania) would result in a positive increase in reading scores.

For example, holding all other factors constant, moving the 'standard' student from the ACT to NSW would see a 24 point increase in the predicted reading score.
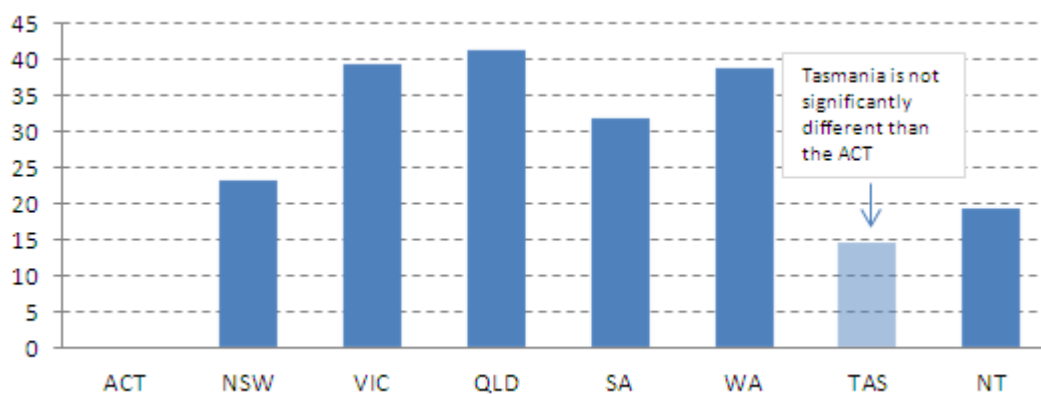
Figure 66: Impact of state on expected reading PISA scores

The results indicate the performance of the ACT may be being driven by the background of students. For example, students in the ACT typically have a higher socio-economic background than students in other states and territories[129].

The results for Queensland and WA should be viewed with the previous caveats in mind – that is, PISA tests an age group (15 year olds) and at this age students in Western Australia and Queensland have typically attended six months more school than students in other states and territories.

The multilevel analysis also allows us to view equity, while controlling for other factors. Figure 67 shows that the impact that a school's average ESCS student background has a significant impact on the predicted performance, and that this varies across states and territories.

The results show that an increase of one point in a school's average ESCS student background would result in an increase of close to 70 points in the student's reading performance in the ACT.

However, it should be noted that the range of ESCS is narrow, and that:

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[129] ACER (2011) – Table 8.1, Range of schools' average socio-economic background.

- Moving a student from a bottom decile school to a top decile school would have a total impact of 70 points

- In Victoria the impact of average ESCS is significantly less; moving a student from a bottom decile school to a top decile school would increase reading by 32 points.

Figure 67: Impact of average school SES and state on expected PISA reading scores

Appendix CSchool market in Australia

C.1   The market context

The level of competition for students between schools in Australia is higher than in any other OECD country, including those that have a reputation for high performance and high equity (Table 31).
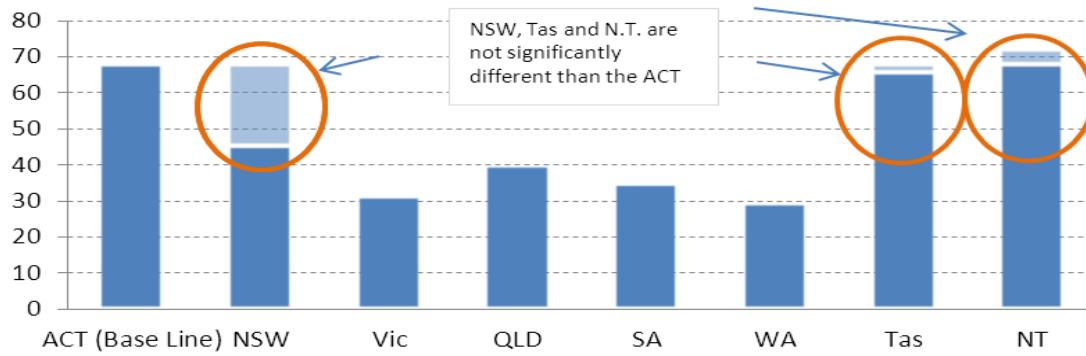
Country	Percentage of schools competing with two or more other schools
Australia	90
Canada	67
Finland	44
Iceland	36
Norway	22

Table 31: Relative competitiveness of school markets in comparable OECD countries

So, if Australian parents have some room for discretionary investment in their child's education, they generally have more than one school to choose from in their general vicinity.

As a general proposition, competition should improve the quality and efficiency of education provision, as different providers seek to attract students to their respective institutions at the lowest efficient cost. More specifically, it's expected that private institutions are effective in driving improvements in profitability, workplace performance and labour productivity and hence their involvement in the education sector should improve the quality and efficiency of education provision. As we will see however, these two principles do not necessarily hold true in practice.

The influence of competition

In assessing whether these features are applicable to education and generate similar effects, Levin and Belfield find that "(a)lthough the evidence in favour of privatisation in education seems consistent with that of other sectors, the beneficial effects of privatisation are perhaps more modest in education."[130] This is consistent with other findings that the positive impact of choice on the quality of education has a negligible or minor effect, but nevertheless a positive one.[131]

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[130] Belfield, C. and Levin H. M. (2002), "Education Privatization: Causes, consequences and planning implications", UNESCO: International Institute for Education Planning, Paris,, p.41.

[131] Waslander, Pater and van der Weide "Markets in Education: an Analytical Review of Empirical Research on Market Mechanisms in Education" 92010) OECD Education Working Papers No. 52, OECD Publishing.

The reasons for the more subdued 'privatisation effect' in education probably relate to the fact that it is heavily regulated, and that there are clear social objectives rather than commercial objectives being pursued. [132] It is also the case that the main players in the education system do not behave in the way that classical economic theory predicts.

But the question still remains: why does Australia, with its highly competitive education market, not see clearer positive results (including among our top-performing schools) from its enviable range of education options? The answer lies in the strategic reactions of those well-resourced non-government schools that are able to charge higher fees.

In the face of competition most non-government schools have kept their fees relatively high in part so they can invest in reducing class sizes to attract students (Figure 68 and Figure 69). [133]
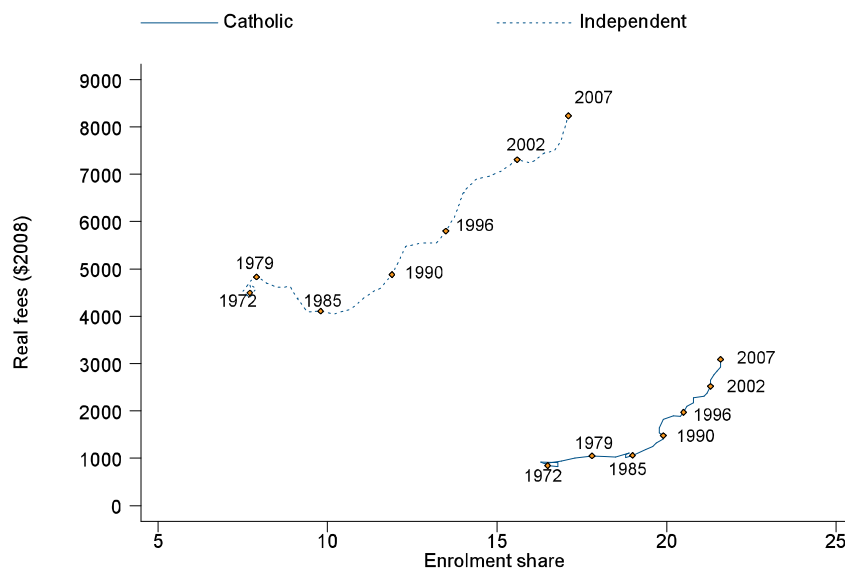
Figure 68: Non-government secondary school enrolment shares and real fees, 1972 to 2007[134]

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[133] Watson, L. and Ryan, C. (2009) Choice, vouchers and the consequences for public high schools: lessons from Australia, http://w.ncspe.org/ accessed 30 March 2011

[134] Watson, L. and Ryan, C. (2009) Choice, vouchers and the consequences for public high schools: lessons from Australia, http://www.ncspe.org/ accessed 30 March 2011. 'Real fees' represents an average, adjusted for CPI increases.
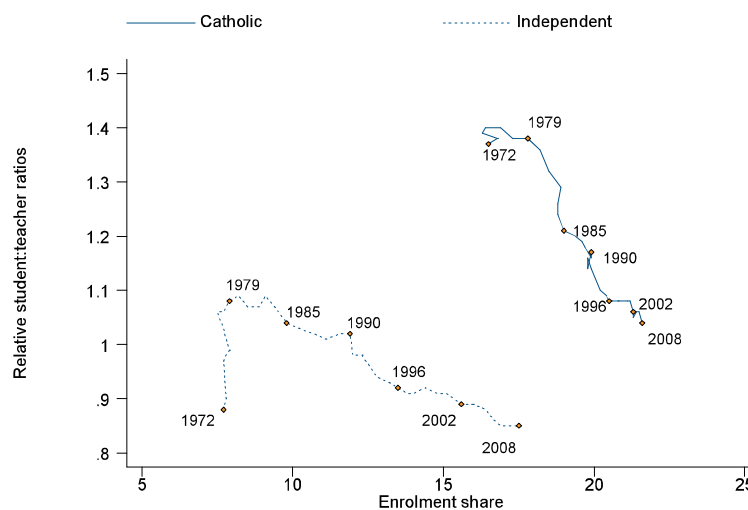
Figure 69: Non-government secondary school enrolment shares and student: teacher ratios relative to government schools[135]

From the perspective of the non-government schools, this has been an effective strategy. Where they have been able to do so - recognising that a lot of non-government schools do not levy high fees, and the Catholic sector generally charges lower fees – such schools have attracted a greater share of high SES students (important for continued high performance) whilst retaining revenue.

However, given that smaller class sizes have shown to have a negligible effect on student performance[136] this is not necessarily an efficient use of resources.

This isn't to say that competition in education can't deliver greater efficiencies: we can point to schools that achieve great results at a smaller per-head cost, but it is not evident whether these outcomes stem from the schools responding to a competitive marketplace.

As Levin and Belfield observe from the international literature "educational economists cannot offer very precise advice about which characteristics schools should possess to make them more efficient, nor can they indicate unambiguously that private schools are more efficient than public schools". [137]

A related concern is whether competition delivers more effective schools. As we will have seen elsewhere in this report, the desire to carve out a market 'niche' leads to greater selectivity and certainly greater selectivity lifts school performance. The point is that competition across the school system does not appear to 'lift all boats'.

This does not square entirely with the findings of OECD analyses. One report showed that increased choice, *along with school level autonomy and accountability* contributes to high performance among both high and low SES students - more so for high SES, but the lift in performance of lower SES students was noticeable.[138]

[135] Watson, L. and Ryan, C. (2009) Choice, vouchers and the consequences for public high schools: lessons from Australia, http://w.ncspe.org/ accessed 30 March 2011. The *y* axis represents the difference in the average student: teacher ratio relative to the government sector

[136] Hattie, J. (2009) Visible Learning: a synthesis of over 800 meta-analysis relating to achievement, Routledge, London

[137] Watson, L. and Ryan, C. (2009) Choice, vouchers and the consequences for public high schools: lessons from Australia, http://w.ncspe.org/ accessed 30 March 2011., loc cit

[138] Schutz, G, West, M and Wossman, L *"School Accountability, Autonomy, Choice and the Equity of Student Achievement: international evidence form PISA 2003"* OECD Working Papers No. 14, OECD publishing. Emphasis added

C.2 School-level autonomy in the 'market'

Given that Australia's government education is characterised by less autonomy than comparable countries, this could be a good place to start to understand why heightened competition in Australia isn't necessarily "lifting all boats".

There are several reasons why autonomy is regarded as key ingredient for strong school performance:

- First, we know that independent schools do the best in Australia and they are the most autonomous. However, we also know that there are a variety of other factors – average SES of the student body being the main one – that account for higher performance by most independent schools

- Second, autonomy, fuelled by an incentive to improve (or compete) delivers innovation. The difficulty is that it is hard to assess the extent to which innovations driven by sheer competition (i.e. between schools or school districts) are more valuable than innovations that result from centrally-driven changes to curricula or pedagogy

- Third, the principle of subsidiarity tells us that decisions should be made at the lowest level appropriate to the recipients of a product or service. Decisions made through the exercise of autonomy 'at the coalface' should better reflect the needs and interests of the direct client group or constituency. In an education context, this means more responsive schools adopting more appropriate approaches to better effect. It also creates an environment for 'bottom-up' innovation – in this case motivated by a response to local need rather than a response to a competitor.

But autonomy can manifest in many ways and contexts, and can be driven by different objectives. In Australia the independent sector is generally autonomous at the school level, in the sense that each school controls fund-raising and budget management, employment of staff and selection of students. The Catholic system has more limited autonomy at the school level, as funding allocation is determined by the State Catholic Education Commission.

School autonomy is a relatively recent phenomenon in the public sector. In the late 1980s Victoria began to devolve decision making over use of a given budget to principals at the school level. Western Australia has effectively adopted this model for its 'Independent Public Schools' and South Australia, Tasmania and the ACT have indicated plans to move school financing in this direction.

Three key factors have tended to put limits on the degree of autonomy traditionally enjoyed by government schools, and it is these that are being challenged in various ways by the states:

- The mandate to provide education to 'all-comers' within a school zone – modified by the ability to accept children out of zone (where there are places) usually at the school's discretion

- The centrally negotiated terms and conditions for teachers via enterprise bargaining agreements – still a major constraint on autonomy in attraction/retention of and reward for teachers but under some pressure from those who would advocate performance-based pay or bonuses

- The central management of the employment of principals and, at minimum, considerable influence over the recruitment and deployment of teaching staff – giving way to more localised decision-making but still within a centralised policy and planning framework.

In other OECD countries, the trend towards school autonomy has been evident in the growth of private schools but the degree of autonomy of these schools varies. Private schools that receive no or few government payments tend to have high levels of autonomy, whereas those that are fully publicly funded such as the Swedish 'free schools' do not have autonomy over such matters as enrolments.

The Charter Schools in the USA and the Trust schools and City Academy schools in England are all based upon the principle of greater autonomy at the school level. Typically these schools are given greater

autonomy over the selection and deployment of staff and other resources, the general running of the school as well as the projected image of the school. However, unlike strictly private schools, they do not have complete autonomy in their student enrolment practices.

It is important, therefore, in assessing the impact of autonomy on performance to be clear on whether it is autonomy over budgets, human resources or enrolments that is in play. Also we need to understand the extent to which autonomy is being 'traded' and what the degree of 'relative' autonomy is within the schooling system that differentiates different providers.

There is a rich supply of data on the impact of autonomy but the overall findings are generally equivocal and not all variables of autonomy are readily able to be isolated and observed separately. For example, there is a large volume of literature on the impact of charter schools, much of it contradictory. On balance though, there does seem to be a positive impact on scores, but it is difficult to isolate the causes for this. Is it because parents have made the conscious decision to send their child to a charter school which in turn implies higher parental expectations and support, or is it because of the way the school is run? Studies that have sought to answer such questions have not produced a compelling conclusion.[139]

Autonomy in enrolments

It is reasonable to hypothesise that autonomy, where it leads to selectivity in enrolments, does increase school performance. However, three important considerations flow from this:

- The ability to be selective in enrolments both reflects and expands market power

- In a closed system with unequal distribution of autonomy, there will always be 'winners' and 'losers' as selectivity leads to the concentration of advantage in some schools

- Therefore, at the system level, autonomy in this context does not necessarily 'lift all boats'.

This is consistent with the findings of Ben Levin who suggests that school autonomy does not have a discernible impact on school performance and when it is implemented through greater marketisation it actually leads to greater inequity.[140]

In Australia, we have seen the emergence of differentiated market power in the public sector due to the popularity of some high performing government schools. Schools that are in high demand and a capacity to utilise this demand can be more selective in their enrolments – that is, their decision-making in this respect becomes more autonomous. This is occurring in most states and territories across Australia.

Figure 70 below demonstrates the correlation between selectivity and educational outcomes. The cluster of government schools at the top of the figure below are mostly selective entry schools or government schools that have achieved high levels of market power.

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[139] For example, showed that, even when the 'parent effect' was removed, mathematics' scores especially at Charter schools were higher. But the same data was used to show that reading scores were considerably lower. See Kevin Drum "Winners and Losers in the Charter School Lottery" in Mother Jones, http://motherjones.com, 2 June 2011
[140] Levin, B. (2008), "How to change 5000 schools: a practical and positive approach for leading change at every level", Cambridge, Harvard Education Press.
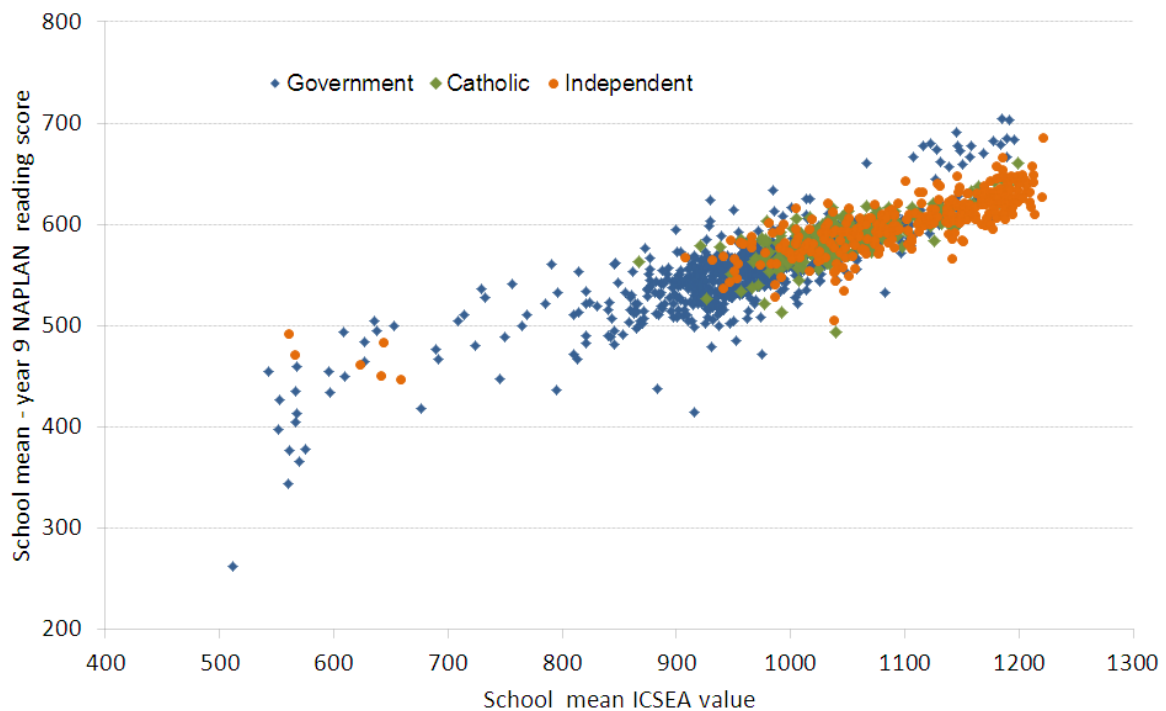
Figure 70: School mean ICSEA value and mean reading score[141]

The result of this trend is an increasing stratification of the schooling system, which we discuss further below.

Autonomy over resources

Salary payments effectively lock up the vast bulk of school budgets, leaving less than 10% in discretionary budget for most government schools. This is also the case in most Catholic schools. Even in independent schools, whose budgets are not set at the State level, salaries still consume the bulk of expenditure leaving relatively less room for discretionary programs and investments.

The most fruitful area in which resource management autonomy can improve performance therefore, is in employment of staff. Australia's government school systems retain central employment policy (terms and conditions) and a central staffing service. This service varies between the states - limited in Victoria and extensive in NSW for example.

Because of the requirement to provide universal access to schooling, education departments need to plan and ensure the deployment of staff across the system. This requirement cannot be fulfilled through school-based appointments alone. For example, Queensland uses a central appointments system to staff schools in rural and remote areas.

Under enduring employment arrangements for teachers in the public system, most of the staff being deployed have permanent status. This makes it more difficult to manage the workforce flexibly and, many would argue, deal effectively with under-performance.

Autonomy over staffing is therefore widely seen as a key variable in school effectiveness as well as (but to a lesser degree) a contributor to more meaningful budgetary discretion. And unlike the case with

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[141] NAPLAN data file, ACARA 2011.

autonomy in selections, where we have observed a trade-off in outcomes between schools with larger or smaller amounts of market power, increased school-level autonomy in staffing decisions should contribute to 'lifting all boats'.

Without a significant shift in traditional approaches to managing and remunerating the teaching workforce in Australia, however, the most practical alternative has been to focus on lifting teacher quality and performance through levers. This is discussed in more detail elsewhere in this report.

Distributed and collective autonomy

So far we have been focussing on types of autonomy at the school level, and we started with the underlying notion that 'subsidiarity' improves decision-making and promotes innovation. The converse argument to pursuing local solutions and autonomous management is that such differentiation means a potential loss of economies of scale. This not only makes autonomous schools more resource intensive (hence private resources are needed to supplement government funding or vice versa) but it creates unevenness in standards and outcomes across the system as we have seen. In short, autonomy may bring benefits but it comes at a price – in both dollar and equity terms.

As a result, the predominant model among OECD countries is one of 'distributed autonomy'. Distributed autonomy is where all schools have similar degrees of autonomy over pricing and fundraising, resource allocation and enrolment policies. To achieve evenness, there is centralised decision on standards. The reach of the central control is managed via a trade-off between government funding and higher degrees of autonomy. The degree of autonomy enjoyed by independent schools in Australia, notwithstanding the significant public funding they receive, is unique in the OECD.

The concept of collective autonomy starts with a proposition that the sovereignty of the state over schooling is or should be limited. A corollary to the subsidiarity principle, the notion of collective autonomy has been adopted by most Scandinavian countries over the past few decades and resulted in the devolution of responsibility for schooling to the municipal level where forms of collective provision have been developed.

In Australia there have been some examples of schools working together to achieve forms of collective responsibility. However, they have generally existed within countervailing cultures of market competition. An alternative form of devolution to the one most evident in Australia (which is based upon the principle of market competition to drive efficiency and quality), would be to create a system for collective responsibility for delivering strong education outcomes at the regional/local level supported by greater autonomy over the assemblage, use and sharing of resources and assets.

C.3 Accountability

We now turn to the third variable that the earlier-cited OECD study identified as being a part of the equation that 'lifts all boats' – accountability. Accountability can be considered at the teacher, school or sector-wide or system-wide level, and goes hand-in-hand with transparency.

Australia's government school system uses a variety of instruments to make teachers accountable. Again in the public system especially, this is constrained by centrally-negotiated terms and conditions of employment. There has been an energetic debate here and overseas about the impact of performance-based pay on teacher performance (indeed its efficacy in all industry sectors). We do not propose to go through the arguments here, but it is fair to say that there is no strong consensus to support the contention that it serves as an incentive to lift performance.

Post-facto recognition of teacher performance is another (and less contentious) performance management instrument that is seen as important and helpful. Several jurisdictions have adopted public

teacher awards of various types, some of them involving payments. A recent study by the Grattan Institute identified performance management of teachers as key to improving educational outcomes. They identified eight key mechanisms for assessing teacher performance:

1. Student performance and assessments

2. Peer observation and collaboration

3. Direct observation of classroom teaching and learning

4. Student surveys and feedback

5. 360 degree assessment and feedback

6. Self-assessment

7. Parent surveys and feedback

8. External observation.

The authors conclude that "schools should choose at least four of these to assess teachers' performance. Each school should be required to include student performance and assessments among the four."[142] Such mechanisms provide a form of accountability as well as a basis for determining where and how to improve teacher quality (discussed elsewhere in this report).

At the school level, there are different governance mechanisms that provide for some accountability. Regardless of sector or jurisdiction, schools will have a governing council or board with teacher, parent and sometimes student representatives. This ensures some transparency in internal management systems as well as input into resource allocation decisions, school policies, partnerships and directions. In overseas jurisdictions school boards can have a greater say over curriculum as well, but this has not been the practice in Australia.

The calibre of boards and their effectiveness varies. Arguably those for independent schools are more important because there are no other layers of substantive oversight (i.e. a State-level coordinating body or the education department). Parents tend to be better resourced and able to engage in school management issues, but are also arguably more highly motivated to engage because of the greater financial stake they have in the institution.

We have argued in the report that the issue of parental and community engagement with school leaders at a community level is one that warrants further exploration in the context of 'collective autonomy' and a commitment to shared outcomes at the regional/local level.

At the sector, system and school level, the most interesting and important development has been the development of the *MySchool* site and the publication of information about absolute and relative performance and resources of schools. While aggregated data has been made publically available in the past (e.g. through the annual Report on Government Services) the *MySchool* innovation marks a great leap forward in accountability within Australia's education system. Although it is too early to asses its impact, the *MySchool* innovation is likely to have a significant impact on school leadership behaviour and parental choice – that latter is something we consider further in the next section.

C.4 The exercise of choice in Australia's school market

When thinking about the dimensions to and the dynamics of Australia's competitive school market, another consideration is whether the market itself is operating efficiently.

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[142] Jensen, B., "Better Teacher Appraisal and Feedback: Improving Performance" Grattan Institute, April 2011

In some respects, Australia's schooling market is more 'pure' than others: in most countries, governments who fund non-government schools restrict fees or restrict some selective enrolment practices. Australia is unusual in that it provides public money to non-government schools but does not place such restrictions on the sector.[143]

In Australia, access to fee-charging schools is more heavily contingent on parents' ability to pay, though it does operate a partially weighted voucher system via direct payments to schools. The level of each 'voucher' (or subsidy) is determined by the SES status of a student's family. Although the subsidies paid to the school are differentiated by the student's SES the tuition fees charged by the school are not. As such private school choice in Australia is not "free" as it is in a system where the students in private schools receive full vouchers for tuition.[144]

In an efficient market, consumers are well-informed and exercise rational choice. In several respects choice in education is similar to choice exercised in the purchase of other goods and services: namely, it might be driven by considerations of price, quality, and 'brand'. Similarly when it comes to information, parents as consumers can be influenced by data (an important point given the Government's investment in the *MySchool* site) but also word-of-mouth recommendations or more general impressions. Convenience is another relevant consideration for many, accessing education services locally is a very practical consideration.

But of course choosing a child's school is a far more complex and important decision, and invokes a much more complex range of considerations to weigh up. Even then, choice might be compromised by the unavailability of places at the preferred school or inability to meet admission requirements. So for some parents, the decision-making process is about an order of preferences rather than an absolute.

Why parents choose private schools

There are several studies that we can draw on to better understand the variables that contribute to parents' school choice. One, by Dearden, Ryan and Sibieta for the Institute of Fiscal Studies, compared the determinants of private school choice in Australia and the United Kingdom.

As to be expected, there is a positive relationship between income in the top half of income distribution and attendance at private schools. However the relationship is not as strong as the relationships with other variables. A 10% increase in income in the top half of the distribution translates to a 1-1.5% increase in the likelihood of attending a non-government school.[145] In other respects there were similar correlations in both countries between private school choice and self-employment (a positive correlation) and between private school choice and the number of siblings (a negative correlation at least with respect to independent schools). Two-parent households were no more or less likely than sole parents to send their children to private schools.

What stands out, however, is the substantial impact of parents' attendance at a private school. As the authors note: "the most striking predictor of private school attendance in both countries is whether one or both of your parents attended such a school, with children being 8 percentage points more likely to attend a private school if one of their parents attended one in the UK, and anywhere up to 20 percentage points more likely in Australia."[146] There is a particularly strong intergenerational Catholic school effect that is marked even after taking account of religious identification (Table 32).

Variable	Government	Catholic	Independent

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[143] Keating, J. (2010) *Resourcing Schools in Australia: a proposal for the restructure of public funding*, The Foundation for Young Australians, Melbourne

[144] Ryan and Watson, 'The impact of school choice on students' University entrance rank scores in Australia', 2009

[145] Dearden, L., Ryan, C. and Sibieta, L, "What determines private school choice? A comparison between the UK and Australia", IFS Working Paper 10/22, Institute for Fiscal Studies

[146] ibid., p. 35

Variable	Government	Catholic	Independent
Raw data	**(per cent)**		
Parent(s) attended Government school	75.4	13.4	11.2
One parent attended government, another Catholic	50.9	41.9	7.3
One parent attended government, another independent	61.3	16.6	22.2
Parent(s) attended Catholic school	36.6	55.3	8.1
One parent attended Catholic, another independent	43.1	43.2	13.6
Parent(s) attended independent school	29.7	24.1	46.1
Difference from parent(s) attended Government school			
One parent attended government, another Catholic	-24.5	28.5	-3.9
One parent attended government, another independent	-14.1	3.2	11.0
Parent(s) attended Catholic school	-38.8	41.9	-3.1
One parent attended Catholic, another independent	-32.3	29.8	2.4
Parent(s) attended independent school	-45.7	10.7	34.9
Base (unweighted) regression estimated differences from parent(s) attended Government school			
One parent attended government, another Catholic	-12.9	17.6	-4.7
One parent attended government, another independent	-7.7	1.7	6.0
Parent(s) attended Catholic school	-28.8	29.1	-0.2
One parent attended Catholic, another independent	-18.2	17.7	0.4
Parent(s) attended independent school	-33.8	15.2	18.6
Regression estimated difference taking account of parental religious background			
One parent attended government, another Catholic	-7.4	10.4	-3.0
One parent attended government, another independent	-8.2	2.7	5.5
Parent(s) attended Catholic school	-22.5	20.9	1.6
One parent attended Catholic, another independent	-14.4	12.8	1.5
Parent(s) attended independent school	-32.7	13.9	18.8

Table 32: Choice of school sector by school type attended by parents – Australia[147]

These findings are very important given the sizable and growing proportion of Australians who have been educated in the non-government school sector.

Delving more into the question of school choice, we can look at a March 2011 publication from Independent Schools Queensland called 'What Parents Want'. Based on an extensive survey of parents who were, at the time of the survey, educating their children in the independent school sector in that state, the report drills down into parents' reasons behind that decision.

The survey found that most influential sources of information for parents in considering a school are friends and colleagues and other parents with children at the school. Important but less influential was information drawn from the internet, or obtained on school open days. This confirms that objective data on performance is a relatively small input, though this may change over time as the *MySchool* site becomes more familiar to and trusted by parents.

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[147] Dearden, L. & Ryan, C. & Sibieta, L.,(2010), "What determines private school choice? a comparison between the UK and Australia," IFS Working Paper.

But this does not mean that parents are acting irrationally, as 'academic performance' is not necessarily the main criterion for selecting private education. The single most important factor cited by parents for choosing their current private school was 'preparation for student to fulfil potential in later life'.

Also ahead of responses such as 'strong academic performance', 'teaching methods' and 'quality of teachers' was that the 'school seemed right for the child's individual needs'. The latter response was the strongest for newly-starting students in Years 9-12. Discipline was also cited as an important factor in another survey[148], which may give some clue as to what parents have in mind when they responded that the 'school seems right for the child's needs'.

The prominence of considerations other than the school's record of educational achievement is something we discuss in the report in the context of understanding the non-educational benefits of schooling. Suffice to say here that this finding that people look well beyond academic record when it comes to choosing schools is validated through other lines of inquiry. Research shows that parents tend not to take their children out of underperforming schools (meaning that demand is relatively inelastic and the market therefore not particularly 'efficient').[149]

Any disruption to schooling is traumatic, even in cases where the move is to a place that is expected to be more satisfying. So it is not surprising that shifting schools becomes a 'last resort' option. Loyalty and principle can come into play as well. In the other survey cited above which sampled 600 parents of children in different school sectors, just over half of the parents of government school students said they would not move their children to a private school if money was not an obstacle. Thirty per cent said they would.

The main take-away point from these findings is that if we are to address the 'drift' from the government to non-government sectors that leads to a concentration of disadvantage, then we need to do more than raise the average results in core curriculum areas of under-performing schools. Word-of-mouth reputation rests on perceived quality of the wider curriculum and of teaching, including the ability to meet the particular needs of each student. It also rests on impressions of school culture, behaviour and the environment for learning.

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[148] Research Developments, 'Why parents chose public or private schools', Research Developments, Vol. 12, 2004
[149] Waslander, Pater and van der Weide "Markets in Education: an Analytical Review of Empirical Research on Market Mechanisms in Education" 92010) OECD Education Working Papers No. 52, OECD Publishing.

C.4.1 Concentrations of language or cultural groups

Researcher Christina Ho[150] analysed *MySchool* data for Sydney's schools and found "a clear pattern of cultural polarisation in schools across the board, including in wealthy elite suburbs…suggest(ing) that Anglo-Australians may indeed have abandoned government schools in many areas" Table 33 tells this story with striking effect.

School	Percentage of students with a Language Background Other than English
James Ruse Agricultural High School	97
North Sydney Girls High School	93
Hornsby Girls High School	86
Baulkham Hills High School	92
Sydney Girls High School	88
Sydney Boys High School	91
Northern Beaches Secondary College Manly Campus	39
North Sydney Boys High School	90
Fort Street High School	81
Normanhurst Boys High School	80
St George Girls High School	90

Table 33: Percentage of students from language backgrounds other than English, top 10 selective schools in NSW (in order of HSC rank)

Our regional case studies also provide evidence of concentrations of Indigenous and non-Indigenous populations in certain communities.

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[150] Ho, Christina, '"MySchool" and others: Segregation and White Flight', Australian Review of Public Affairs, May 2011

C.4.2 School size and concentration of disadvantage

There is a consistent hierarchy of school enrolment size, and average student SES, with low SES students concentrated in smaller schools. These patterns are partially explained by the smaller enrolment levels of rural and regional schools which mostly serve lower SES communities. However, the patterns remain much the same when confined to urban areas only. These patterns also suggest that schools that are most successful in the market as manifested in enrolment levels have student populations that reflect greater parental capacity to choose schools.

Size bands	ICSEA Bands				Total
	Lowest	Next lowest	Next highest	Highest	
<51	1.9	3.5	2.6	2.8	2.7
51-100	12.1	11.0	9,3	4.7	9.3
101-200	18.2	15.3	4.9	11.8	15.1
201-300	15.3	12.8	12.5	13.5	13.5
301-400	10.0	10.6	11.6	14.9	11.8
401-600	12.0	14.1	15.2	18.2	14.9
601-900	7.6	10.6	11.6	13.5	10.8
>900	3.5	7.5	9.2	14.4	8.7
All schools	100	100	100	100	100

Source: ACARA, unpublished data.

Table 34: School size bands X ICSEA bands – percentages

Enrolments	ICSEA**	Catholic		Independent		Government	
		Year 5 Reading	Year 9 Reading	Year 5 Reading	Year 9 Reading	Year 5 Reading	Year 9 Reading
Smallest	Lowest	469	-	465	490	437	509
	Lower	493	-	479	559	483	551
	Higher	483	-	501	569	495	603
	Highest	503	-	520	595	517	-
Small	Lowest	462	555	438	530	439	519
	Lower	483	549	482	583	474	560
	Higher	496	571	491	572	487	575
	Highest	516	-	523	605	520	607
Larger	Lowest	479	565	477	566	448	531
	Lower	486	560	489	575	471	557
	Higher	491	583	494	584	491	564

		Catholic		Independent		Government	
	Highest	512	601	537	616	524	590
Largest	Lowest	496	-	457	513	455	539
	Lower	466	570	488	574	474	558
	Higher	487	583	498	582	494	576
	Highest	512	604	535	617	529	614

Source: ACARA, NAPLAN data file, 2010.

Table 35: Mean NAPLAN reading scores x school enrolment quartiles x ICSEA quartiles X sector, 2010.

** Approximately 30 percent of ICSEA measures are missing from the student record files. The distribution of these missing measures across schools is unknown, but is likely to be uneven, and they are likely to have had an impact upon average ICSEA levels across most bands, on the assumption that the distribution of the missing measures is not random.

Appendix D Regional Case Studies

D.1 Case studies

Purpose

The purpose of these case studies has been to briefly explore how schools are meeting the schooling needs of different communities in Australia. In particular they have attempted to look at the localised behaviours of the school market, their impact upon schools, the responses of schools as individual agencies, collections of schools, school systems, and how schools and other agencies have responded to the market impacts.

All of the regions cannot be described as socially and economically disadvantaged. Two have slightly higher average incomes than the state averages, and two have averages that are below the state averages. However, all have different types and locations of social and economic disadvantage that have an ostensible impact upon schooling. In particular all four regions or communities have very active school markets. On the whole parents have made active choices in enrolling their children at schools.

The market patterns have some common features, but also some particular features. As a consequence there are some common and familiar issues, and some that are more particular to local circumstance.

Method

Given the short time available for the case studies the methodology has been relatively limited and straight forward. It consisted of:

- The examination of publicly available data for each of the communities;

- The use of data and other information provided by the relevant state education departments; and

- Consultations with a number of people working in school education across the communities. They included:

  - The regional director and some staff of the state department of education;

  - Relevant central education department personnel for some of the states;

  - Principals and some staff from a selection of primary and secondary schools across the communities. These were mainly government schools but included a small number of Catholic schools;

  - Directors and personnel from the relevant Catholic Education Offices, and some personnel from the independent schools sector;

The communities

The four communities were identified with the advice of state education departments in four Australian states. Each is defined as a local government area (LGA), although there is some variation in the overall and school populations of these communities. While each community does have populations that have low SEIFA levels, this pattern is not consistent across all of the communities and some contain relatively well-off populations. The four communities were a large and relatively well established urban suburb (A); a satellite town or suburb of a capital city (B); a large coastal city (C); and an inland city (D).

- Populations ranged from 70,010 to 147,782, with each community having multiple postcodes.
- SEIFA levels for different localities range from 815.93 - 1060.05; 706.43 -1047.13; 820.64 - 1105.38; and 971.81 - 1083.79, respectively (see Figure 71).
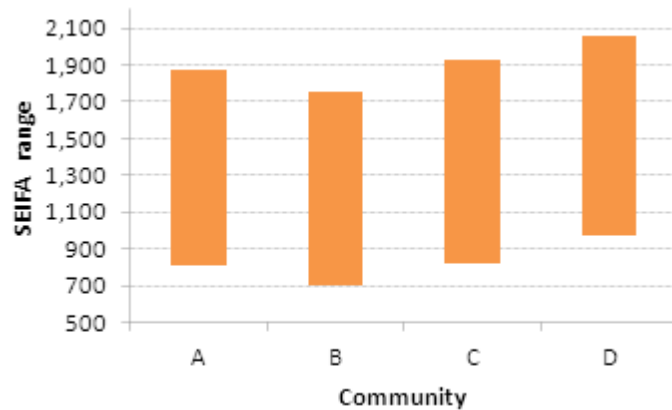
Figure 71: SEIFA range for the four communities

Each of the communities has suffered some form of economic shock over the past decade or more in the form of either or both industry (mainly manufacturing) decline and drought and flood. This has led to varied patterns of unemployment, job and occupational change, and patterns of family movement across the four communities.

Domain	Percentage of children developmentally vulnerable			
	Community A	Community B	Community C	Community D
Physical health and wellbeing	10.5%	16.2%	13.3%	8.0%
Social competence	14.2%	14.1%	14.3%	6.9%
Emotional maturity	10.8%	13.7%	14.5%	8.2%
Language and cognitive skills (school-based)	10.2%	11.0%	18.7%	5.3%
Communication skills and general knowledge	14.8%	12.4%	11.7%	6.4%
Developmentally vulnerable on one or more domains	29.2%	32.3%	33.5%	19%

Source: Australian Early Development index

Table 36: Percentage of children developmentally vulnerable

D.1.1 Community A

The community and the schools

This community has been a relatively long standing 'working class' community where a large percentage of the population has been employed in manufacturing industries. While manufacturing continues the scale of the employment has declined in recent years. Industry sectors are manufacturing, construction, transport and storage, and property and business services. The region is in the process of evolving from a manufacturing past to a knowledge economy that includes the retention of high-tech manufacturing. In 2011 unemployment across the LGA was 10.0 percent, but ranged from 5.5 percent to 15.00 percent across different suburbs. Youth unemployment was 15.1 percent and the disengagement rate is 2,671 (11.9%). 29% (43,074) of the population are foreign born. 17.7% are sole parent families.

The LGA is located within the capital city and has reasonable transport facilities and other infrastructure. It has a very active local government that has made the support of education one of its priorities. Approximately 51 percent of secondary school enrolments in 2010 were in government schools. ICSEA levels across the four sectors ranged as follows:

- Government primary 919.07 to 1019.46
- Government secondary 912.21 to 987.17
- Catholic primary 917.79 to 1059.32
- Catholic secondary 964.85 to 1042.58
- Independent primary 1005.38
- Independent secondary 952.86 to 1068.13.

The particular community that was considered for this case study is located within the broader LGA and is a central post code within the LGA. The municipality was identified as the third most disadvantaged in the state and unemployment within the post code was as high as 19 percent. The area had 17 government schools, a Catholic and an independent secondary school and two Catholic primary schools.

Issues

Within the government school sector there was a sense of crisis over the period 2004-5. This was manifest in a range of factors:

- The schools' outcomes in the state wide reading tests were in the bottom 10 percent for the state;
- Mathematics in particular was 'a black hole';
- Absenteeism rates averaged 22.4 days for primary and above 35 for Years 9 and 10. Both were close to double the state averages; and
- The Year 12 completion rates were 30 percent.

It appeared that a very large number of students (up to 1,000) were leaving the municipality every day to attend non-government and government schools outside of the municipality. The largest provider of the Year 12 certificate in the region and municipality is the local TAFE institute and government high schools have been capturing less than a quarter of the senior secondary school market.

Most government schools across the community had a number of characteristics including low expectations of students, poor outcomes, behavioural management problems, tired leadership, low enrolments (in one case below 40), and poor outcomes. Departmental personnel in the regional office argued that there were too many schools in the area; that many school leaders had only worked in these schools; there was a pervasive culture of low expectations, associated patterns of low staff morale, and a professional culture of welfare rather than scholarship.

Residualisation?

This situation fits closely with the concept of residualisation. It was clear that many families located within the municipality did not regard government schooling, especially at the secondary level, as a viable or acceptable option for their students. The social patterns of participation across the three school sectors are well known. However, these patterns vary across Australian regions. The range of ICSEA averages across the wider municipality shown above is typical in its hierarchy between the three sectors. However, they do show overlap between the three sectors and the primary school with the lowest average is a Catholic school.

Across the broader LGA the percentage of students in secondary government schools within the LGA as a share of all schools within the LGA is 58 percent. However, 59.5 percent of these enrolments are male, which compares with 48.2 percent across the non-government sector. Within the particular community the number of enrolments in government secondary schools located in the area is about half of that of non-government schools. However, students resident in the area will attend government and non-government schools outside of the area and schools within the areas, especially non-government schools, enrol students from outside of the area.

Nevertheless it has been the case that many students and parents from the area, especially secondary school students, have not opted to enrol at the local government secondary schools. One impact of this is that the government secondary school has the lowest average ICSEA of all 50 government and non-government schools within the wider LGA. It is more difficult to draw comparison with the primary sector, but it does seem to be a situation where government secondary education in the immediate community is not seen as a viable option by a large majority of parents and especially parents who are better off. This impact is even greater when the school age students who have enrolled in TAFE courses are factored in.

Causes

This situation appears to fit the residualisation scenario:

- It is a mostly low SES community, that has suffered high levels of unemployment;
- Local government secondary education has a very small market share;
- This market share is mostly low SES, and also has a higher percentage of males;
- On the other hand non-government secondary schools in the area on average have a higher percentage of language background other than English (LBOTE) students than government schools. One reason for this is the opening of two large Islamic schools in the LGA;
- The government schools have had patterns of high absentee rates, high rates of early leaving, and poor educational outcomes.

These patterns raise the question of what were the factors that caused the enrolment trends and contributed to the patterns of outcomes. Consultations with the regional and school based personnel suggested a number of factors:

- Demographic change across the area had caused or contributed to major falls in the enrolment levels of many of the schools. As a result there were too many schools and many had very low

enrolment levels. Half empty schools contribute to an image of decline which can be self-fulfilling. This contributed to the poor state of some schools – although some had plenty of money in their bank accounts but did not know how to utilise the funds – and a subsequent drift in enrolments. One school of 45 students, and very poor results, had $400,000 in its bank account.

- School leadership in general was not strong. Many of the school leaders had only worked in the schools in the area and had allowed the culture of low expectations to go unchallenged.   The leaders did not know how to deal with the situation and were unable to change staff attitudes and behaviours.

- A culture of low expectations had grown across the schools and was pervasive amongst the teaching staff. There were few expectations of student success and the patterns of absenteeism amongst students and staff, high rates of early leaving and poor student outcomes were not challenged. In some of the schools staff were inflexible about work practices.

- Despite obvious signs of the problems existing for some time they were largely neglected at the system level. The schools were given a lot of resources and encouraged to improve. However, there were no major interventions that attempted to get to the seat of the problems.

- Several of the personnel who were interviewed noted the evolution of a welfare mentality that acted as a substitute for a culture of scholarship. It combined with deficit attitudes but was also manifest in the use of the extra resources that were allocated to the schools.

- Across secondary education the declining enrolments reduced the schools' capacity to offer viable programs and there were few attempts to work with each other or the local TAFE institute.

- A final factor is that the school personnel individually and collectively did not know how to address the problems. They lacked the operational, occupational and strategic know how to reform the schools and to build and sustain teaching practices and cultures of expectations that schools needed in regards to student behaviours and learning.

Interventions

The School Regeneration Project that began in 2006 is possibly the largest in the history of the country. It was initiated through the regional director of the state education department with the support of the director of education and the State Minister for Education, who secured a substantial allocation from the state budget. The intervention was strongly supported by the Australian Education Union and the principals' associations. It has involved:

- The amalgamation of several schools that have reduced the number of government schools from 17 to 11.

- The amalgamations included building two new schools – a primary school collocated with pre-school provision, and a three campus secondary school. The schools look attractive and have excellent facilities.

- As part of this the schools have stronger uniform policies and practices. The school personnel were strongly of the view that the students wanted uniforms and good uniforms – they wanted an identity.

- This has facilitated the appointment of some experienced principals who have strong track records in other schools. These principals have been able to assemble leadership teams to support them.

- The processes for the renewal have encouraged staff to come on board and support new directions with high expectations. Some staff who were unhappy with the intervention and the new directions moved on.

- Major investments have been made in changes to teaching practices. This includes the employment of coaches and establishing a leadership team that is able to provide instructional leadership.

- The intervention strategy was community driven. It had the active support of the municipal government and the engagement and support of the parent community was built through on-going communications.

- The core on-going strategies that have been utilised include:

  - Adequate and up to date infrastructure – these students need the best not the worst infrastructure;

  - Building a data driven approach to educational and instructional management;

  - Continued investment in leadership to ensure the capacity for on-going instructional leadership;

  - The use of distributed leadership and the capacity to extend instructional support and leadership through the allocation of some extra leadership positions;

  - The building of peer support and confidence through observation and coaching.

At the school level the principals have identified a number of factors that are critical for success in these environments. They include:

- The necessity for a secure environment. It is not possible for a school to operate successfully if they are to be regarded just as locations for, as one regional director put it, 'the mad and the bad'. School leaders have spent a lot of time building an environment where quality instruction can take place. There is evidence that teachers in schools with high levels of educational need typically use a more narrow range of instructional modes. This is because of time spent in maintaining an environment where teaching can take place and as protection against the risk of aberrant student behaviours. Yet these students most need a wider range of teaching modes. *In some cases in secondary schools this has meant expelling some students.*

- The need to build and communicate with the school community. This point was repeated across all four case studies and has several aspects:

  - Parents need to have confidence in and assurance of the well-being of their children, including being safe at school. Schools need to be, and need to be seen as being, secure environments.

  - As one principal put it, "all parents want the best for their kids, but they sometimes don't know what it is or how to express it". The schools needed to work with parents in order to build common expectations of students.

  - In some cases this is about changing parent behaviours towards schools and teachers. Some parents have had negative experiences of schools that are reflected in their behaviours. Strategies need to be used to build trust with these parents.

  - Schools in these circumstances are under heavy welfare demands. However, this is not their and their teachers', roles. They "can't do it alone". They need to work with other government and non-government agencies to gain this support. The local government is potentially a significant resource.

- The importance of changing the culture. All school leaders indicated that nothing can be achieved without a culture of high expectations. It is a constant process of challenging deficit attitudes. This also involves building a professional culture of flexibility – established ways of doing things may not work in these changing environments.

- Concentration upon the fundamentals. All schools involved in renewal programs have emphasised the importance of concentration upon the core areas of learning – literacy and numeracy. Students in these schools are at stages that are one or more years behind national benchmarks and the schools typically have allocated a large percentage of class time to numeracy and literacy teaching.

- Building capacity. The fact is that teaching in schools with higher levels of learning needs is tougher than in most other schools. Student behaviours are more challenging and the students do not have the physical and cultural assets of students in some other schools. For example, one principal pointed out that only 40 percent of the schools' students had internet access at home, whereas the figure was 100 percent in his last school in the eastern suburbs. Teachers therefore need assistance in shaping and building their teaching practices through coaching and mentoring, as well as support through teaching approaches.

Resources

The resource implications of the schools in these circumstances are complex for at least two reasons. One is that the situation of residualisation typically results in an excess of schools. The expenditure of more capital resources in these circumstances is unlikely to be productive in the absence of action to reduce the school numbers. Another is that, as several people attested, schools did not know how to use the extra money: they spent it - on welfare, general reductions in class sizes, none of which are likely to address the issues of educational outcomes – or they stored it in bank accounts.

However, it is ostensibly the case that these schools do not have the range of resources that are available to schools with more even demographics. While there is general agreement that 'throwing money at these schools' is unlikely to be productive there have been relatively common sets of identified need that have resource implications. They include:

- 'Safe and presentable environments'. School personnel, and especially those in primary schools, felt that a dilapidated looking school has the impact of turning away parents. Schools need to look well built and kept and have a sense of order and security. Many primary schools have used BER funds to build fences that give a greater sense of schools as safe and presentable environments'.

- 'Consumables'. Principals pointed out that there has been a reluctance to enable staff in these schools to allow students access to books, laptops and other resources that can be damaged or lost. Under these circumstances they pointed out that the resources are of no use.

- 'The leadership class'. Leadership capacity and drive is the most consistent asset identified across all four case studies. There are several barriers to achieving this:

  - The job is typically more challenging in these schools and leaders (and teachers) will mostly have a shelf life before they decide to 'get a life' and seek less demanding environments;

  - Because high needs schools mostly have smaller enrolments staffing formulae typically allocate lower salaries to principals in these schools;

  - The leadership jobs have multiple demands: school management; system liaison; community relations; staff management; and instructional leadership. While these all apply in all schools their sum total, arguably, is greater in these schools.

Upon this basis several people in and beyond the schools argued for greater resource allocations for the leadership teams in these schools – which includes one or two extra leadership positions. In some cases experienced teachers have been given small extra payments to come to these schools.

- The challenge of instruction is greater in these environments. Teachers are under pressure to change and innovate in their instruction modes and to work in a more collegiate manner. School personnel have identified a need for experienced staff to coach and mentor teachers and teachers have expressed a need for more time to plan and prepare their class instruction using data in a more systematic manner.

- All schools identified the need to build community links, including those with parents and with community agencies. While this is a whole school responsibility it is a particular challenge for these schools that may require dedicated resources.

Not the 'core business'

These schools and communities raise the issue of the core business of schools. As the case study demonstrates this core business can get lost and a welfare role or orientation can become a substitute. One regional director spoke of a proposal whereby young people at risk of disengagement and exclusion would be sponsored by some community agency, which could be an NGO, a government agency or an employer that would take the responsibility for the pastoral care, mentoring and safety of the young person. The school's role would be that of delivering the educational instruction.

Schools need to be led, supported and resourced to do their core business of education while other agencies take the responsibility, in partnership with schools, of the social and economic care of the young person.

Reversing residualisation

Finally there is the question of whether residualisation, of this type, can be halted or reversed. Here there are two dimensions: that of overall national and system effects, and that of a particular community and location. The two are not mutually exclusive, with systemic factors contributing to locational patterns, and localised interventions potentially contributing to overall patterns.

A historical view would be that if the localised interventions can change factor conditions at a system level, such as the supply of the most competent leaders and staff, and a changed role for schools in relation to other community agencies, then it should be possible to achieve systemic change. On the other hand, if interventions don't change the factor conditions in the long term it should be expected that a defaulting to the pre-existing factor conditions will have the original effect.

A historical view would be that if the demands of localised interventions can change factor conditions at a system level, such as changes in the supply of the most competent leaders and staff, and a changed role for schools in relation to other community agencies, then it should be possible to achieve systemic change. On the other hand, if interventions don't change the system level factor conditions in the long term it should be expected that a defaulting to the pre-existing factor conditions will have the original effect.

Here there are tensions between an empirical and a historical view. While they are also inter related history wins out, because of the consistency of conditionality over time. Empirical analyses have located behaviours in schooling, notably leadership and teaching practice, as the main factors influencing educational outcomes. Changes in these practices will lead to changes in outcomes. However, an evangelist approach premised upon 'moral purpose' to changes in practice is unlikely to be sustainable. Historical trends can be reversed and these trends are conditioned by cultures, as well as structure, which also can and do change. However, the cultural interventions in schooling of this type are essentially industrial – they are primarily targeted at changes in occupational values and practices. They

are not targeted at the cultures that influence behaviours within the educational market: those on the demand side where parents seek the best school, or on the supply side where schools seek the best students, and where most school leaders and teachers seek the best school and least demanding working environment, at least in the long term, like almost all other occupational groups.

Leaving aside the impact of high concentrations of students with high levels of educational need (DET, 2011) the highly observable trend in Australian schooling of concentrations of lower SES students in smaller schools is exacerbating factor conditions that are not conducive to the most effective school leadership and teaching practices. In terms of interventions there is a horse and cart issue here: Better practices are needed to change the school outcomes that will lead to changes in enrolment patterns; while more even enrolment mixes are needed to provide the conditions for better practice.

At this point in time Australian school education policy appears to be beset with a dualism. There are multiple interventions that are attempting to improve school leadership and teaching practices. At the same time the commitment to market principle and policy unwillingness to address the structural imbalances in the market are exacerbating conditions that will exacerbate inequality in outcomes. These two positions could be described as the empirical and historical, respectively. To repeat the point, over the long term the historical will win out, partially because it is self-sustaining.

The strength of the interventions in this case study is that it appears to recognise this. The capacity to address all of the factor conditions that influence schools is limited, given the wide market for schooling and the system wide structural imbalances. However, it has addressed those that it can, such as the quality of the school buildings and other resources. It is also premised upon the clear recognition that the success of the intervention will very much depend upon its impact upon the enrolment levels and mix of the schools.

The evidence from this case study is only starting to emerge. Key schools in the regeneration have achieved significant falls in absentee rates, indications of stronger and more positive community relations. Enrolment trends have also reversed. The improvement is student results has lagged somewhat. However, this is to be expected to some degree and there are clear signs of stronger staying on rates. The main secondary school had a target of gaining a two year improvement in literacy and numeracy standards in one year –'two in one'. It achieved one and a half in one.

D.1.2 Community B

The community was established in the 1950s and 1960s and mainly served the manufacturing industries. It is located as a satellite town or suburb of a state capital city. In recent years manufacturing employment has declined (although it remains at 21 percent of employment) and the unemployment rate in 2010 was 13.1 per cent, with youth unemployment at a rate of 27.5 percent. The LGA has an Indigenous population of 1.8 per cent, and an overseas born population of 27.4 percent. The percentage of the population with a post school qualification is 41.6 percent (compared with a national average of 55.73 percent) and the percentage of households that speak a language other than English is 27.3 percent.   The rate of home internet access is 56.8 percent.

The community has faced significant pressures in the forms of economic change, mostly through the decline in the manufacturing sector, and demographic changes. There are indications of long term and now inter-generational unemployment, which tends to be locationally concentrated. The region has significant prospects for economic and employment growth of up to 40 percent. However, the skills profile of the adult workforce is such that it is likely that most of the employment opportunities will be taken by people from outside of the community. There is a significant challenge to improve educational quality and especially Year 12 completion rates.

The wider region of the two LGAs have a complex sociology, with elements of long standing residents with a strong community identity, but there are forms of disruption and division caused or exacerbated by the sell-off of public housing (into rental areas) and the impact of a major road as a dividing line. As several people who were consulted commented, some parts of the area had changed from 'working class to welfare'. As is the case with many other regions school education provision has been influenced by the impact upon the region's demographics by patterns of housing decline and growth. In particular the establishment and expansion of a new housing estate has altered the nature of the market for some schools.

There are 26 schools within the LGA. However, to a large extent the LGA needs to be considered with its neighbouring LGA, which has 56 schools, and a similar shared settlement and industrial history. There is one government secondary and one combined primary and secondary school in the LGA's case study, compared with one private secondary and three combined non-government schools. However, there are five government secondary and two combined primary and secondary schools in the neighbouring LGA, and two secondary and two combined non-government schools. Clearly a significant number of students in the first LGA will attend secondary schools in the second.

Across the two LGAs the average school ICSEA levels range as follows:

- Government primary: 626.82 to 1048.24

- Government secondary: 923.89 to 957.33

- Non-government primary: 938.85 to 1059.23

- Non-government secondary: 955.14 to 1053.9

NAPLAN reading means for government schools within the two LGAs are shown below.

Year	Year 3	Year 5	Year 7	Year 9
2008	367.2	443.4	500.9	535.9
2009	363.6	446.8	502.1	535.6
2010	364.0	439.4	508.6	523.5
National average 2010	414.3	487.3	546.0	573.6

Table 37: NAPLAN reading means for government schools within the two LGAs

Schooling

While the region is relatively deprived, as indicated by the social indices, there is an active school market. For example data gathered for the Australian Early Development Index has shown that only three out of twenty one students went to their local government schools. The percentage of students in government secondary education has been below the state average, despite the low SES characteristics of the region. The market is influenced by the patterns of parent movement from home to work, access to child care, and by the perceptions of school quality and safety. The area has limited infrastructure and given its location there is a limited option for students to travel long distances to schools. Government school enrolment numbers have been volatile across the region, but appear to have been more stable in Catholic schools.

The school market has been both segmented and dynamic. The segmentation is related to the patterns of residency and transport routes and capacities, housing affordability, and the capacity to meet school fees, however small they are. The dynamism is related to demographic changes, aspirational objectives of families, the reputation of schools, and the patterns of school enrolments and their relationship to patterns of community stress.

The region has been seen as having plenty of, or too many, schools and there has been high mobility between some schools. At the same time there are some concentrations of students who have high levels of educational need. There are a large number of young mothers, and there is a high incidence of mental health issues in families and often in students. As a whole the demand for psychology services across the schools has been high. The education department supports a program for secondary school students who are disengaged from mainstream schooling and who are attached to and supported by other agencies. The students are formally enrolled in secondary schools but have flexibility in their attendance and learning locations. The percentage of students who are enrolled in the program is approaching 10 percent across the area and is as high as 40 percent in one school. One person who was consulted suggested that once a school has over 15 percent of these students it will have a negative impact upon its environment and enrolments.

Issues

Combinations of a 'highly visible group of students', the physical look of a school, aspirations of families that feel economically and socially vulnerable, and localised concentrations of poverty and unemployment have given a significant dynamic to the school market. The restraints of disposable income, need – including disability support, geography and transport have combined with this dynamic to produce a type of educational crisis in the region. The crisis has been in the form of a decline in the number of enrolments at several government schools and an associated pattern of weak educational outcomes, as indicated in the NAPLAN results, high absentee rates and high early school leaving rates.

The market share has been spatially varied. Some students change schools rapidly due to a variety of reasons. One impact for this is that the schools most affected get reputations for instability.

This impact has been exacerbated by the poor state of many of the schools and their stigmatisation in the eyes of the community. These factors have interacted with school cultures such that school staff adopted low expectations of students and moved towards a welfare culture. As one principal put it, they 'took the easy way out'. The schools also had difficulty in attracting experienced and highly competent teachers and leaders.

There are two sets of impacts from these trends:

- The first is the concentration of needs within some schools. Students often have weak oral skills and significant burdens in their home lives. The schools face issues of unstable attendance and enrolment patterns; student behavioural issues; high demands and dependence upon support services, together with the demand of linking with and negotiating these services; weak cultural capital in the form of books, paper and pens; and greater capacity for program disruptions.

- The second is that these conditions, apart from inciting cultures of low expectations and a welfare orientation, lead school leaders and teachers to become risk adverse. The range of pedagogies, and learning experiences and locations typically become narrower, and schools will be reluctant to use relief teachers and other personnel because of the risk of disruption.

As with the first case study, the fact is these schools are challenging environments for teachers, and not all teachers can cope with them. One principal indicated that an advertised vacancy can attract up to 200 applicants. However, identifying those who would best cope with these environments is very difficult.

Many of these schools have had a large number of funded programs to address various issues. The programs are targeted at Indigenous students, refugee students, and other needs. As a quantum the funding can be quite large. However, because they are tied and short term their impact can be minimal and the burden of administering them can be considerable for schools.

The market

Compared with the first case study the school market is relatively localised, with fewer options for parents to move beyond the area because of factors of geography, transport and income. However, it does appear to be just as strong and possibly more dynamic. The base line conditions of poverty, unemployment and associated social stress are stronger. The community has a small Indigenous population and high levels of mental ill health and long term unemployment.

The impact of the market appears to be stronger within primary education in comparison to the first case study. Here the 'look of the school', its reputation and potential stigmatisation, and community perceptions of its safety are important. In a sense the community has fewer external outlets and reference points than the first, so relative positioning between schools becomes important.

Once a school begins to lose out within this market it faces the dangers of enrolment decline, physical dilapidation, lack of staff renewal, and the adoption of deficit and welfare cultures. This then becomes a partial culture, and an exercise in behavioural and welfare management. Under these circumstances stability, including stability in instructional practices, becomes more important.

The winner schools within the educational market have a foundation of stability. Their enrolments are more stable and they have higher rates of student attendance. The behavioural patterns of students are more stable and staff can approach each day with greater confidence and certainty. They have few demands to coordinate and work with other agencies and professionals. This can provide the basis for more variety and innovation in programs and pedagogy. The institutional cultures of the schools are

also more stable. The schools will tend to 'look better' because they are fully utilised and have an active parental community which enhances the schools' capacity to project an image of safety.

As one departmental officer put it, "There are low SES families and low SES families. Where there is a strong community, a decline in a school's population through demographic change is not a problem. However, where there is a movement into the school of a particular population, this can be disruptive."

Beyond the schools there is evidence of some children up to the age of 13 or 14 who have had virtually no schooling. These students will typically have low levels of or no functional literacy. However, they also are encumbered with a culture of no aspirations. This culture is also a challenge for the schools as well.

Intervention

A similar intervention to that in first case study has been initiated across this region. The intervention was informed by the first case study, which occurred a few years earlier, and was initiated by the education department with the active support of the minister for education.

The intervention involved the closure of several schools and the building of a new school that incorporates preschool, primary and secondary education. It also involved the refurbishment of several other primary schools. Experienced school leaders were appointed, especially to the new schools and negotiated programs of staff renewal were introduced. The interventions that emerge from this case study are similar to those of the first case study:

- The centrality of leadership and building a leadership team. All people who were consulted felt that the appointment of experienced and capable school leaders is essential for schools in these circumstances. Furthermore the principals need to be supported by competent leadership teams with shared visions. Once again given the multiple demands upon these leaders it was argued that extra resources should be provided to attract the most competent leaders and to increase the overall leadership capacity in these more challenging circumstances.

- Changing the culture. A shift back from welfare to education as the core focus of the schools was seen as a core challenge. This typically involves some negotiated staff changes and support programs for teachers. It also involves investments in professional development, coaching and team approaches to instruction.

- School appearance and facilities. Almost all people consulted indicated that the look of the school is important in this environment. As some people indicated, they had changed their minds about the importance of facilities and technologies to support learning.

- Safety. All schools have an emphasis upon safety. This generally involved having fences around and appropriate procedures within the schools. Safety from bullying is also a central objective.

- Orderly learning environment. The principals in the new school environments all noted that an orderly teaching environment is needed if quality instruction is to take place.

- Working with the community. This was seen as important for several reasons: the need to raise expectations and aspirations; building confidence with the community; and changing a culture of hostility towards schools.

- Concentration upon priorities. All people interviewed agreed that levels of literacy and numeracy need to be improved as a priority.

- Shared learning. The state has invested in programs that are designed to support parental learning in conjunction with their children's schooling. This has often been targeted at young mothers and has been an important program in these areas. The 0-18 capacity of the new school should enhance this capacity.

- Working with other agencies. As with the other case studies there is a need for teachers to be relieved of their welfare roles and for students to be given appropriate support through other agencies.

- Spread the need. One principal indicated that no school can carry more than 20 students who have a disability, including behavioural disabilities. There is a need to spread the responsibility for supporting these students' needs.

It is too early to judge the outcomes of this initiative at this stage. Schools have reported improvements in retention, student behaviours and school morale. In particular the schools have reported a greater sense of security and stronger links with and confidence from the school communities. As with the first case study the school principals and staff all indicated that the students want a safe and orderly environment and they want to be identified with their school through quality uniforms and school image.

Funding

In one sense many of the schools have had substantial funding. However, it has tended to be fragmented and short term, and the effectiveness of much of the expenditure has been questionable. It is also the case that the demands of these schools on leaders' and teachers' time are such that some extra funding quickly gets sucked up in teacher time.

- There is a view that the leadership demands in high need schools are greater than in other schools. Therefore, there is a need to allow principal salaries for small, but high needs, schools to match those of large schools. It has been argued that these schools also need an extra leadership position.

- Because the teaching task is more difficult, and because of the response of restricting the range of instructional techniques, schools expressed a need for the capacity to have ongoing coaching and professional development for teachers, as well as allowing teachers more time for peer activities, including reviews and team approaches.

- In this regard there was a consistent view that teachers in high need schools want extra time, not payments.

- As a principal indicated "because it's about survival curriculum goes to the wall". Under these circumstances schools need ongoing support and input in order to maintain teacher capacity and motivation.

- A principal commented that "our kids have had no sense of entitlement to things like books". All schools invested in uniforms and it was seen as important that the uniforms should be of good quality. The capacity of families to pay for these items is limited.[151]

Residualisation

Once again this leads to the question of how to avoid and how to address residualisation. The case is different from the first in the intensity of the social stress and the different demographics and location of the community. The market impact is more complex and more dynamic.

In a sense these dynamics may not be entirely bad. Parents are 'voting with their feet' and exercising their choice that is valued within the policy frames for schooling in Australia. On the other hand, there are consequences for those families and students who don't or can't change schools, and it would appear that the residualising effect may have a negative impact upon educational outcomes overall.

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[151] Bond, S. & Horn, M. (2009) Counting the cost. Parental experiences of education expenses. Fitzroy: Brotherhood of St Laurence.
Online: http://www.bsl.org.au/pdfs/Bond&Horn_Counting_the_cost_2007_educn_survey.pdf

As discussed earlier in this paper, these case studies raise the issue of what are the limits of the capacities of schooling in general and general or comprehensive schools in particular. High levels of local concentration of economic, health and social stress combined with a school market that further concentrates this stress, arguably can create a set of demands that most schools and their personnel cannot be expected to cope with. The solutions to this would seem to be:

- The geographic or community dispersion of the stress;

- The wider distribution of the need across schools;

- Wider agency partnerships with schools that deal with these circumstances;

- A change in the nature of those schools that are confronted with these challenges; or

- A continued expectation of and support for groups of dedicated school professionals in schools that have these situations.

As public policy all of the strategies have countervailing stresses:

- Public housing policies based upon mixes of public and owner occupied housing face the natural push back of housing markets;

- The school market encourages social separation;

- Wider agency partnerships face administrative, industrial and regulatory complexities;

- Some movements towards alternative settings confronts the common or general school ideal; and

- The emphasis upon improved quality and practice confronts the inevitability of personnel exhaustion.

Public policy in Australia arguably utilises all but one of these: recent policies have allowed greater selectivity. This is the same point as that made in the concluding comments for the first case study. Therefore, this case study raises the question of what are the most appropriate set of wider policy strategies that should be used in the future to deal with the issue of high concentrations of community stress and student needs.

D.1.3 Community C

The third region is encompassed within an LGA and has a mixed economy that includes administrative, transport and retail services for the wider region as well as some tourism and processing industries. In May 2010 it had a low unemployment rate of 3.3 percent, although this represents a rapid fall from 6.0 percent in 2010. The population is growing at a rapid rate. It is a city with a population approaching 200,000 people and is spread over a large area. A high cost of housing (including rental) has contributed to pockets of poverty and patterns of population movement.

The area has been subject to rapid economic change. Manufacturing industries have declined and been replaced by new service industries and there has been a general pattern of rapid population growth and rapid population movement. The average income for the region is slightly above the state average, and there are areas of high income, and there also is a gradual emergence of pockets of intergenerational unemployment. The community appears to be relatively mobile, with 22.5 percent of the population having a different address one year earlier, compared with a state average of 19.7 percent.

Aboriginals and Torres Straits Islands people represent 5.9 percent of the population, compared with a state average of 3.3 percent, while 4.9 percent live in households where a language other than English is spoken. The percentage of one-parent families is 16.5 percent, compared with a state average of 15.9

percent. The percentage of 15-65 year olds with a post school qualification is 49.9, which is almost the same as the state average. The SES distribution is shown below (Table 38):

	Quintile 1 (most disadvantaged	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (least disadvantaged)
Region	15.2	26.8	21.8	15.3	21.0
State average	20.0	20.0	20.0	20.0	20.0

Table 38: SES distribution

The percentage of the population between the age of 0-14 is 20.9 percent (compared with state average of 20.1 percent) and the percentage between the ages of 15-24 is 16.8 percent (compared with a state average of 14.3 percent). The region has 55 schools made up of forty government and 15 non-government schools. The enrolment share of the government sector is 65.3 percent in primary and 51.8 percent in secondary education.

School average ICSEA levels range as follows:

- Government primary schools - 776.3 to 1026.05
- Government secondary schools - 851.6 to 988.77
- Non-government primary schools - 956.75 to 1099.71
- Non-government secondary schools - 927.96 to 1129.78.

As with the other regions these patterns are consistent with national patterns, but do show overlap between the sectors.

Schooling

The community has not faced the types of economic and social stresses that have been felt by the first two communities. While it has been affected by the economic conditions and climate conditions it has remained relatively prosperous as a whole. However, the community does have areas of low income and social and economic exclusion. Typical of medium and large regional cities there is a robust school educational market across the community that extends through the three sectors. The location of the community does not allow parents the option of extending the market outside of the city, as is the case in the first case study where parents could choose schools outside of the region. However, with seven state high schools and ten non-government combined or secondary schools there is a wide range of secondary school options, and a wider range of primary school options for parents.

Within the state secondary sector there is a generally acknowledged hierarchy of schools. However, this is not a rigid hierarchy and possibly the most successful school, at least in terms of enrolment numbers, is not at the top of this hierarchy and has a wide mixture of students, including a disproportionate number of Indigenous students. As personnel from the state education department pointed out, Indigenous parents will drive past other secondary schools to take their children to this school.

Personnel from both the government and Catholic school sectors do not see the two sectors as necessarily being in competition with each other. Rather they run parallel systems, and Catholic school enrolments tend to be relatively stable, as is the trend elsewhere in the country. The two sectors have good relations and work closely in delivering primary schooling to a large Indigenous community. They also have worked closely in the establishment and operation of a school for disengaged young people. The school was established through the joint initiative of a number of agencies, including both the department of education and the Catholic Education Office. It is publicly funded and is an Edmund Rice

Foundation school. The Foundation is run by the Christian Brothers and therefore is effectively part of the Catholic Church.

Their social distribution of students across the sectors is consistent with national patterns. However, as indicated above, there is overlap in the range of average ICSEA levels for schools across the non-government sector. These levels are influenced by geography as well as the workings of the school market.

Government schooling has not faced the same type of crisis as those of the first two case studies. One probable reason for this is the rapid population growth of the region which has prevented the catalyst of a sudden enrolment decline in some schools. Nevertheless demographics have had an impact upon some schools, and especially the government schools. Some have had enrolment declines, although not terminal declines, and others have had an intensification of educational needs. Several principals commented on rapid changes in their school's demographics, which is associated with changes in the cost of housing, and the fact that the schools have had several demographics changes over a couple of decades.

These changes have had their greatest impact upon the government schools because of their locations and costs. However, they have not affected all government schools in the same way. Arguably the most successful government secondary school, at least in terms of enrolment numbers that are over 2,000 (the highest for a government secondary school in the state), has a relatively low mean ICSEA (865.43) and approximately 25 percent of its students are Indigenous, the highest of any secondary school in the community.

The community profile could be described as mainly lower middle to middle class, as indicated above, and with a strong aspirational culture. This possibly is reflected in the fact that the percentage of primary and secondary enrolments in the non-government sector, which are both higher than the state and national agenda. However, it is a complex community given its recent growth and demographic change, industry changes, large Indigenous population, and the influx of migrants, including refugees.

The school education market therefore is a complex mix of government and non-government schools that is influenced by the particular demographics and the dynamics of the community. It includes schools that draw their students from local communities; low to medium level fee based schools; specialist and semi-specialist schools; and what might be described as comprehensive secondary schools.

The government school sector faces particular challenges of maintaining the quality of its school building stocks. This problem is exacerbated by the climatic conditions, notwithstanding the contribution of the BER. This is a relatively common problem across the government school sector in most states and territories because of the greater tendency of government schools to draw their students from immediate local areas or neighbourhoods. As a consequence they have been more vulnerable to demographic shifts.

Issues

It does appear that some of the patterns of demographic choice combined with an active school market have contributed to some examples of school based and highly concentrated educational need. Community perceptions of these schools can then lead to enrolment decline and further concentrations of need. These schools face challenges of high levels of student mobility, high levels of student absenteeism, and major weaknesses in oral language skills. As in the other regions these schools frequently have a high percentage of students with disabilities. Mental health is a major issue within some communities.

There have been multiple programs to support these schools and students. However, because these schools typically are small the administrative and accountability demands of these programs can be

burdensome for school leaders who face multiple demands of school management and instructional leadership. As in other areas these schools are demanding of school leaders and teachers. Because they tend to have small enrolments it is difficult to attract experienced leaders and students to these schools.

Student mobility appears to be a particular problem in some of these schools. This is a problem of both family and students' domestic mobility and students shifting between schools. This mobility also is associated with high levels of absenteeism.

These schools have high demands of parental engagement. This engagement is related to student mobility and attendance, and to students' motivation and learning. Schools see a need to engage with parents in order to encourage a scholastic culture amongst the students.

The community has a large Indigenous population, including a community that was relocated from a wide variety of locations several decades ago. School education for Indigenous communities includes the Catholic and government primary schools in this community, mainstream government and non-government schools, and boarding schools, including a Catholic boarding school for Indigenous students. As would be expected Indigenous enrolments are not spread evenly across all schools. However, there are examples of schools that provide very effective schooling for Indigenous students. Within the highly concentrated Indigenous communities there are dilemmas over withdrawing and moving students to schools outside of the community, including boarding schools.

The concept of residualisation does not appear to fit this region. While there are schools that are more and less successful in the school market, and the government school sector has a low market share by national standards, schools have not faced the pressures that some schools in the first two regions have faced. The schools also include a government school that might be regarded as an outstanding example of a comprehensive secondary school. This school has a highly diverse enrolment and has challenges of poor levels of literacy. However, it has a strong identity, very high enrolment level, and strong student outcomes. It appears, in the words of a school leader, to have "something for everybody".

On the other hand there are schools that face an intensity of demands that could be seen as excessive. Thus while the schools in the community or the government sector would not be regarded as residualised, there are schools that clearly struggle to meet student needs. As indicated in the two other case studies this is partially because of the nature of the schools' community and 'schools cannot do it alone'. However, it is also a wider community expression as virtually all school enrolments involve some degree of selectivity, in the form of parents being selected in or out of the schools. Some of these schools are local schools that because of demography and the educational market have come to face these intense demands. Others have evolved or even been established to meet the needs of students with high levels of need.

Systems and autonomy

Personnel from both the government and Catholic school sector have stressed the importance of school systems.

The need to provide schooling to all communities has been stressed by the government school personnel. This requires a staffing system or support system, although leaders in some schools have stressed that government schools need to be proactive in staff recruitment and establish relationships with teacher training programs. On the other hand there is also a need to ensure that all schools are functioning well and supported to improve. System intervention is necessary in some circumstances. Leaders of some of the successful schools in this region believe that their schools are capable of accepting greater autonomy, and this contrasts with the view of the leaders of some schools in the other two regions, where the concept of residualisation has more relevance, who appreciated the need for system level intervention.

Within the education department in the state an approach to area based school leadership is being considered. This would involve groups of schools across a sub region or district having a leadership and resourcing focus upon the needs of the community and the students within it. The approach would be supported by IT systems that could assist in the delivery of programs to a wider group of students and could assist in personalised learning approaches.

All representatives of Catholic schools across the four regions have stressed the importance of the Catholic school system. There are 28 Catholic dioceses in Australia across the 8 states and territories. The Catholic sector is based upon the principle of subsidiarity. This principle parallels shared social and educational missions across the Catholic schools, as well as the principle that more wealthy schools and communities should make a greater contribution by effectively subsidising Catholic schooling in less wealthy communities. Schools leaders are seen as having a responsibility towards their own schools and to the collective of schools.

Funding

A problem for some schools has been that there have been too many funding initiatives. For some there has been 'plenty of money', but for several the fragmented nature of the funding initiatives or programs had caused problems. Under these circumstances it has been difficult to discern any clear or consistent strategy or sets of strategies, especially strategies that are appropriate to the region and the schools.   A term used by one person consulted was that many of these programs were like seagulls: 'They fly in, shit everywhere and leave'.

The case suggests that there is a need for a more integrated approach to school and program funding. There is a dilemma in that the large successful schools are able to manage and exploit greater autonomy, but the small schools face difficulties in utilising this autonomy. However, in both cases a more integrated approach to funding, including the combining of Commonwealth and state funding would seem to be beneficial.

Beyond this broad observation about the packaging and management of, and accountability for, school funding a number of other suggestions emerge from the study:

- The first repeats the observations from the first two cases that 'schools can't do it all – or alone'. The demands upon some schools, primary and secondary, are clearly excessive and school leaders and teachers cannot be expected to handle the range of welfare demands that confront them on a daily basis. These demands flow over into educational demands, especially in the area of the weak oral language levels of some students. Proposals that emerged from these schools included the following:

  - Support for community liaison. This is needed for both school leaders and teachers.

  - A community hub. This concerns the need for other agencies that deal with the social, health and economic welfare of students and their families to be more closely related and, arguably, located to the schools.

  - Attendance. Attendance and mobility were frequently cited as core problems in schools serving communities with high levels of educational need. Initiatives and support to deal with this have been quite successful. However, they need to be continuous.

- Literacy. Most schools, including successful schools, cited literacy as a priority all the way through schooling. Continued support for literacy programs was seen as important.

- School leadership. As with the two previous cases, the demands upon school leaders in schools with high need students were seen as excessive. Leaders in these schools have had the extra demands of supporting stable learning environments, agency interactions, and community liaison. Therefore, they have little time for instructional leadership.

- Teacher development. Teaching in high needs schools is more demanding. Teachers need the time and support to establish and embed appropriate instructional methods.

Residualisation

The educational profile of the region is relatively strong with year 12 retention rates higher than those for the non-metropolitan areas of the state and strong post year 12 transition patterns, including a higher percentage of students entering university than the state average.

However, the community does have particular population characteristics that contribute to the high risks of social and economic exclusion for some students. These characteristics tend to be spatial and therefore can have an impact upon a local school, which is just as likely to be a primary as a secondary school. This may not lead to a flight of students from these schools to the extent that was apparent in the first two regions, but it does create major demands for the school and its staff.

On the other hand there are some signs of a broader school market response across the wider community. In one sense this is identified as a hierarchy of schools. However, in another it is identified as a variety of schools, government and non-government. They include the highly successful comprehensive secondary school, grammar schools, semi specialist schools, boarding schools, and schools established to support disengaged students. This is not to suggest that this pattern of schools is optimal or that it does not advantage and disadvantage different types of schools and students across the community, or the school market. However, it is to suggest that the concept of residualisation is too limited to apply to this market.

More broadly the state does have a high percentage of small and very small schools, because of its demographics. The small schools face major disadvantages because of diseconomies of scale, gaining and maintaining quality leadership and staff, and in the maintenance and management of their schools. Once again this is not a residualisation issue. However, it is a resourcing issue.

This case is another example of an active school market in Australia. Like other markets it has the typical patterns of a social and scholastic hierarchy of schools, and schools that have been more or less successful within the market. The market patterns are influenced by the school sector and geography. However, these patterns are not universal or consistent in that there are examples of schools that have been successful despite the social and economic background of its students, the particular characteristics of spatially concentrated communities, and the existence of types of different or special purpose schooling.

Some questions relating to this type of school market are whether the typical patterns of differentiation on the basis of sectors, students' social background and enrolment levels, and whether the exceptions to this pattern can become more widespread? A possible follow up to this second question is how can the exceptions be extended, and what are the implications for funding and governance?

D.1.4 Community D

The community is a major inland town with a population of approximately 63,000. After being relatively stable in the 1990s the population has grown steadily throughout the subsequent decade. The growth rate is expected to increase over the next decade. Approximately 3.2 percent of the population is Indigenous, although the percentage of school age children is almost double this percentage. The Indigenous population has increased rapidly, rising by two thirds over the period 1996-2006. The percentage of the overall population that is under 25 is 41 percent.

It has an economic base in the areas of retail, education, defence, and rural servicing; and overall households are $950 per annum better off than the state average. The average SEIFA is 998.9. However, the community appears to be quite varied and the long drought had a big impact, especially on the small neighbouring towns.

Schooling

There are 46 schools in the community of which 36 are government schools. The market share of the government secondary schools was 52.5 percent in 2010, which is approximately 9.5 percent below the state average; and 60.2% in primary schools, which is 9.3 percent below the state average. For the period 1996-2010 these market shares have fallen by 8.6 percent and 8.1 percent respectively, which are about 80 percent and 67 percent higher than the state average trends. Students who leave government schools between the Year 5 and Year 7 NAPLAN tests tend to be of higher SES and have very different parental profiles from the students who remained in government schools.

The average ICSEA range across the sectors is as follows:

- Government primary: 856.4 to 1055.76
- Non-government primary: 979.0 to 1111.57
- Government secondary: 860.76 to 998.37
- Non-government secondary: 1049.73 to 1122.23

There are three government secondary and seven non-government secondary schools in the region. The average ICSEA for all three government schools is below that of all seven non-government schools. However there is overlap in the average ICSEA between government and non-government schools in the primary sector. These patterns are reflected in data on the parental occupations of students, as shown in Table 39 below.

Occupation	Parent 1		Parent 2	
	Year 7 government	Year 7 unknown	Year 7 government	Year 7 unknown
Professional	10.3%	23.7%	14.5%	28.4%
Semi-professional	13.4%	22.7%	16.3%	34.1%
Skilled non-professional	22.3%	23.7%	27.9%	12.5%
Low-skilled	29.0%	14.4%	35.5%	20.5%
Unemployed	25.0%	15.5%	5.8%	4.5%

Source: NSW DEC internal data
Note: 'Parent 1' refers to the parent filling out the NSW DEC enrolment form, which in 96 per cent of the cases, according to DEC research, is the female. 'Parent 2' is the other parent.

Table 39: Parental occupations of students

Of the 18 government primary schools two have experienced enrolment growth over the past decade, and of the three secondary schools one has experienced enrolment growth. Part of the primary school enrolment decline is explained through the decline of populations in the rural areas. However, several city based schools also have had enrolment declines.

On the other hand there has been a major growth in Indigenous enrolments in government schools. Fourteen primary schools have had a growth in Indigenous enrolments, although most of these schools have had a net enrolment decline. Indigenous enrolments have increased in all three government secondary schools, although they tend to be concentrated in the one of the three schools, representing about 26 percent of enrolments compared with less than 5 percent in the other schools. The growth in both sectors since 1996 has been 80 per cent for primary and 100 per cent for secondary. This growth is driven by the changing demographic profile, where the numbers of Indigenous families are increasing from a relatively low base.

Apart from enrolment declines the government schools face problems of low and falling attendance rates. Average rates for primary schools over the period 1996–2010 were 94.0 percent, and 88.9 per cent for secondary schools. Rates for Indigenous students were about 10 percent and 15 percent below these rates for primary and secondary schools, respectively. Apparent retention rates from Years 7 to 12 are -5.7 percent below state averages and from Years 10-12 are 9.9 percent below state averages. However, this data should be treated with caution because of the movement of enrolments between schools, government and non-government, and other forms of enrolment changes. On the other hand, apparent retention rates were near the state average until 1993, but have since dropped to about 10 percent below this average. Over the same period Indigenous retention rates have dropped from being above the state average for Indigenous students to being 10 percent or more below this average.

In the NAPLAN test the government primary schools perform at a level that is close to the state average. However, government secondary schools are below the state average. The percentage of secondary students receiving a senior secondary award has dropped slightly, but there is a larger drop in the percentage who received an ATAR score.

The school market

As with the other three regions the market for schooling across this community is quite robust. It shares with the third community the feature of being a regional city where schooling options for the vast majority of families are confined to the local schools, apart from a couple of boarding schools in the broader region.

The market winner and loser schools in this area are very apparent if judged upon the basis of enrolment growth. The winner schools are mainly non-government schools, a small number of primary schools (five) and two government secondary schools. However, if judged upon the basis of changes in attendance rates only two primary and no secondary schools have had improvements. However 11 of 17 primary schools have had improvements in their 2010 NAPLAN reading schools against 2008 scores, but not necessarily 2009 scores, and all of the secondary schools have had improvements, albeit minor. There has been a major fall in apparent school retention rates, although this is likely to be linked to student enrolment transfers and to a growing concentration of lower SES students in government schools, as indicated by the average ICSEA levels of the schools.

It does seem that over the past decade that the government sector in general, and a large percentage of its primary schools and one of its secondary schools have faced major pressures in the school market. As a consequence these schools have low and falling levels of enrolments, low and in many cases falling ICSEA means, high levels of absenteeism, and poor scholastic and transitional outcomes. This would appear to fit the constructs of residualisation that can be applied to the government school sector, individual schools, and smaller communities within the wider community:

- At the current rate of enrolment drift government secondary school enrolments will be below 50 percent within four years and below 40 percent within a generation. The concentration of low ICSEA students and educational need is likely to be greater and the sector faces challenges of high rates of early school leaving, and poor scholastic results, and image across the community.

- The impact of these changes has not been even across all government schools. Some primary and one, and arguably two, (out of three) secondary schools remain strong. As numerous people who were consulted noted, the government sector share of enrolments would improve if one of these schools was able to expand its enrolment. Thus the school market, as in other communities, extends through the government school sector.

- There is a clear relationship between localised communities and their schools and the wider school market. Most people consulted identified what they regarded as poor demographic and housing policies in the past as having contributed to the dynamics of the school market. The relocation of an Indigenous community from the capital city into a regional city, and subsequently to an area of poor and in many cases run down housing stock in this regional city, is widely seen as having precipitated enrolment changes in the local schools.

It is apparent that there are some government schools that remain robust within the school market. It is widely recognised that if enrolment numbers were expanded in one and possibly two of the government high schools there would be plenty of demand for places and this would halt, and possibly reverse, the enrolment drift, at least in the short term.

The policy dilemma, however, is that much of this demand would come from parents of students at the third high school, which has the weakest position in the school market. This would further undermine its capacity to provide a viable program for its students. There was a similar policy dilemma in the location of a selective or accelerated stream within one of the high schools. It was not located at this high school, presumably because this was seen as unlikely to be effective in attracting back some of the more scholastic students to the government schools. That is, these programs, which are now common throughout many government high schools in the mainland states, are only likely to succeed in attracting back the students with high levels of scholastic capital if they are located in schools that also have a certain critical mass of scholastic capital.

Therefore the policy dilemmas for the government sector are considerable. Structural options within secondary education include opening up enrolment numbers at the high schools with high demand, closing the weakest school, or establishing two Years 7 to 9 and a Year 10 to 12 school. However, each of these faces the issue of the community attitudes to what one person in the second case study termed 'a highly visible group of students'. These students need to be enrolled.

It can be noted that the percentage of Indigenous students at the third high school is about the same (25 percent) as a highly successful high school in the third case study. This raises the question of why this concentration of enrolments appears to have such a different impact across the two communities. This comparison does serve the point that school markets in Australia are localised and context specific. It raises the question of whether the differences between the two schools across the two different communities are largely explained by the quality of the two schools and the history of their leadership and programs. While these factors can never be discounted it seems likely that the wider community and school market environments have contributed to the differences. The school in the third case study is located in a larger school market and many parents, including Indigenous parents, appear to have opted in to the school. Although many of its students have high levels of education need the school is not residualised.

Across the primary schools there tends to be a more even distribution of enrolments of Indigenous students, and ranges between 10 to 30 percent for most schools. However, overall enrolment densities of Indigenous students in primary schooling are higher because of the different demographics of primary

and secondary school age students. The decline in the enrolment share of the government schools has been at much the same rate in the primary as in the secondary sector. Several people who were consulted pointed out that there are seven non-government secondary schools compared with three government secondary schools and that this is likely to be a factor in the strength of the non-government school market. However, the ratio is reversed in primary education with government schools far outnumbering non-government schools. On the other hand there are government primary schools that have higher average ICSEA levels than some of the non-government schools. Across the sector there have been contradictory trends of increased student absenteeism and improved Year 5 NAPLAN reading results.

Several people who were consulted indicated that the community 'has always been like this', and that an aspirational culture had contributed to a tendency to regard government schooling as second rate. As one person noted, "when you lose the mechanic and the pharmacist" government schooling is under pressure. It does appear that about a decade ago a catalytic point was reached that has been followed by a steady decline in government school market share and associated falls in school attendance and staying on rates.

Issues

As discussed above there are clear policy issues, especially in secondary education, of whether a neighbourhood and comprehensive approach to schooling can continue to be followed. The alternative would be for the government sector to retain a presence within the middle class by offering what amounts to a grammar school education plus alternative and probably more applied education for the more disadvantaged students. The curriculum alternatives are not as stark in primary schooling, but the trends in this community do challenge the ideal of the common or neighbourhood school where children of all creeds, race and wealth can mix. The case study raises a most challenging question of whether public education should succumb to pressures of social and scholastic separateness that are being expressed within the school market.

The impact of these trends is clearly concentrated in those schools that have faced declining enrolment and an associated concentration of high needs. The issues for these schools are common with those identified across the other three, and especially the first two, case studies.

- Teachers and leaders in these schools face major demands in supporting students, establishing stable school and classroom environments:
  - School leaders have added burdens of behavioural management, building and maintaining staff morale, managing relationships with multiple agencies, managing multiple programs, and providing instructional leadership.
  - The challenge for teachers is greater in these schools and developing and maintaining appropriate instructional modes is difficult. One principal noted that "our staff have volunteered to take one extra class per week and six extra per term", that "we could not manage if staff chose to work to award conditions". Another noted that "all of our staff are on duty every lunch hour".
- Student health is an issue identified by several school principals and education department officials. Disabilities and mental health is a common issue and students' nutrition and safety are also major issues. Schools typically have breakfast programs and some have lunch programs. One principal pointed out that "we have to feed our students before the NAPLAN tests" if they are to perform optimally.
- As indicated in the last study there have been multiple funded programs to support these schools and students, and principals have appreciated these programs, especially in the context of enrolment declines that otherwise would have resulted in staff loses. However, the

complexity of the conditions for the use of and accountability for the funds has been burdensome for schools.

- The need for schools to link and work with their communities was mentioned by virtually all school leaders.

- As with the other case studies there are limits to schooling's role and what can be expected of schools. A key challenge is to provide the support so that schools can concentrate upon their core role of education.

- Here the core issue appears to be literacy levels. All schools concentrate upon building students' literacy levels.

It should be pointed out that schooling is a vital institution for these communities and especially the children. As one principal pointed out, 'Monday is a dreadful day' for the schools, as students need to be settled after the trauma of the weekend, and the students 'are starting to get antsee' as the school holidays are only a week away. Schools are a safe place for students, and in this sense it is difficult to separate their educational role from their social support role. Arguably this should not be separated. However, the extreme challenges that this creates for school leaders and staff needs to be recognised and supported and resourced in appropriate ways.

Funding

The implications for funding are similar to those of the other three case studies. They include:

- Support for school leadership. Schools in challenging circumstances require capable and experienced leaders who are rewarded for the huge efforts that these schools require and are given support to allow them the time to provide instructional leadership.

- Assistance or resources for schools to work with families. Here school principals appreciate the impact of the NPP and believe that the resources that have been provided through the program need to be continued.

- The need to support small schools through school systems. Personnel from both the government and Catholic sectors stressed the importance of schools being part of a system. This is especially the case for small rural schools.

- Teachers and professional engagement. Teachers in rural and regional schools can suffer professional isolation and need to be supported. Those in high need schools face more difficult instructional and general school environments. They need support for developing their instructional practices and in their broader roles in the schools.

- Literacy and numeracy. Programs that assist schools to address these two core challenges are an on-going need.

Residualisation

The case study arguably represents a situation where the concept of residualisation has the greatest relevance. Here there are examples where schools have faced enrolment decline that has been precipitated by their enrolment characteristics and that has contributed to major challenges in delivering quality schooling to their students.

Over a third of parents of primary and half of parents of secondary school students have opted for fee based schooling. On a trend basis these percentages can be expected to grow. Unlike parents in the first and third case studies parents do not have the option of seeking schooling outside of the immediate community. The dilemma for some parents is that they are faced with a choice of moving residency to

get into the higher demand government schools, paying non-government school fees, or what they are likely to regard as chancing it in the schools that have had major enrolment declines.

School and school system leaders face a similar dilemma of either accepting a reality of a quasi-segregated school system and attempting to compensate schools and their communities with high concentrations of educational need, or attempting interventions that can turn around the schools that have been losing in the school education market.

D.2 The school market in operation in these regions

As has been suggested above, the term residualisation is problematic because it has used the relative market shares of the three schools sectors as the main indicators of the phenomenon in schooling. Market share should not be an issue if a community is well served by its schools and if the schools are delivering education that is of a good standard and accords with the core principles and goals of education as outlined in the Melbourne Declaration. The term also tends to be divisive as it suggests that the non-government sectors have cherry picked the school market leaving the government sector to carry the responsibility of educating for all. The Catholic sector in particular would point out that its enrolment share and profile have been relatively even and stable over the past two decades.

The enrolment drift and its social composition from government to non-government schools is apparent is a market expression, as are the enrolment shifts within the government sector. The behaviours of parents and schools as the demand and supply side actors, respectively, will vary on the basis of purpose and principle.

The issue for public policy is whether the institutional arrangements that influence market behaviours, including public funding and its conditionality, on both the demand and supply side, are optimal for the achievement of effectiveness and equity in Australian schooling. The institutional framework should also be fashioned within a framework of the rights and responsibilities of parents and students, and within a framework of the public or common good.

This serves the point that it is difficult to generalise about the Australian school market. National trends tend to be replicated at the state and territory level, although there are some variations. However, the variations are greater at the regional and community levels. There also are broader social and economic trends that contribute to the dynamics of the market. These trends also vary at the regional levels and their interactions with schooling produce different localised school market effects, and corresponding sets of issues for school governance and funding.

Nevertheless there are national trends that cannot be ignored. These trends can be regarded as national aggregation of localised trends or local expressions of national trends. The first view is clearly limited, but does have some relevance in that localised trends are quite variable. It is also relevant in that there are limitations in the practical and political scope for policy interventions in the school market.

One set of trends does stand out, partially because it applies at both a national and local level. The triple effect of small and declining school enrolments, concentrations of low SES students, and weak educational outcomes is quite consistent across all sectors and both levels of schooling. Its most intense expression is in government secondary schooling. This expression is intuitive as the secondary school market is more robust than the primary school market and government secondary schooling is mostly under greater market duress than primary schooling.

The negative scholastic impact of high concentrations of high needs students is reflected in a range of literature. More recently this impact has been explored in some detail by the New South Wales Department of Education and Training. The case studies also show that these concentrations of

disadvantage create huge demands upon school leaders and teachers, have a negative impact upon school climates, and restrict pedagogical or instructional practices. These conditions exhaust school leaders and teachers.

Enrolment sizes and social mixes are not the outcomes of education policies, notwithstanding the impact of selective entry schools and programs. They are expressions of social geography and the school education market. The options for policy interventions are limited. On the demand side the option of the reintroduction of school zoning is publicly unacceptable, and arguably would only increase a drift to non-government schools. On the supply side it is unlikely that any state or territory government would introduce regulations on social mix as have been applied to some schools in England. Policy options, therefore seem to be limited to incentives and inducements for schools, government and non-government, to broaden their social mixes and work collectively to maximise the educational options and outcomes for different communities.

Watson and Ryan[152] have analysed the impact of school funding policies on the Australian school market. They conclude that government funding by increasing the affordability of non-government schools has contributed to the overall enrolment drift to the sector. Beyond this broad point there is little else that could be laid at the door of public funding regimes. Changes in school zoning regulations have increased the overall robustness of the school market. However, they have not contributed to an enrolment drift to non-government schools, and arguably the changes were made partially as a defensive response to enrolment drift.

Beyond this the case studies suggest a range of other factors that are contributing towards a robust educational market. They include:

- Changing demographics, both at a national and local level. Smaller families have increased parental capacity to invest in education. At a local level a reduction in the school age population or a shift in residents with high levels of social and economic exclusion can act as a shock for a local school. This is more likely to affect a government school as these schools have more localised enrolments and fees tend to reduce the enrolments of children from these households in non-government schools.

- Social and economic trends. A widening Gini level and the emergence of inter-generational unemployment have concentrated economic and social exclusion in some localities.

- Localised issues of school leadership and practices can contribute to a school situation of perceived and in some cases actual weak performance. Where this occurs in a situation of vulnerability it will contribute to the flight of students with stronger social and scholastic capital. Institutional arrangements, such as leadership appointments numbers and levels that are based upon school enrolment numbers, and which do or do not take account of the relative difficulty of the school context can influence these practices.

- Increased levels of aspiration and social feelings of insecurity amongst parents[153]. Such a trend was frequently cited across the case studies and was seen as a factor that led parents to actively choose what they see as safer scholastic and social environments.

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[152] Watson, L. and Ryan, C (2009) Choice, vouchers and the consequences for public high schools: lessons from Australia, NCSPE Research Paper No. 181. National Center for the Study of Privatization in Education, Teachers College, Columbia University, June http://www.ncspe.org/seeker.php

[153] The evidence for this is difficult to assemble, partially because of definitional issues related to such concepts as the level of social trust and social capital. Some tangible evidence is from the Commonwealth survey of parental attitudes to schooling which does show a declining level of satisfaction over a period of increased investment in schooling. In 2003 83 percent of parents were satisfied or very satisfied with the quality of their children's education. This has fallen to 75 percent by 2007.- Source DEST (Department of Education, Science and Technology) (2007) Parents' Attitudes to Schooling, online: http://www.dest.gov.au/NR/rdonlyres/33EFD6E9-5343-4C6A-9F10-EF44905360D8/18554/ParentsAttitudestoSchoolingreporMay073Sept07Revisi.pdf

- Increased internal selectivity within government sector. This is a major dilemma for the government school sector. The Catholic sector on the whole has tried to avoid this, apart from the fee variations across their schools (which are less than those across the independent school sector).

- Capacity of the non-government sector to invest in school buildings and grounds. All four case studies included numerous comments about the comparative quality and look of non-government school buildings and facilities.

- The lack of or failure of interventions in government schools that have faced difficulties. This was cited in some case studies, and possibly relates to some electoral timidity on the part of state governments to make major interventions.

This is not to say that schools are not active within the school market. People who were interviewed identified marketing practices of different schools and the uneven market conditions for schools. On the other hand the Catholic sector has an effective policy of not expanding its market share and providing a parallel contribution with the other sectors to schooling in Australia. People from the government and the Catholic sector both stressed the importance of having school systems, as in their view there is little doubt that without systems there would be much greater implications for equity across schooling.

As discussed above, the principle of school choice is widely accepted in Australia and is now embedded in the education acts of some of the states. It is seen as having intrinsic value, even if its effective qualities are disputed. It is equally clear that the realisation of choice has had consequences for the sociology and possibly the performance of schooling. There are implications for equity, even though the implications for effectiveness are disputed.

The policy options open to government are unlikely to be in the area of regulatory restrictions upon the school market. Those that have been introduced or extended in recent years have mainly been selective programs in government schools, and their impact has been strongly contested.

On broader scale approaches there have been a number of strategies that are being considered, or have been initiated by school education authorities, or that have been suggested by school principals and other education personnel. They include the following:

- It is apparent that the school market and its impact are different across different regions and communities. Localised approaches would seem appropriate and nascent partnerships between schools and sectors that are apparent in some communities could be better exploited.

- Whole of agency approaches were mentioned by several people. Whole of government approaches that have been attempted over the last decade or more possibly have not been as successful as anticipated. Broader partnerships between schools, other government agencies and non-government agencies may offer better outcomes.

- Senior secondary schooling remains a major challenge within the four communities. Schools find it very difficult to diverge from a concentration upon the academic and university pathway. Alternative and well-resourced provision may be necessary.

- Teachers' roles have been expanded in many of the schools that were considered. Research into the centrality of teacher quality runs up against the reality of what can be expected of most teachers. Some means of reducing the range of teachers' responsibilities and of supporting the establishment of stable teaching environments are needed, and supporting better teaching practices would seem to be a priority.

- There is a similar issue with school leaders. Much is expected of many of them, and increased support to school leaders in these challenging circumstances needs to be provided.

- The priority of the early years was cited by a large number of people and several schools have collocated pre-school and primary school education.

Implications for school resourcing

Several people who were consulted said that 'just pouring in money' is not the solution. This is not to say that the schools that have to deal with high levels of student educational and social needs do not need more resources. Rather it is likely that these resources will by themselves deliver significantly better outcomes.

The intervention strategies that have been used are well known, with priorities on appointing and building good leadership; building expectations amongst staff, parents and students; supporting teachers to improve their practice; and the use of data by school leaders and teachers to analyse student outcomes and the effectiveness of practice and programs. These interventions can be supported by improved learning environments that are safe and amenable to learning, and investments in technologies that can facilitate teaching practice and student learning. As well, many students and their families simply don't have the funds to invest in uniforms, books, and IT and the internet.

Two of the case studies have involved major resource investments in an attempt to turn around what have been localised situations where the quality of government schooling has been poor and where parents have the only alternative options of paying fees in non-government schools or seeking access to other government schools beyond their communities. In both cases the resource interventions have been accompanied by other initiatives related to the school leaders and teachers, school programs, and school support systems. While the impact upon student outcomes cannot yet be judged, both cases show positive outcomes in terms of school enrolments, absentee rates, and morale and expectations.

The longer term question, of course, will be sustainability. Interventions that are built upon the heroic efforts of school leaders and staff are likely to be fragile. Most of the intervention strategies for weak or underperforming schools, which typically will be identified as schools that are failing in the Australian school market, are behavioural rather than structural in their foundation. They are targeted at the behaviours or the professional modes and practices of educational professionals. They relate to and are designed to improve their motivation, strategies and skills.

Given that the vast majority of resources in schooling are directed towards the cost of educational professionals this seems to be an appropriate strategy. As well, virtually all of the empirical research into educational effectiveness has identified that the attitudes, strategies, skills and practices of educational professionals are the main factors in educational outcomes, apart from student backgrounds. Furthermore a large body of research has concluded, albeit it less emphatically, that extra resourcing in schooling does not make a major difference in the level and distribution of educational outcomes.

So the challenge is to establish sustainable practices in schools, especially in those schools that have the most challenging circumstances. Teacher and school leader training, the selection of teachers and school leaders, rewards systems (pay and conditions), and appraisal systems have been identified as the means of achieving this.

The empirical research upon which these proposals rest are not as strong as those that relate to the impact of better practices. An historical view would question their validity. Teaching like other occupations is located in a wider labour market. As a mainly publicly funded occupation it is unlikely to be very highly paid in the foreseeable future. Given that there is some evidence that the practice of Australian teachers is relatively advanced[154] the capacity of generalised efforts to raise the quality of

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[154] OECD (2005) Teachers Matter: Attracting, Developing and Retaining Effective Teachers. Final Report, Paris.

teaching and school leadership as a means of countering the impact of school markets must be questioned.

This is not to suggest that these efforts are not important. However, as these case studies suggest, what has been termed as the residualisation effect is a product of the combination of social geography, structural characteristics of schooling, and localised situations that act as a catalyst. The catalyst can be demographic and social, and they can also be institutional – or put more bluntly, the quality of the local schools, their leaders and staff can be the catalyst, or at least part of the catalyst. An historical and sociological view would postulate that there is conditionality in regards to school, leadership and teacher quality. This would be two way: weaker capacity or quality is more likely to be manifest in high need schools because of the fragility of their behavioural cultures, and the conditions of high need schools are more likely to impact upon professional practice because of exhaustion and turnover.

Over the long term the capacity and motivation of school leadership and staff will wax and wain. However, structures are less variable, and structures and social geography are less pliable. As well, both of these conditions influence professional motivation and leadership. Professional morale is weaker and pedagogical practices are narrower in schools that have high levels of educational need. Teacher absenteeism is also higher.

A historical and long term view would suggest that sustainability for interventions will require the environmental conditions to be addressed. Given that the education policy cannot directly change patterns of social geography it is left to structural options. This was the rationale around school zoning and is the rationale behind the introduction and extension of selective entry schools. These initiatives are designed to attract the students with scholastic capital back to government schools in general and specific schools, respectively.

So the question for sustainability is can school resourcing systems be a means of having an impact upon the social geography of schooling. Given that the structure of Australian schooling has certainly contributed to its social geography, through its impact upon the school market, it seems likely that resourcing could have some impact. Here resource allocations could be used, in part, to leverage programs and school behaviours that are seen as conducive to more socially inclusive. As demonstrated in the vocational education and training sector, and in other countries, strategies can include the purchase of programs, which has the added advantage of allocating costs that can be more realistic for students with high levels of need, and of linking educational programs with social and economic support programs.

This is a complex question that has been little explored in the policy literature. If there is any leverage here, the case studies would suggest that such an approach:

- Should be local, as regions and communities are different and provide different challenges and opportunities;

- It would involve multiple agencies, focussed on the needs of the students;

- It might need to question some of the long and strongly held principles of comprehensive schooling; and,

- The sites and means of delivering schooling.

Appendix E The economic cost of underperformance

E.1 Analysis of the impact of socioeconomic disadvantages and school 'value-added' on students' probability to drop out of school

In this analysis we match the data from PISA 2006 standardised test scores to the Longitudinal Survey of Australian Youth (LSAY) which is composed by the students form PISA 2006. Using the matched data, we preserve all the information on students and schools available from PISA 2006 while adding extra information about students' school attainment up to 2009, the year of the last LSAY interview. By 2009 a lot of students have completed high school and went on to further education or to the labour force. We used this information in order to link socio-economic disadvantage, both at students and schools levels, to expected PISA scores in the same manner as previously with PISA 2009. We extend this analysis by linking socio-economic disadvantages, scores and school estimated 'quality' to students' schooling attainments. More specifically we look at the probabilities for students to drop out of school before completing Year 12 or equivalent. We test the underlying hypothesis that bad PISA results give a warning sign that students concerned are at risk of dropping out of school before completing Year 12. We also test the hypothesis that the estimated school 'quality' (or value added) plays a part in determining students' schooling outcome in terms of participation and completion.

In the next section we outline the estimation methodology and discuss the determinants of students' probabilities to drop out of school before completing Year 12 in the following section.

E.2 Estimating probabilities to drop out of school: methodology

In the following we estimate the determinants of students' decisions to drop out of school before completing Year 12. To do so we combine the information from the PISA data with the Longitudinal Survey of Australian Youth (LSAY) data whose first wave the students undertook is the PISA 2006 survey. The students are surveyed every year until 2009, which is the point where they have completed high school and a large proportion of them are off to further education or into the labour force. Some of them drop out of school without completing Year 12, go on to VET courses or straight into the labour force. Altogether, students are surveyed 3 times after the PISA survey.

Since we are only interested in knowing whether individuals actually complete Year 12 and in the impact of their PISA scores and school quality variables on such decisions, we do not need the panel dimension of the LSAY data. Therefore, we recorded whether or not, at some point in time, students have dropped out of school definitively without completing Year 12 and whether they complemented their high school qualification with a VET course giving them higher qualifications or not. To do this we use the last wave of LSAY and make our way back towards the first wave (PISA wave) in order to reconstitute the students' history.

An issue with the LSAY data is the fairly high attrition rate whereby one loses more than 48% of the student sample by 2009. This high attrition rate requires an appropriate econometric treatment in order to avoid selection issues in our estimation of the probabilities to drop out of school before completing

Year 12. Indeed, it is possible that the discouraged students are precisely the ones who drop out of the survey and thus the ones that are more likely to drop out of school prematurely. If it is the case, ignoring this issue would lead us to underestimate the issue of school drop outs and we would get biased estimates of the relationship between school drop out and PISA scores/ school 'quality'.

We therefore provide two sets of estimations, testing whether the non-respondents to the survey can actually be considered as randomly drawn from the student population or if they actually are a self-selected group. The first set of estimations of the students' probabilities to drop out of school assumes that a selection bias exists and corrects for it via a selection equation based on a dichotomous attrition variable followed by the estimation of the conditional probabilities to drop out of school given we have the complete student's history since 2006. We use a selection model adapted to the dichotomous nature of the variable of interest in the second equation (Van de Ven & Van Praag, 1981[155]) that is 'school dropout', taking value 1 if the student drops out of school prematurely. We estimate the conditional probability to drop out of school using full information maximum likelihood methods and correcting for the correlation between the unobserved component of the selection equation and that of the equation of interest. The test as to whether this correlation coefficient between the two unobserved components tells us whether students who disappear from the survey are actually a self-selected group. The second set of estimations ignores the selection issue and considers that students disappearing from the survey are randomly drawn from the student population. These models and their estimated coefficients are those that apply, should we find that there is no selection issue.

We use these two estimation methodologies and estimate two types of models. In the first model, we estimate students' probability to drop out of school (and not engage in further training) including regressors that have been identified in the literature (both in Australia and internationally) as determining these probabilities. Among these variables, we first control for students' motivation. Indeed, if students fail to perceive the longer term rewards associated to graduating from high school and accumulating further qualifications as opposed to reaping immediate smaller rewards from entering the labour force sooner, it is more likely that they will opt out before completing Year 12. We also add variables associated to students' disadvantage as they have already been identified as affecting students' scores and are also highlighted in the literature as responsible for student early dropouts. Consequently, we add the information available in PISA 2006 about parents' occupation type. Unfortunately, PISA 2006 does not record parents' labour force status so we are restricted to the information on whether parents are blue collar workers or not. We also add the ESCS index. Further we add information on Indigenous status and immigration status of the parents and students, and the type of community students live in, which indicates the relative remoteness of their place of residence. Finally, we control for a number of school characteristics and for State of residence.

In a second set of estimations, we further add the estimated students' scores (the fixed part) from the previous estimations along with the estimated school quality (estimated random intercept). The comparison between the two sets of estimations allows us notably to investigate whether the student disadvantage variables affect the probability to drop out of school beyond the effect they already have on the standardised score. Indeed, we know that some disadvantages affect the PISA score negatively and that lower PISA scores are likely to be correlated with higher probabilities to drop out. What we want to see in this second series of estimations is whether, after controlling for the effect they have on scores, these disadvantage variables have a further effect on dropouts. If the variable is significant in the first set of estimations (and is significant in the estimation on scores) and remains so in the second set, where the estimated scores are used as regressors, then we can say that this variable not only affects the probability to drop out via its effect on scores but it also produces a further effect on the probabilities to drop out beyond its influence on scores.

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[155] van de Ven, W.P.M.M, and van Praag B.M.S. (1981) The Demand for Deductibles in Private Health Insurance; a Probit Model with Sample Selection, Journal of Econometrics, vol. 17, pg. 229-252

As a final note on the methodology of the estimations, the estimates provided in the following tables are corrected for clustering of students among schools. In other words, we correct the estimated standard errors accounting for the fact that students belonging to the same schools are more alike than students in different schools.

In the following paragraph we discuss the estimation results on the probabilities to drop out.

E.2.1 Estimation results on the probability to drop out of school

The first estimation of the probability to drop out of school includes variables highlighted in the literature as having a significant impact. In this first series of estimations we do not add the effect of the estimated PISA scores nor the school 'quality'. In this estimation, we observe that there is a significant selection bias associated with students who drop out of the LSAY survey before its full completion in 2009, as shown by the Wald test on the Rho coefficient in Table 40. However, when performing the same test on the two equations estimation, including the estimates PISA scores, we find that the selection bias disappears. Therefore, for the first estimation of the probabilities to drop out, we discuss the results of the two equations models; while for the second estimations including the estimated PISA scores, we discuss the results of the one equation Probit model. For clarity, the interpreted results are compiled into a single table, Table 41. The previous table is only displayed in order to show the differences between the two models and to discuss the issue of the potential selection bias associated with the large number of students whose history could not be entirely reconstituted because they stopped answering the survey. The discussion of the results is based on Table 41.

In Table 41, the first two columns represent respectively the estimated coefficients of the two equations model for the probability to drop out of school excluding the estimated PISA scores from the estimation. Since the probability model used is not linear, the estimated coefficients cannot be directly interpreted save for their estimated signs. Indeed, contrary to the estimation of PISA scores proposed in the previous sections, the estimated coefficient of the present models do not represent the effect on the probabilities of a one unit change in the value of each variable. Since the models are non-linear, the effect of a one unit change in the value of each variable depends on the actual value of the variable that is it depends from where we take the one unit change. In order to obtain the information on the effect of each variable on the probabilities to drop out and be able to interpret it in the same manner as we did for the estimated PISA scores, we compute what we call marginal effects (that is the slope coefficient, or the value of the derivative of the probabilities with respect to each variable). To do so, we need to specify the value we start from for each variable. It is common practice to evaluate these marginal effects at the sample mean of the variables. This is what we do in Table 41 in the third column for the model without PISA scores and the last column for the model with PISA scores. However, throughout the discussion, we also provide estimated marginal effects for some variables assuming different values of the variable outside the sample mean. For instance, when looking at the effect of ESCS on the probability to drop out, the marginal effect for ESCS in the table tells us by how much we would expect the probability to change for a one unit change of ESCS starting from the sample mean. However, we are mostly interested in students with disadvantages; therefore we also calculate the marginal effect of ESCS on the probabilities starting from lower values of ESCS such as the first quartile of ESCS. This will indicate what would be the effect on the probability to drop out of school of a small change in ESCS for the poorest students.

The fourth column of Table 41 lists the estimated coefficients for the variables included in the second model that is the one with estimated PISA scores.

Altogether, in order to have a better view of the two models, the following figure shows how the probabilities to drop out of school change with corresponding changes in the value of variables in the model.
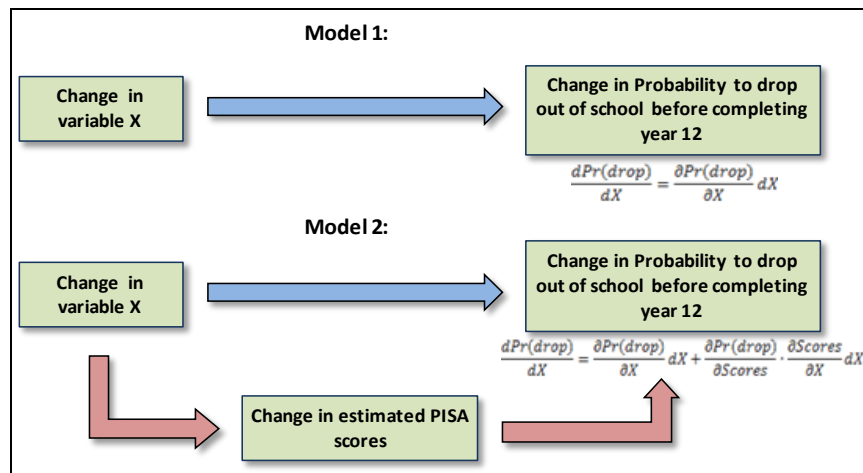
Figure 72: Effect of a change in the value of a variable on the probability to drop out of school, comparison of the two models

E.2.2 Do PISA scores influence school dropout?

Comparing model 1 and 2 from Table 41, we see that students' PISA scores are significant in the estimation of the probabilities to drop out of school. The higher the PISA score obtained by the student the lower the probability to drop out of school before completing Year 12.

However, the marginal effect of the PISA scores estimated at the sample mean of the latter is fairly small. Indeed, for a student with sample average PISA score, a 1% change in PISA score would bring about a decrease in the probability by 0.079%.

As mentioned above, the value of these marginal effects are dependent on the values of the variables themselves because of the non-linear nature of the model; they are dependent on the point we start from. Therefore we computed the value of these marginal effects (slope coefficients) for different values of the estimated PISA scores of the students. We pick three values corresponding to the three thresholds determining students' quartiles of PISA scores. In our sample these values correspond to respectively 475.9 for the first quartile threshold, 512.4 for the second and 545.9 for the last. The following figure represents the estimates of these slope coefficients for the three values of the scores along with the corresponding confidence intervals.
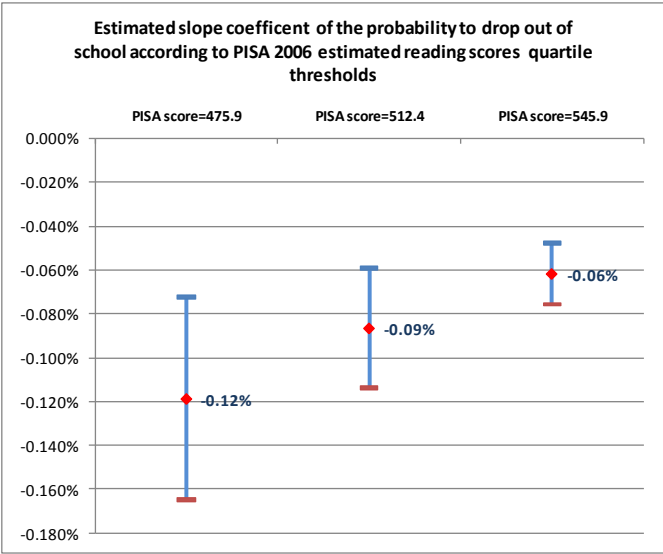
Figure 73: Estimated slope coefficients of the probability to drop out of school according to PISA 2006 estimated scores.

Further to the effect of PISA scores on the probabilities to drop out of school, we computed the estimated probabilities corresponding to the three thresholds of PISA score quartiles along with their confidence intervals assuming all other variables of the model are set to their sample mean values. Following on the assumption that students belonging to different quartiles of PISA scores may have significantly different characteristics (both individual and school characteristics) we also computed the estimated probabilities for all four quartiles of PISA score students taking the average characteristics of each student quartile. The two sets of probabilities are summarised in the following figure (Figure 74).
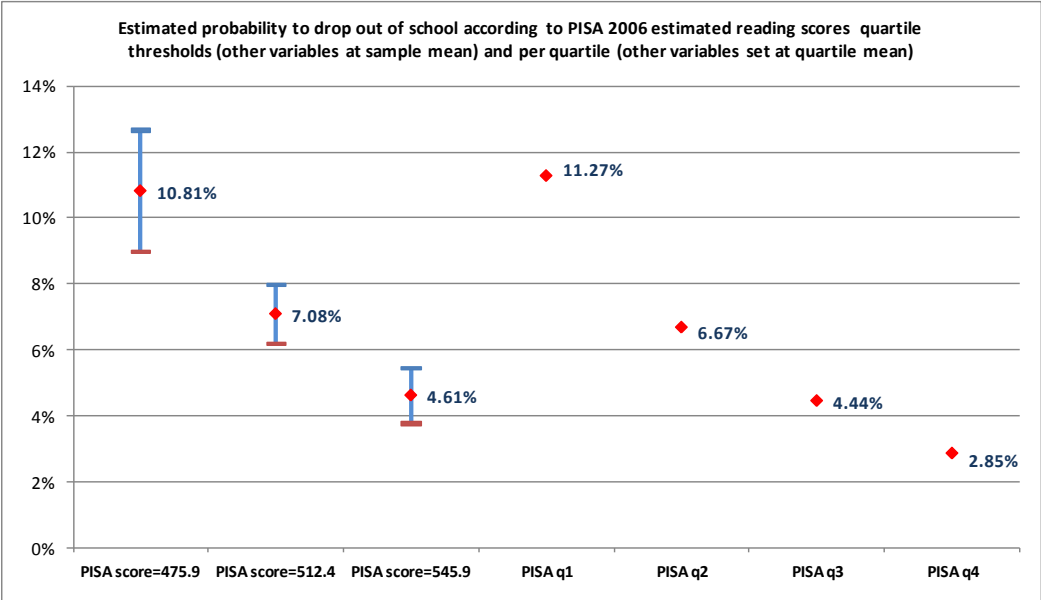
Figure 74: Estimated probability to drop out of school according to PISA 2006 estimated reading scores, quartile thresholds (other variables at sample mean) and per quartile (other variables set at quartile mean)

The results show significantly different probabilities to drop out of school according to which quartile of PISA scores the students belong to. The effect is naturally more pronounced when we account for the differences in students characteristics that are associated to each PISA score quartile, as shown by the point estimates on the right hand side of the figure.

While computing the marginal effects associated to scores, we observed that the value of the marginal effects associated with the geographical variables of the model (whether the student lives in a village, small town, etc.) showed some fairly large variations. Indeed, when computing the marginal effects of all variables assuming the three different values for the PISA reading scores we observed that the slope of such a variable as "Student lives in a town (15,000 to 100,000 people)" varied from 8.2% for people with a 475 PISA score to 4.6% for people with a 545 PISA score. In other words, people who live in a town and who obtained a PISA score corresponding to the lowest quartile threshold are 8.2% more likely to drop out of school compared to individuals obtaining the same score in a large city while individuals living in the same town but who scored 545 are only 4.6% more likely to drop out compared to same individuals living in large cities.

While, after controlling for other characteristics, we found that the residual effect of remoteness was fairly neutral on students' PISA 2009 scores, it appears that the type of community students live in produces a rather strong effect on drop out probabilities. The type of community potentially captures part of the effect of remoteness which is not available in PISA 2006[156]. We investigated further the effect of community type on the probability to drop out of school. The results are summarised in the following figure where the estimated probabilities are represented according to students' estimated PISA scores and per type of community they live in (Figure 75). The vertical dotted lines correspond to the values of the thresholds that determine which quartile of PISA scores students belong to.
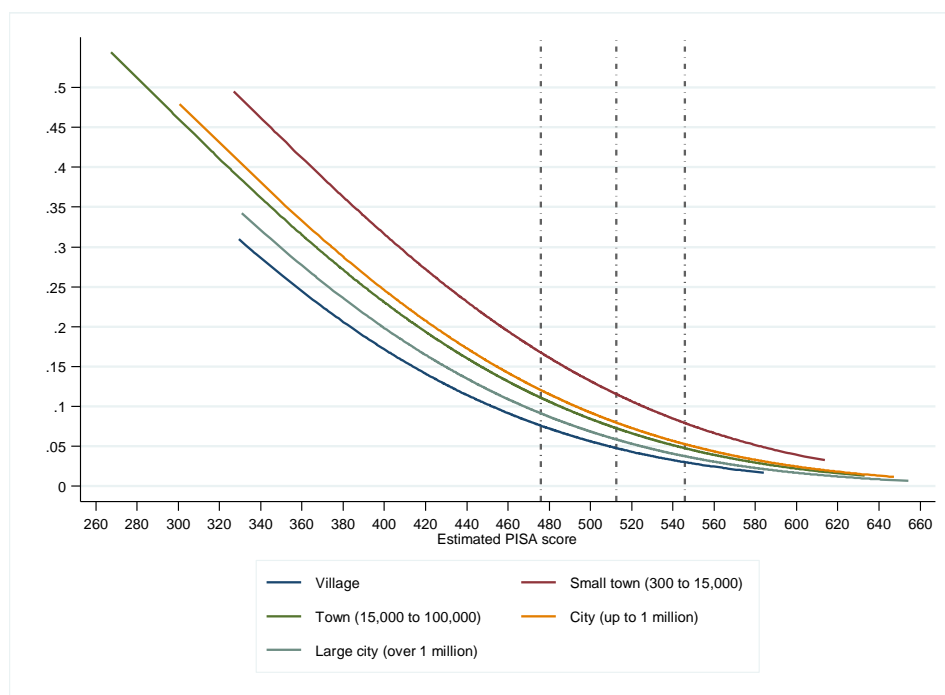
Figure 75: Estimated probabilities to drop out of school according to estimated PISA scores and community types

We observe that the effect of the community that students live in is more pronounced for people who achieved lower scores. Statistical tests enable us to say that from these estimated probabilities it appears that individuals living in small towns and in cities experience significantly higher probability to drop out of school than the same individuals living in large cities. These differences remain significant for all quartiles of estimated PISA scores but they are significantly larger for low PISA achievers.

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[156] For the combined PISA 2006 and 2009 we could not include the type of community people live in because this information was badly recorded in PISA 2009.

E.2.3 Estimated effect of Student ESCS on the probabilities to drop out of school

Whether one looks at the first or the second model, the effect of student ESCS on the probability to drop out of school is negative; that is, the higher the ESCS, the lower the probability to drop out. Looking at the marginal effects evaluated at sample means (with a mean of students' ESCS of 0.1374 in the remaining sample), both models indicate that a one per cent change in ESCS would decrease the probability to drop out by about 1.3%. The 95% confidence interval for this slope coefficient ranges, in absolute value, between 0.04% and 2.55% in model 2 and between 0.56% and 2.63% in model 1.

In the same manner as we did for the PISA scores, we computed the estimated probabilities for students located at different quartiles of ESCS and analysed the differences. Several techniques were used to compute these probabilities. First, we computed the three threshold values comprising the population of students between the four quartiles of ESCS. Second, we used these threshold values to compute the estimated probabilities of dropping out of school in the first model assuming that the other variables of the model are set to their sample mean (all students, no matter their ESCS quartile are assumed to have the sample average characteristics for all other variables). The values of these three estimated probabilities, along with their 95% confidence intervals are the first three values illustrated on the left hand side of Figure 76. For the next set of three values, we used the second model to compute the same three values, assuming any non ESCS variable to be equal to their sample mean, with the exception of the estimated PISA scores. For the students belonging to the first quartile of ESCS (lowest 25% socio-economic background students) we attributed their estimated scores obtained from the estimation on the PISA 2006 data that is 509.6. For the second threshold of ESCS quartile we attributed their expected scores of 513.6 and so on. In other words, the estimated probabilities associated to the thresholds of ESCS quartiles are adjusted by the effect of these ESCS quartiles on PISA scores which themselves impact on the probability to drop out. The probabilities and their confidence interval are represented in Figure 76 by the next series of three bars. Finally, since it is likely that students belonging to different ESCS quartiles are likely to have significantly different characteristics represented by the variables of the model, we identified the four groups of students based on the calculated ESCS quartile thresholds and computed their expected probability to drop out of school, de-facto incorporating such differences in individual and school characteristics associated with students' socio-economic background. These point estimates for each quartile are the last four dots represented in Figure 76.

If we look at these probabilities, everything else held constant (that is if we only look at the first 6 bars in Figure 76), we obtain a probability to drop out of school in the vicinity of 8.5% at the lowest ESCS quartile threshold while the probability reduces almost by half at the highest ESCS quartile threshold. Accounting for students' differences in terms of individual and school characteristics listed in the model, we observe that students belonging to the lowest 25% of ESCS have an estimated probability to drop out of school before completing Year 12 of 7.93% while the highest ESCS quartile students would only drop out with a probability of 2.2%.
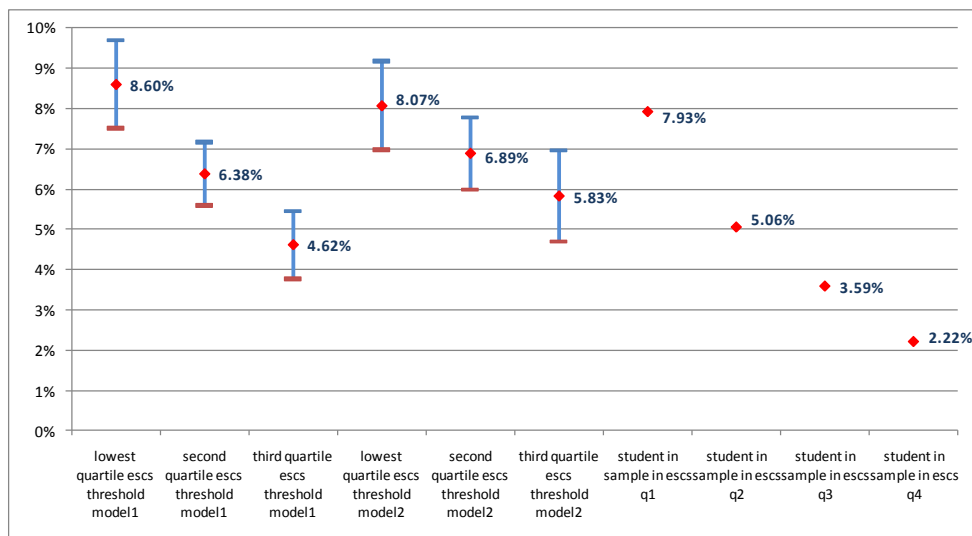
Figure 76: Estimated effect of ESCS on the probabilities to drop out of school (PISA/LSAY)

We can further investigate the effect of ESCS on students' probability to drop out of school by combining the effect of school quality with the students' ESCS and translating the effect it has on scores onto the probability to drop out of school. Indeed, as we have seen in the PISA 2009 scores estimation, individuals from lower ESCS are over represented in lower performance school as captured by the estimated residual school quality. The estimated probabilities of school dropout adjusted for scores in the figure above (second series of three bars) are given for students who attend an overall average school that is a school of residual quality set to 0. We can recompute these probabilities incorporating the effect of unobserved school quality and see how the probabilities of dropping out of school change when we place students of different ESCS quartiles into schools of different quality. To do this we must first find out the estimated PISA 2006 scores according to student ESCS quartile thresholds in different quality schools defined by the value of their quartile threshold of 'unobserved' quality as we did for PISA 2009 in Figure 19. Then given these estimated scores we can compute the probabilities to drop out of school and make meaningful comparisons.

The equivalent of Figure 19 for PISA 2006 is given in the following figure:
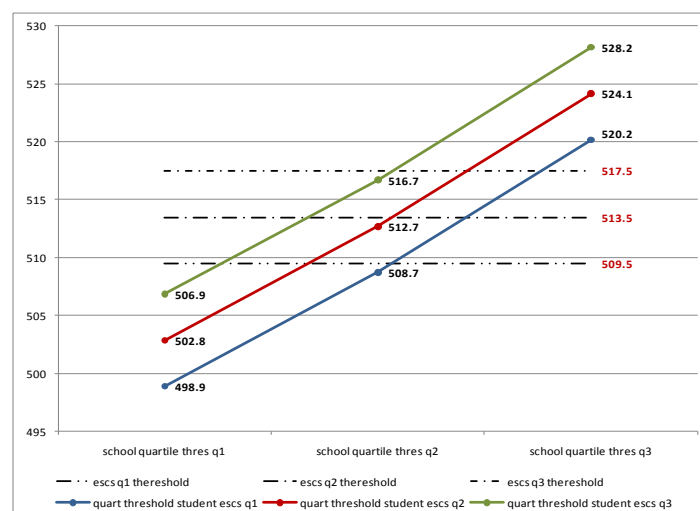
Figure 77: Estimated PISA 2006 reading score according to ESCS quartile thresholds and school quartile threshold of estimated performance (PISA 2006)

Like in the figures drawn for PISA 2009, this figure shows that for students whose ESCS corresponds to the threshold between the 25% lowest socio-economic background and the next quartile (blue line), the expected reading score is 498.9 if the student belongs to a school whose 'unobserved quality' is set to the threshold between the lowest 25% of schools and the next quartile. It is 508.7 if this student is in the next quartile of school performance and increases up to 520.2 when the school performance is set to the threshold between the third and the last quartile.

The red and green lines give the same estimated score variation information for students whose ESCS is set to respectively the threshold between the second and the third quartile and the threshold between the third and the last quartile. The horizontal lines tell us the expected score of each student type based on ESCS quartile threshold if they attend a school whose unobserved 'quality' is set to 0 (overall average performance school). It is these later values that were used to compute the drop out probabilities for each quartile threshold of ESCS in the second set of three bars in Figure 76. We now incorporate the information obtained in Figure 77 to compute the probabilities taking into account the type of school students attend. The results are illustrated in the following figure (Figure 78).

Students of lowest socioeconomic background who also attend the lowest performing school as determined by their estimated 'unobserved quality' from the PISA score estimations have an estimated probability to drop out of school of 9.58% (with a 95% confidence interval between 8.19% and 10.96%). It is about twice as much as the estimated probability for a student in the highest ESCS category who attends the best performing schools (highest quartile threshold of unobserved school effect in PISA scores) with an estimated probability of 4.89%. Note that the differences between these two categories of students correspond to the estimated lower bound of such differences since the probabilities are estimates at threshold values of each quartile. Indeed the 9.58% probability is the value for students at the junction between the first and second quartile of ESCS in a school which is itself at the junction between the first and second quartile. Therefore 9.58% is a minimum probability for this category of individual. At the opposite, 4.89% is the estimated probability for students at the junction between the third and the last quartile of ESCS in a school which itself is at the junction between the third and the last quartile of school quality. Therefore, for these individuals, 4.89% represents a maximum probability. In spite of that the difference between the two values is very large since being in the lowest ESCS and 'school quality' group amounts to experiencing a probability to drop out at least twice as large as the opposite group of students; that is, those students with the highest ESCS in the highest quality schools.
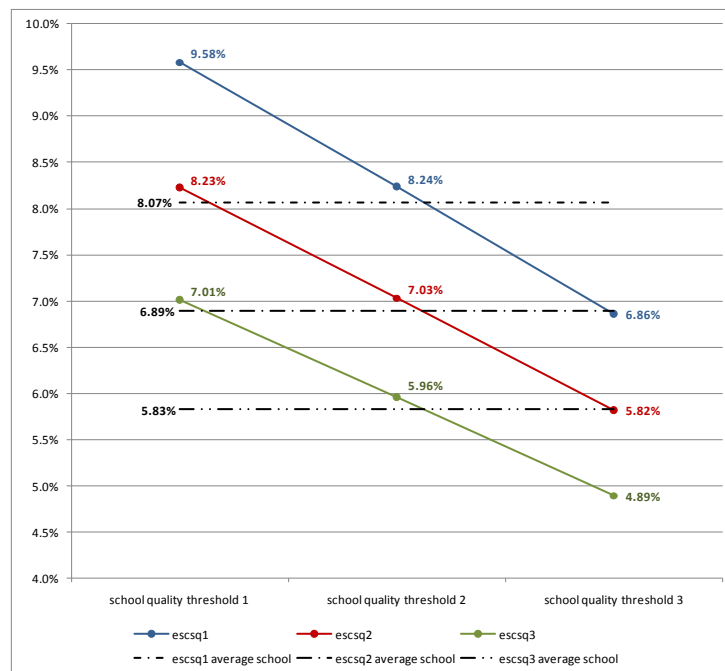
Figure 78: Combined effect of ESCS and 'School unobserved quality' on the probability to drop out of school

Students at the junction between the first and second ESCS quartiles who attend schools at the highest threshold of school performance improve their probability to drop out from 9.58% down to 6.86% that is a drop of 28.4%. Yet, compared to the highest ESCS students in the same types of schools, their probability to drop out remains more than 40% higher and corresponds to the average drop out probability of students whose ESCS is at the junction between the second and the third quartile of ESCS (in an average school).

The estimation of the PISA scores highlighted significant differences across states as regards the effect of ESCS on scores. We observe similar significant differences with respect to students' probabilities to drop out. The following figure represents the estimated probabilities with respect to students' ESCS (deviations from the population mean) by state (Figure 79). Our results show that students in Victoria, Queensland and South Australia experience significantly lower probabilities to drop out of school for all values of students' ESCS compared to ACT. The other states do not appear to be significantly different from ACT. For lower values of ESCS, the three states with lowest drop out probabilities increase slightly their differences with ACT but statistical tests do not lead us to conclude that these differences become significantly larger than that observed at the population mean value of ESCS.
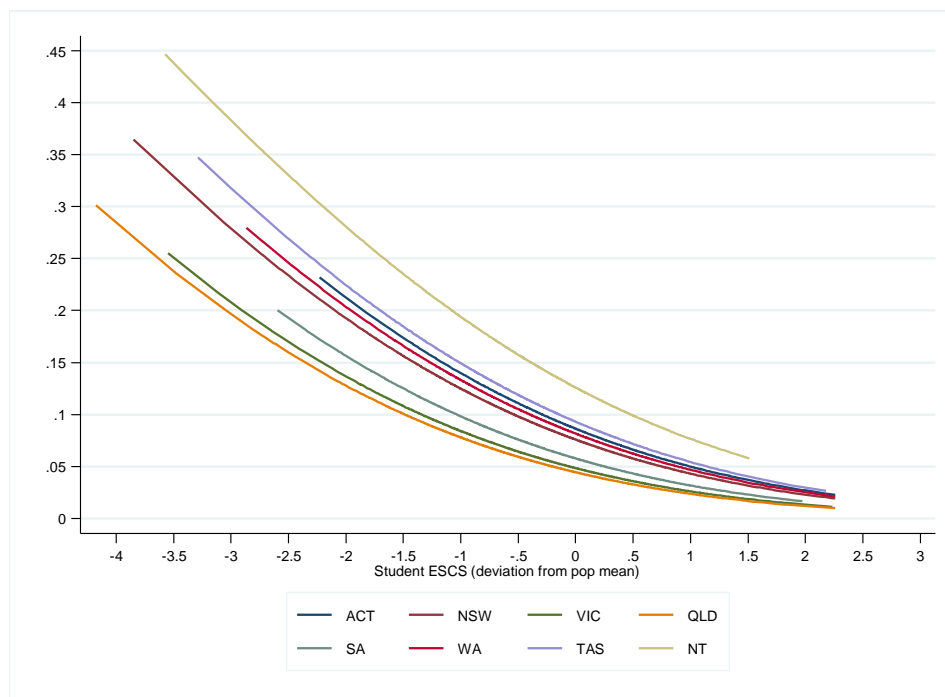
Figure 79: Estimated effect of ESCS on the probabilities to drop out of school by state

E.2.4 Other determinants of students' probability to drop out of school

Among the reasons highlighted in the literature for students' dropping out of school, the lack of knowledge regarding the future labour market outcome benefits of having higher qualifications and the fact that some individuals may heavily discount future consequences rank as very important in people's decisions (see Oreopoulos, 2007). To account for these types of motivations, we introduced two variables indicating the extent to which students are aware of how important it is for them to perform well in their high school subjects. It is the only available information in PISA 2006 that can be used as a proxy for students lacking foresight regarding the payoffs associated with higher qualifications. We have information on how important they think it is to perform well in science, mathematics and reading. However, we used only their responses on science and reading since the response for reading was highly correlated with that for mathematics because of the relatively small number of people answering by the negative in mathematics and reading. The results show that the response on the importance of reading is not significant, though it is positive, indicating that people who don't believe performing well in reading is important are more likely to drop out. The same response on science leads to a significant and positive coefficient with a marginal effect estimated at about 4.2%. In other words, individuals who don't believe that it is important to perform well in science are 4.2% more likely to drop out of school prematurely.

In the first model, Indigenous status is associated with higher probability to drop out. Looking at the second model, after controlling for PISA scores, the effect of Indigenous status is no longer significant while positive. This result seems to suggest that most of the difference in terms of dropout probabilities between Indigenous and non-Indigenous students comes from the effect of the original differences they have in terms of scores. As we have seen above, Indigenous students have significantly lower scores than non-Indigenous students. Since estimated scores produce a negative affect on the probabilities to drop out, the lower the score the higher the probability to drop out. Since Indigenous students obtained on average an estimated 37.5 to 38 points lower score in reading in 2006 than non-Indigenous students, the consequences in terms of probability to drop out if we evaluate it around the mean PISA score is

respectively 11.32% probability to drop out for an Indigenous student and 7.36% for a non-Indigenous student. As model 2 shows, if we consider two students having the same estimated PISA score in reading, one of them being an Indigenous student, their probability to drop out of school would not be significantly different. The results from model 2 suggest that there is no further disadvantage from being an Indigenous student on the probability to drop out save for the negative gap in PISA scores. Using model 1 on the left hand side, the following figure shows the gap between Indigenous and non-Indigenous students according to ESCS, the observed differences in probabilities being captured by differences in average scores as suggested by model 2 on the right hand side.
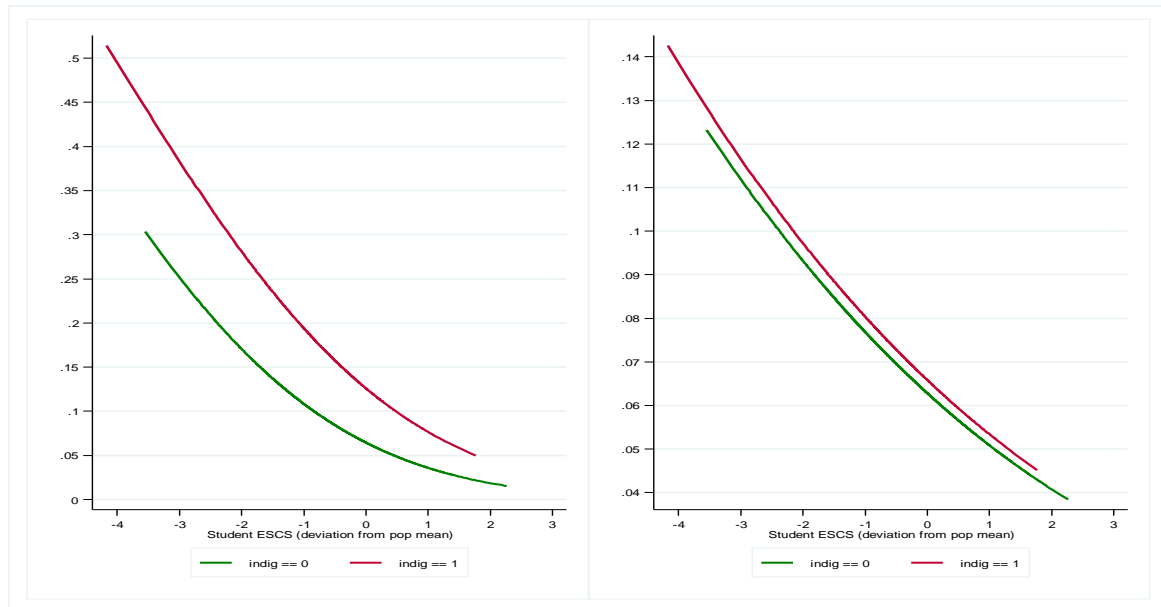
Figure 80: Indigenous vs. non Indigenous students' estimated probabilities to drop out of school by ESCS

As regards migrant status, we observe significant differences between natives and non -native students. Indeed, the results show that students speaking a different language than English at home are about 5.24% less likely to drop out of school than those who don't with a 95% confidence interval ranging from 3.8% to 6.6% (the estimate is 6.5 % when we do not control for PISA score differences in model 1). In addition, students whose mother was not born in Australia are a further 1.87% less likely to drop out of school before completing Year 12.

	Model without Estimated PISA scores			Model with Estimated PISA scores	
	attrition	dropout	Marginal effects	attrition	dropout
Student doesn't think it is important to do well in science		0.350***	0.0306***		0.275***
		(0.0566)	(0.00653)		(0.0633)
Student doesn't think it is important to do well in reading		0.0611	0.00535		0.0577
		(0.0807)	(0.00709)		(0.0949)
Student ESCS (deviation from pop mean)	0.207***	-0.183***	-0.0160***	0.0583**	-0.0812
	(0.0201)	(0.0501)	(0.00529)	(0.0243)	(0.0539)
Male	-0.160***	0.0958*	0.00839*	0.0493	-0.0600
	(0.0273)	(0.0516)	(0.00482)	(0.0304)	(0.0570)
Indigenous status	-0.242***	0.215**	0.0220*	0.0515	0.0287
	(0.0577)	(0.102)	(0.0125)	(0.0578)	(0.110)
Father is a blue collar worker	0.0234	0.105**	0.00936**	0.0321	0.100*
	(0.0292)	(0.0515)	(0.00475)	(0.0299)	(0.0545)
Mother is a blue collar worker	0.0509	0.143*	0.0137*	0.0670*	0.115
	(0.0390)	(0.0759)	(0.00817)	(0.0401)	(0.0806)
Student non Australian born	-0.202***	0.0902	0.00840	-0.0482	-0.00440
	(0.0452)	(0.101)	(0.0101)	(0.0471)	(0.109)
Mother non Australian born	0.0501	-0.167***	-0.0138***	0.00744	-0.150**
	(0.0321)	(0.0649)	(0.00522)	(0.0333)	(0.0714)
Student speaks language other than English at home		-0.493***	-0.0301***		-0.611***
		(0.121)	(0.00568)		(0.130)
Student teacher ratio (deviation from pop mean)		0.0229***	0.00200***		0.0292***
		(0.00787)	(0.000728)		(0.00910)
School's percentage of funding from government		0.000703	6.15e-05		0.000275
		(0.00394)	(0.000344)		(0.00369)

	Model without Estimated PISA scores			Model with Estimated PISA scores	
School's percentage of funding from student fees		-0.00597	-0.000522		-0.00454
		(0.00443)	(0.000398)		(0.00423)
NSW	-0.137*	-0.0691	-0.00586	-0.132**	-0.155
	(0.0779)	(0.0943)	(0.00772)	(0.0517)	(0.0948)
VIC	-0.0852	-0.289**	-0.0215***	-0.0462	-0.396***
	(0.0786)	(0.114)	(0.00743)	(0.0565)	(0.121)
QLD	-0.220***	-0.315***	-0.0230***	-0.242***	-0.385***
	(0.0844)	(0.104)	(0.00635)	(0.0606)	(0.103)
SA	-0.0164	-0.178	-0.0138*	-0.0196	-0.255**
	(0.0841)	(0.111)	(0.00773)	(0.0576)	(0.115)
WA	-0.149*	-0.0336	-0.00287	-0.216***	-0.105
	(0.0786)	(0.125)	(0.0104)	(0.0545)	(0.131)
TAS	-0.140	0.0232	0.00206	-0.160**	-0.0906
	(0.0992)	(0.104)	(0.00939)	(0.0761)	(0.101)
NT	-0.431***	0.0935	0.00879	-0.217***	-0.0784
	(0.0888)	(0.123)	(0.0127)	(0.0693)	(0.125)
School is in a village		-0.0293	-0.00251		-0.0928
		(0.122)	(0.0102)		(0.134)
School is in a small town (300 to 15000 people)		0.372***	0.0422***		0.343***
		(0.0889)	(0.0137)		(0.0912)
School is in a town (15000 to 100000 people)		0.117	0.0108		0.106
		(0.0834)	(0.00809)		(0.0851)
School is in a city (100000 to a million people)		0.159**	0.0148*		0.148*
		(0.0750)	(0.00763)		(0.0772)
Average School ESCS	0.0958			-0.118**	
	(0.0591)			(0.0538)	

	Model without Estimated PISA scores			Model with Estimated PISA scores	
Students are not grouped by ability within their classes	-0.0644*			-0.0493	
	(0.0348)			(0.0308)	
Residence in a particular area is not considered for student admission	0.0876**			0.0388	
	(0.0360)			(0.0332)	
Student records are not considered for student admission	0.0152			0.0532*	
	(0.0336)			(0.0305)	
Regional or national education authorities do not influence instructional content	-0.153***			-0.0723*	
	(0.0460)			(0.0383)	
Fixed part estimated PISA score (reading)				0.00587***	-0.00438***
				(0.000502)	(0.00162)
Estimated residual school quality				0.00508***	-0.000470
				(0.000904)	(0.00179)
Constant	0.230***	-1.806***		-2.883***	0.700
	(0.0816)	(0.403)		(0.266)	(1.011)
Athrho		0.700***			0.544
		(0.254)			(0.413)
Rho		0.604	0.604	0.496	0.496
Observations	11,399		11,399	10,899	
Number of clusters (school)	321		321	309	
Likelihood	-9149		-9149	-8638	
chi2	114.8		114.8	93.81	
P chi2 >0	0		0	1.35e-09	
Wald test of independent eqs (Rho=0)	7.608		7.608	1.736	
p > chi2	0.00581		0.00581	0.188	

Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 40: Estimations of the probabilities to drop out of school with correction for selection associated to attrition: model with and without estimated PISA scores (PISA/LSAY)

VARIABLES	Model without PISA scores			Model with PISA scores	
	Attrition	Dropout	Marginal effects	Dropout	Marginal effects
Student doesn't think it is important to do well in science Q36_1		0.350***	0.0306***	0.300***	0.0418***
		(0.0566)	(0.00653)	(0.0579)	(0.00921)
Student doesn't think it is important to do well in reading Q36_3		0.0611	0.00535	0.0608	0.00781
		(0.0807)	(0.00709)	(0.102)	(0.0136)
Student ESCS (deviation from pop mean)	0.207***	-0.183***	-0.0160***	-0.105**	-0.0130**
	(0.0201)	(0.0501)	(0.00529)	(0.0518)	(0.00639)
Fixed part estimated PISA score (reading)				-0.00639***	-0.00079***
				(0.000945)	(0.000117)
Estimated residual school quality				-0.00207	-0.000255
				(0.00152)	(0.000188)
Male	-0.160***	0.0958*	0.00839*	-0.0756	-0.00929
	(0.0273)	(0.0516)	(0.00482)	(0.0602)	(0.00742)
Indigenous status	-0.242***	0.215**	0.0220*	0.0239	0.00300
	(0.0577)	(0.102)	(0.0125)	(0.116)	(0.0148)
Father is a blue collar worker	0.0234	0.105**	0.00936**	0.0953	0.0120
	(0.0292)	(0.0515)	(0.00475)	(0.0584)	(0.00746)
Mother is a blue collar worker	0.0509	0.143*	0.0137*	0.106	0.0139
	(0.0390)	(0.0759)	(0.00817)	(0.0835)	(0.0117)
Student non Australian born	-0.202***	0.0902	0.00840	0.0101	0.00126
	(0.0452)	(0.101)	(0.0101)	(0.115)	(0.0144)
Mother non Australian born	0.0501	-0.167***	-0.0138***	-0.160**	-0.0187**
	(0.0321)	(0.0649)	(0.00522)	(0.0746)	(0.00821)
Student speaks language other than English at home		-0.493***	-0.0301***	-0.653***	-0.0524***
		(0.121)	(0.00568)	(0.136)	(0.00703)

	Model without PISA scores			Model with PISA scores	
NSW	-0.137*	-0.0691	-0.00586	-0.147	-0.0171
	(0.0779)	(0.0943)	(0.00772)	(0.102)	(0.0112)
VIC	-0.0852	-0.289**	-0.0215***	-0.432***	-0.0433***
	(0.0786)	(0.114)	(0.00743)	(0.124)	(0.00982)
QLD	-0.220***	-0.315***	-0.0230***	-0.370***	-0.0374***
	(0.0844)	(0.104)	(0.00635)	(0.110)	(0.00904)
SA	-0.0164	-0.178	-0.0138*	-0.289**	-0.0302***
	(0.0841)	(0.111)	(0.00773)	(0.120)	(0.0106)
WA	-0.149*	-0.0336	-0.00287	-0.0722	-0.00851
	(0.0786)	(0.125)	(0.0104)	(0.136)	(0.0153)
TAS	-0.140	0.0232	0.00206	-0.0708	-0.00834
	(0.0992)	(0.104)	(0.00939)	(0.109)	(0.0123)
NT	-0.431***	0.0935	0.00879	-0.0282	-0.00340
	(0.0888)	(0.123)	(0.0127)	(0.126)	(0.0149)
Student teacher ratio (deviation from pop mean)		0.0229***	0.00200***	0.0319***	0.00393***
		(0.00787)	(0.000728)	(0.00898)	(0.00107)
School's percentage of funding from government		0.000703	6.15e-05	0.000325	4.01e-05
		(0.00394)	(0.000344)	(0.00397)	(0.000490)
School's percentage of funding from student fees		-0.00597	-0.000522	-0.00452	-0.000557
		(0.00443)	(0.000398)	(0.00457)	(0.000562)
School is in a village		-0.0293	-0.00251	-0.1000	-0.0115
		(0.122)	(0.0102)	(0.144)	(0.0154)
School is in a small town (300 to 15000 people)		0.372***	0.0422***	0.369***	0.0573***
		(0.0889)	(0.0137)	(0.0908)	(0.0168)
School is in a town (15000 to 100000 people)		0.117	0.0108	0.111	0.0143
		(0.0834)	(0.00809)	(0.0906)	(0.0121)

		Model without PISA scores		Model with PISA scores	
School is in a city (100000 to 1 million people)		0.159**	0.0148*	0.160**	0.0209*
		(0.0750)	(0.00763)	(0.0810)	(0.0109)
Average School ESCS	0.0958				
	(0.0591)				
Students are not grouped by ability within their classes	-0.0644*				
	(0.0348)				
Residence in a particular area is not considered for student admission	0.0876**				
	(0.0360)				
Student records are not considered for student admission	0.0152				
	(0.0336)				
Regional or national educ authorities do not influence instructional content	-0.153***				
	(0.0460)				
Constant	0.230***	-1.806***		2.014***	
	(0.0816)	(0.403)		(0.672)	
Athrho		0.700***			
		(0.254)			
Observations		11,399		5,474	
Number of clusters (schools)		321		308	
Likelihood		-9149		-1434	
Restricted likelihood				-1664	
chi2		114.8		401.7	
P		0		0	
chi2_c		7.608			
P > Chi2_c		0.00581			
Rho		0.604			

	Model without PISA scores	Model with PISA scores
Pseudo R2		0.138

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 41: Estimations of the probabilities to drop out of school, models with and without estimated PISA scores (PISA/LSAY)

E.3 Analysis of long term impacts of low schooling outcomes

In this section we use the HILDA data (Household, Income and Labour Dynamics in Australia) in order to evaluate some long term costs associated with low schooling outcomes which follows individuals throughout their lives. We test whether individuals who dropped out of school before completing Year 12 experience a significantly different path. First we look at contract type, with the hypothesis that the lower the qualifications, the more likely an individual should be employed on a casual basis or fixed term contract rather than on a permanent basis. Second, we look at the labour force status, between unemployed, employed part time and employed full time. Following the same hypothesis, we can expect school dropouts to be overrepresented among the unemployed. Third we look at job and life satisfaction measures to see whether school dropouts experience significantly lower satisfaction, everything else held constant, than people with more qualifications. Fourth, given that school dropouts may be more likely to experience precarious working conditions as wage earners, with more frequent and prolonged unemployment spells, they may be more likely to become self-employed. We test for this hypothesis in this fourth series of estimations. Fifth, following the literature aiming at estimating the returns to education, we estimate a wage equation and provide hourly wage comparisons between different levels of education. Finally, we investigate whether the issue of over skilling on ones' current job affects school dropouts to a larger extent.

These seven series of estimations are conducted both on the whole HILDA sample and on the sample restricted to the 35 years old or less. We expect to find some differences in terms of the effect of education level on the labour market outcomes described above since the education requirements and returns have changed overtime. It is expected that younger people would pay a greater penalty for obtaining a low educational outcome than the previous generation.

E.3.1 The costs of low education on the types of labour market contracts

We estimate a multinomial probit model on the individuals' contract types between fixed term contracts, permanent contract and casual contracts. The following figure illustrates the estimated marginal effects associated to each outcomes of the regression with respect to the education variables of the model. School dropouts are taken as the reference category with a value assigned to zero. The figure shows that school dropouts are more likely to be employed on a casual basis since all other levels of education have a significantly lower probability of being employed casually. Individuals with Year 12 as their highest level of education are 5 % less likely to be employed casually (3.5% for the less than 35 years old) than school dropouts. The estimated marginal effect for TAFE graduates is between 7.5% for certificate 3 and 4 and 10% for diplomas. These figures remain stable whether we use the full sample or the less than 35 years old sample.

Looking at the estimations on the whole sample, individuals whose highest education is Year 12 or TAFE are more likely to be employed on a fixed term basis. It is no longer the case when we restrict the sample to the less than 35 years of age.
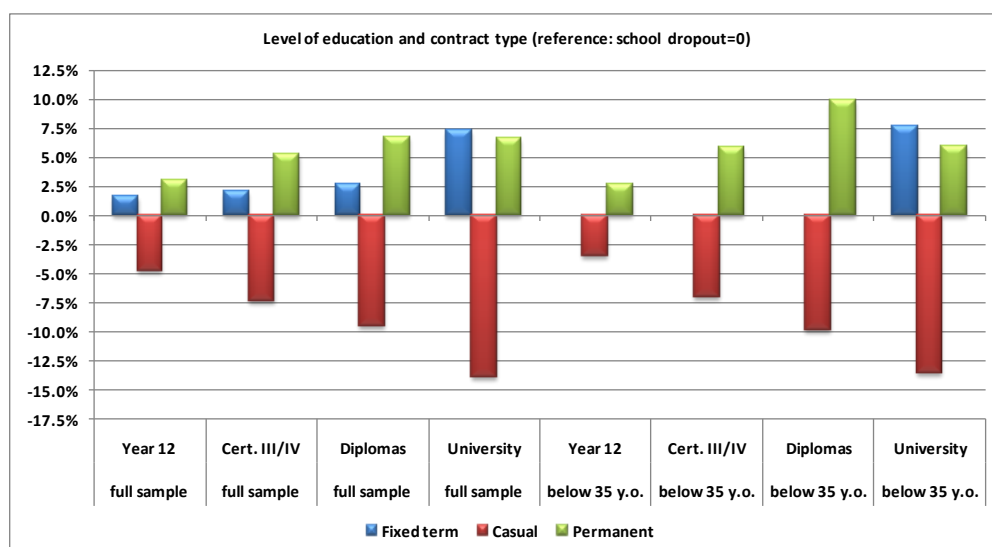
Figure 81: Type of contract and level of education (HILDA)

E.3.2 Low education outcomes and labour force status

We estimate a multinomial probit model on individuals' labour force status in order to see whether school drop outs are more likely to be unemployed or part time employed. The results show that school dropouts and Year 12 graduates are not significantly different from each other as regards their probability to be part time employed. As for the probability to be unemployed, Year 12 along with TAFE graduates at all levels (certificates and diplomas) are less likely to be unemployed than school dropouts and appear to have statistically similar marginal effects of about - 2.5% for the whole sample and up to - 4.5% for the 35 years old and younger. The marginal effect for university graduates is significantly larger in absolute value and are over 5% less likely to be unemployed than school dropouts. The blue histograms in the following figure show by how much the probabilities of being full time employed differ across education levels as compared to school dropouts. For instance, university graduates are about 12.5% more likely to be full time employed compared to school dropouts. The results show that there are significant differences in terms of the probability to be full time employed even when comparing school dropouts and those who only complete Year 12 with no further education. This remains true when we look at the 35 years old and younger. As individuals get further education, whether vocational through TAFE or through university, the differences become very important and reach the 10% gap.
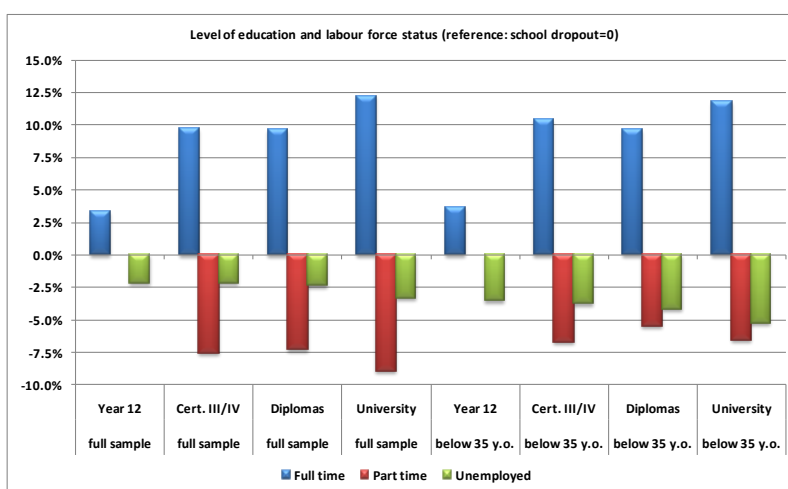

Figure 82: Labour force status and level of education (HILDA)

This result, along with the previous estimation on the relative job insecurity, shows that school dropouts are more likely to be employed casually and experience unemployment spells and less likely to be employed on a permanent and full time basis. Significant differences arise as early as when compared to individuals who only complete Year 12. The differences get worse as we compare the school dropouts to individuals with levels of education beyond Year 12. It is worth noting here that these results apply to males as gender is controlled for in the estimations so that when one observes significant differences between being full time and part time employed, the result is not due to females leaving the labour force and returning as part time employed after having children. All estimations are controlled for gender and other socio-economic variables that have an effect on labour force participation such as number of children, under aged children, age, disabilities, etc.

To sum up these differences in terms of labour force status and job security, we constructed the following table:

	Full sample (reference: school dropouts)			Below 35 years old (reference: school dropouts)		
Contract type	**Fixed term**	**Casual**	**Permanent**	**Fixed term**	**Casual**	**Permanent**
Year 12	0.0167**	-0.0470***	0.0304***	0.00832	-0.0346***	0.0263*
	(0.00733)	(0.00779)	(0.0101)	(0.00964)	(0.0115)	(0.0140)
Certificate III/IV	0.0208***	-0.0731***	0.0523***	0.0110	-0.0695***	0.0585***
	(0.00659)	(0.00714)	(0.00924)	(0.0102)	(0.0112)	(0.0141)
Diplomas	0.0264***	-0.0942***	0.0678***	-0.000977	-0.0985***	0.0995***
	(0.00955)	(0.00794)	(0.0123)	(0.0134)	(0.0132)	(0.0180)
University	0.0731***	-0.139***	0.0661***	0.0762***	-0.135***	0.0592***
	(0.00778)	(0.00661)	(0.00998)	(0.0127)	(0.0109)	(0.0160)
Labour force status	Full time	Part time	Unemployed	Full time	Part time	Unemployed
Year 12	0.0332***	-0.0111	-0.0222***	0.0367***	-0.00150	-0.0352***
	(0.0112)	(0.0109)	(0.00186)	(0.0132)	(0.0122)	(0.00374)
Certificate III/IV	0.0974***	-0.0757***	-0.0216***	0.104***	-0.0670***	-0.0372***
	(0.00914)	(0.00874)	(0.00201)	(0.0125)	(0.0116)	(0.00382)
Diplomas	0.0966***	-0.0732***	-0.0234***	0.0964***	-0.0544***	-0.0420***
	(0.0114)	(0.0110)	(0.00208)	(0.0164)	(0.0157)	(0.00337)
University	0.122***	-0.0890***	-0.0334***	0.118***	-0.0654***	-0.0523***
	(0.00934)	(0.00893)	(0.00202)	(0.0136)	(0.0127)	(0.00420)

Table 42: Education levels, contract types and labour force status (HILDA)

Altogether, as small an education level difference as that between school dropouts and Year 12, the school dropouts are more likely to be casually employed by 3.5% (less than 35 year old) and 4.7% (all sample) respectively. They are also 3.3% (3.67% for less than 35 years old) less likely to be full time employed and about 2% more likely to be unemployed. Moreover, they are between 2.6% and 3% less likely to be employed on a permanent basis. These differences widen as we compare the school dropouts with people with higher levels of education.

E.3.3 Job and life satisfaction

We used two measures of satisfaction, namely job satisfaction and life satisfaction, to look at other long term outcomes of dropping out of school. The interpretation of the results is not as straightforward as that for other more tangible labour market outcomes since satisfaction and happiness can be affected by everyday life events that may temporarily affect their level. Our estimation on job satisfaction does not yield significant differences across education levels even though the estimated coefficients for Year 12 and TAFE graduates are positive. The only coefficients that appear to be significant are that of the university graduates who seem to be less satisfied on the job. This effect may be due to the fact that the higher the qualification level, the more likely individuals may be overeducated for their job and thus dissatisfied with it.

Turning to life satisfaction, significant differences arise between school dropouts and all other education levels, such that the former experience significantly lower life satisfaction than everybody else, with the largest differences being with university graduates as shown in the following figure.
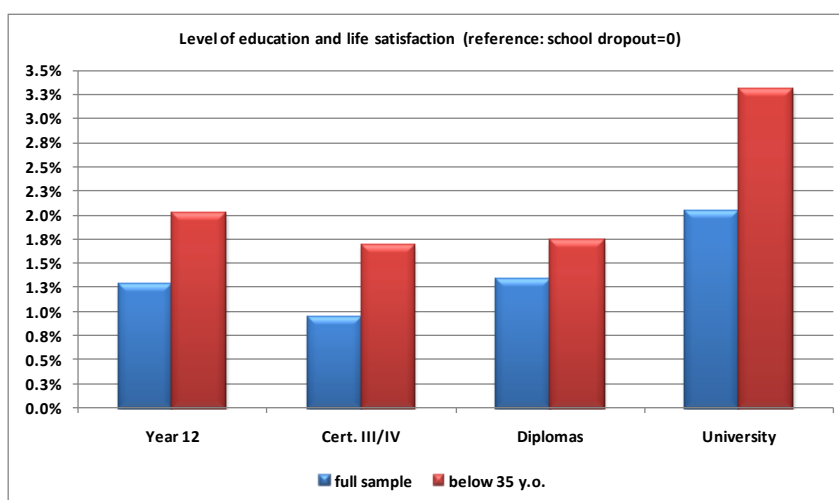
Figure 83: Life satisfaction and education levels (HILDA)

E.3.4 Education levels and probability to be self employed

We estimated the probability for individuals to become self-employed, testing the hypothesis that the returns to self-employment may be higher for school dropouts than that of being wage earners given the sizeable penalty on hourly wage associated with leaving school before completing Year 12.

By returns, we mainly mean non pecuniary returns as it is well documented that self-employed individuals experience, on average, lower earnings at the start, and facing more risk to their earnings through their lives. Yet, it is also documented that self-employed people tend to do anything to remains self-employed, suggesting that there are non-pecuniary rewards from being self-employed. If school dropouts face a situation where they incur a penalty for being wage earners both in terms of wages,

types of jobs, lack of recognition etc., we could assume that they would value the non-pecuniary rewards associated with being self-employed.

Our results are mixed as they do not allow us to fully corroborate this assumption since only University students seem to have a significantly lower probability of being self-employed than other education levels.

E.3.5 Effect of education on hourly wage

We performed estimations on earnings equations using the panel dimension of the HILDA dataset, incorporating a random effect in the equation. We analysed the hourly wage differences by education level, controlling for all other factors traditionally controlled for in wage equations. The returns to education compared to school dropouts are summarised in the following figure (Figure 84). We observe significant differences between these estimates irrespective of whether one uses the whole sample or the subsample of individuals below 35 years of age, where we observe smaller comparative returns. Using the whole sample we observe a 15% difference in terms of hourly wages between dropouts and Year 12 graduates. It is important to note here that our estimations control for individuals' age and years of experience on the job so that the observed differences in return between the two samples are not due to people's age or seniority. Using the below 35 subsample, the difference between school dropouts and Year 12 shrinks down to about 5%, which remains fairly large given the small differences in terms of qualification for these two types of individuals. Interestingly, for the 35 years old and younger, we observe that the hourly wage difference between school dropouts and TAFE graduates is larger for individuals with a certificate III or IV than it is for individuals who obtained a diploma. The estimated wage difference with a certificate III or IV varies between 13% for the 35 years old and younger and 18.5% for the whole sample. For diploma graduates, the difference is estimated to be between 10% and 25% depending on the sample used. The biggest difference arises between university graduates and school dropouts.
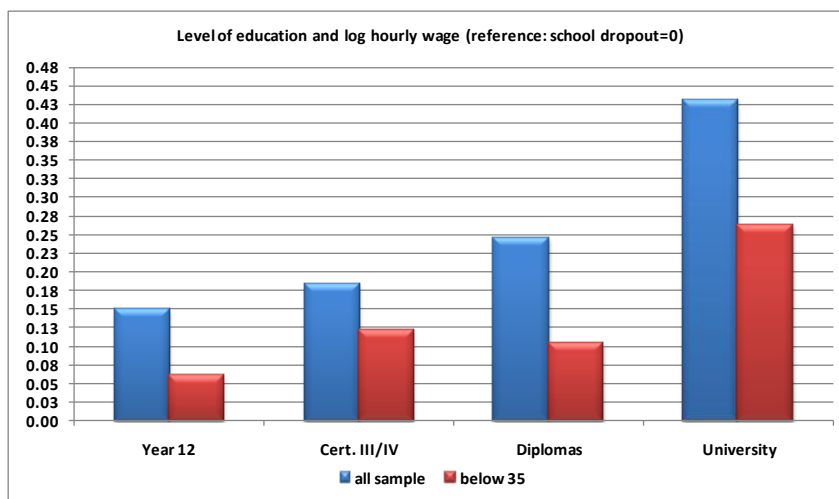
Figure 84: Returns to education (HILDA)

E.3.6 Over skilling

We estimated the probability of individuals' experiencing over skilling in their current main job. We found that compared to other education levels, school dropouts are significantly more likely to experience over skilling. The difference between school dropouts and Year 12 graduates is significant

when one uses the whole HILDA sample while it is no longer significant for the 35 years old and younger. Aside from this result, school dropouts are significantly more likely to be over skilled compared to all other education levels whether one restricts the analysis to the 35 years old and younger or not. The results are summarised in the following figure.
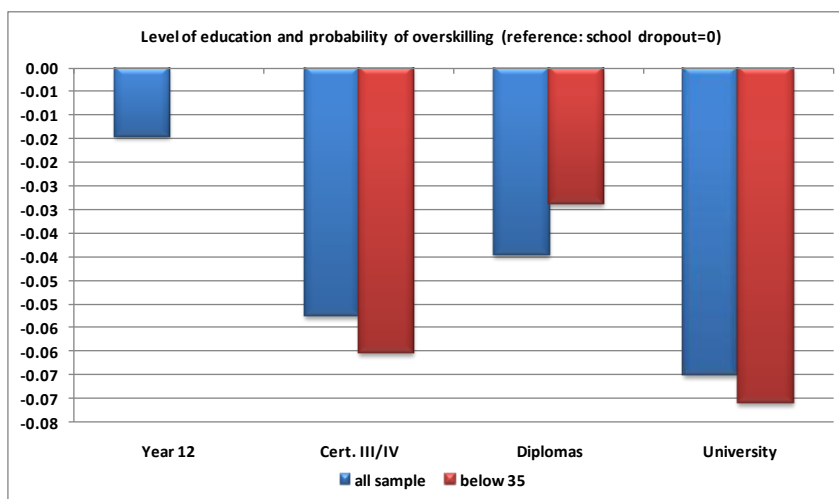
Figure 85: Probability of over skilling and level of education (HILDA)

E.3.7 Probit model tables for earnings equation

The following tables detail the outcome of the earnings equations; we are able to provide tables for other equations in this section if requested.

Log Hourly Wage (full sample)	OLS	Random effects model
VARIABLES	Coefficients	Coefficients
Female	-0.120***	-0.161***
	(0.00847)	(0.00874)
Age	0.0379***	0.0515***
	(0.00216)	(0.00224)
Age square	-0.000426***	-0.000497***
	(2.85e-05)	(2.93e-05)
Disability	-0.0632***	-0.0184***
	(0.00921)	(0.00592)
Married	0.0817***	0.0549***
	(0.00770)	(0.00672)
Urban	0.0576***	0.0465***
	(0.0111)	(0.0123)

Log Hourly Wage (full sample)	OLS	Random effects model
Dad-mid-skill	-0.0131	-0.0123
	(0.00900)	(0.00966)
Dad-low-skill	-0.0382***	-0.0441***
	(0.00860)	(0.00916)
Migrants (ESB)	-0.0137	-0.0416**
	(0.0146)	(0.0167)
Migrants (NESB)	-0.0153	-0.0383*
	(0.0202)	(0.0196)
Indigenous	0.0580***	0.0793***
	(0.0217)	(0.0233)
Hours worked per week	-0.00673***	-0.00981***
	(0.000348)	(0.000312)
Tenure in the current occupation	0.00412***	0.00204***
	(0.000428)	(0.000334)
Tenure with current employer	0.00253***	0.00343***
	(0.000611)	(0.000496)
Firm has less than 5 employees	-0.230***	-0.186***
	(0.0124)	(0.00998)
Firm has 5 to 9 employees	-0.131***	-0.107***
	(0.00980)	(0.00801)
Firm has 10 to 19 employees	-0.0943***	-0.0752***
	(0.00885)	(0.00708)
Firm has 20 to 49 employees	-0.0527***	-0.0352***
	(0.00784)	(0.00590)
Have children aged between 5 and 14	-0.0294***	-0.0456***
	(0.00827)	(0.00706)
Have children aged under 5	0.0256***	-0.0104

Log Hourly Wage (full sample)	OLS	Random effects model
	(0.00889)	(0.00739)
Percentage of time unemployed last financial year	-0.00223***	-0.00177***
	(0.000229)	(0.000208)
Union	0.0315***	0.0134**
	(0.00773)	(0.00626)
Only finished school	0.113***	0.149***
	(0.0120)	(0.0125)
Certificate III/IV	0.110***	0.184***
	(0.00991)	(0.0103)
Diplomas	0.206***	0.245***
	(0.0141)	(0.0146)
University	0.386***	0.431***
	(0.0122)	(0.0121)
VIC	-0.0331***	-0.0252**
	(0.0100)	(0.0105)
QLD	-0.0375***	-0.0119

Table 43: Earnings equation (all sample) (HILDA)

Log hourly wage (below 35 yo)	OLS	Random effects model
VARIABLES	**Coefficients**	**Coefficients**
Female	-0.0835***	-0.0963***
	(0.00979)	(0.0101)
Age	0.136***	0.154***
	(0.00907)	(0.00936)
Age square	-0.00217***	-0.00222***
	(0.000173)	(0.000177)
Disability	-0.0744***	-0.0456***
	(0.0140)	(0.0104)

Log hourly wage (below 35 yo)	OLS	Random effects model
Married	0.0708***	0.0536***
	(0.00864)	(0.00831)
Urban	0.0102	0.000533
	(0.0131)	(0.0143)
Dad-mid-skill	-0.0125	-0.0137
	(0.0106)	(0.0115)
Dad-low-skill	-0.0261***	-0.0301***
	(0.00993)	(0.0107)
Migrants (ESB)	-0.0191	-0.0469**
	(0.0191)	(0.0198)
Migrants (NESB)	-0.0227	-0.0519*
	(0.0274)	(0.0278)
Indigenous	0.0349	0.0655**
	(0.0232)	(0.0276)
Hours worked per week	-0.00607***	-0.00818***
	(0.000458)	(0.000443)
Tenure in the current occupation	0.00761***	0.00489***
	(0.00120)	(0.00107)
Tenure with current employer	0.00180	0.00328**
	(0.00165)	(0.00143)
Firm has less than 5 employees	-0.201***	-0.178***
	(0.0156)	(0.0138)
Firm has 5 to 9 employees	-0.129***	-0.112***
	(0.0117)	(0.0110)
Firm has 10 to 19 employees	-0.0952***	-0.0775***
	(0.0103)	(0.00955)
Firm has 20 to 49 employees	-0.0695***	-0.0436***

Log hourly wage (below 35 yo)	OLS	Random effects model
	(0.00942)	(0.00847)
Have children aged between 5 and 14	-0.0648***	-0.0606***
	(0.0147)	(0.0137)
Have children aged under 5	-0.00657	-0.0176*
	(0.0113)	(0.0102)
Percentage of time unemployed last financial year	-0.00182***	-0.00152***
	(0.000285)	(0.000270)
Union	0.0296***	0.0156*
	(0.00967)	(0.00906)
Only finished school	0.0584***	0.0607***
	(0.0135)	(0.0148)
Certificate III/IV	0.0886***	0.121***
	(0.0131)	(0.0148)
Diplomas	0.122***	0.104***
	(0.0194)	(0.0200)
University	0.280***	0.262***
	(0.0160)	(0.0164)
VIC	-0.0295**	-0.0338***
	(0.0116)	(0.0119)
QLD	-0.0439***	-0.0285**
	(0.0112)	(0.0121)
SA	-0.0625***	-0.0759***
	(0.0147)	(0.0168)
WA	0.00544	-0.000425
	(0.0169)	(0.0179)
TAS	-0.147***	-0.151***
	(0.0319)	(0.0324)

Log hourly wage (below 35 yo)	OLS	Random effects model
NT	0.0791**	0.0649*
	(0.0375)	(0.0389)
ACT	0.0797***	0.0675**
	(0.0290)	(0.0277)
Agriculture, forestry and fishing	-0.172***	-0.0899***
	(0.0396)	(0.0303)
Mining	0.406***	0.320***
	(0.0280)	(0.0318)
Electricity, gas, water and waste services	0.206***	0.184***
	(0.0388)	(0.0404)
Construction	0.125***	0.114***
	(0.0189)	(0.0188)
Wholesale trade	-0.0210	-0.0269
	(0.0212)	(0.0181)
Retail trade	-0.110***	-0.0726***
	(0.0157)	(0.0152)
Accommodation and food services	-0.119***	-0.118***
	(0.0179)	(0.0176)
Transport, postal and warehousing	0.0235	0.0157
	(0.0261)	(0.0243)
Information media and telecommunications	0.0937***	0.0473**
	(0.0288)	(0.0233)
Financial and insurance services	0.138***	0.102***
	(0.0238)	(0.0217)
Rental, hiring and real estate services	0.0546*	0.0195
	(0.0322)	(0.0288)
Professional, scientific and technical services	0.0552***	0.0419**

Log hourly wage (below 35 yo)	OLS	Random effects model
	(0.0181)	(0.0177)
Administrative and support services	0.0181	0.0153
	(0.0340)	(0.0279)
Public administration and safety	0.0517***	0.0586***
	(0.0177)	(0.0173)
Education and training	-0.0650***	-0.0384*
	(0.0199)	(0.0224)
Health care and social assistance	-0.0271	-0.00544
	(0.0187)	(0.0187)
Arts and recreation services	-0.118***	-0.0754**
	(0.0348)	(0.0315)
Other services	-0.0995***	-0.0691***
	(0.0234)	(0.0239)
Constant	1.094***	0.742***
	(0.114)	(0.120)
Observations	18,156	18,156
R-squared	0.338	
ll	-8362	
F	101.2	
N_clust	5638	5,638

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 44: Earnings equation (less than 35 years old) (HILDA)

Appendix F Wider health, wellbeing and civic engagement benefits from schooling

Parents are motivated by considerations other than academic reputation when they select schools for their children. They want an environment that will set up their child for a happy and prosperous future. They expect the schools to nurture their child's development, inculcate good ethics and values, and promote respectful and positive social relations. Parents also expect schools to attend to the creative needs, physical health and wellbeing, and support (where practicable) particular interests, needs or preferences.

In short, parents know instinctively that schooling is about more than producing high test scores. Teachers, policy-makers and education professionals know this too. But all could be forgiven for thinking that this point is often lost in the public debate on the quality of Australia's schools.

The OECD published in 2007 a comprehensive and ground-breaking analysis into the relationship between education and broader societal outcomes. It synthesised the relevant research to that time and therefore serves as a definitive reference.

The authors (Schuller and Desjardins) start with a discussion about the differences between economic and social outcomes, noting that the line is not easy to draw when one thinks of both direct and indirect benefits. (For example, improved health has a benefit in reduced strains on the country's health budget.) They consider also the outcomes at the individual and societal level, providing the list reproduced in Table 45.

This list gives a good high-level indication of the wider potential benefits of education and in some respects provides another dimension to the costs of inequity.

Researchers have tended to focus on three areas when considering the wider impacts of education: health and wellbeing, crime and civic engagement. The following provides an overview of their key findings. We give particular attention to the relationship between schooling and civic and social engagement which is arguably less well-appreciated.

Private non-monetary benefits	Public non-monetary benefits
Health effects	Population and health effects (controlling for income)
Reduced infant mortality	Lower fertility rates (developing countries)
Lower illness rates	Lower net population growth rates
Greater longevity	Public health
Human capital produced in the home	Democratisation (controlling for income effects)
Children's education enhanced	Human rights
More efficient household management	Political stability
Higher returns on financial assets	Poverty reduction and crime (controlling for income)
More efficient household purchasing	Poverty reduction
Labour-force participation rates	Lower homicide rates
Higher female labour-force participation rates	Lower property crime rates
Reduced unemployment rates	Environmental effects (controlling for income)
More part-time employment after retirement	Less deforestation
Lifelong adaptation and continued learning	Less water and air pollution

Private non-monetary benefits	Public non-monetary benefits
Use of new technologies within the household	Later retirement
Obsolescence: human capital replacement investment	More work after retirement
Curiosity and educational reading; educational TV/radio	Community service effects of education (controlling for income)
Utilisation of adult education programmes	Time volunteered to community services within income strata
Motivational attributes	
Productivity of non-cognitive skills	Generous financial giving within income strata
Selecting mating effects	Knowledge dissemination through articles, books, television, radio, computer software and informally
Divorce and remarriage (potentially negative returns)	
Non-monetary job satisfaction	
Pure current consumption effects	
Enjoyment of classroom experiences	
Leisure time enjoyments while in school	
Child care benefits to the parents	
Hot lunch and school-community activities	

Table 45: The potential private and public non-monetary benefits of education[157]

Health

The OECD report mentioned above confirmed the positive relationship between education and health,with some exceptions – namely the potential negative effects of education (e.g. exam pressures) on mental health.   More specifically, the authors conclude that "more years of schooling are substantially associated with better health, well-being and health behaviours."[158]

The study identified three ways in which education can affect health:

- indirectly – through education leading to higher incomes that enable people to access health services and supports

- directly – by improving an individuals' own 'agency' and therefore their ability to exercise good judgement on matters concerning their health

- intergenerationally – by providing for the health and wellbeing of one's children.

An example of the first is the apparent inverse relationship between mortality rates and skill level, which was one of the many findings linking socioeconomic status and health documented in a major 1998 review by Sir Donald Acheson for the UK government in 1998[159].

An example of the second is the lower incidence of smoking among those who have completed school. A study found that smoking among college graduates in the United States had declined sharply since 1964 but only slightly among high school dropouts. [160]

An example of the third is the observation that increased levels of education of parents, particularly mothers, leads to improved health among infants and children. Also better educated mothers have lower infant mortality rates and more commonly vaccinate their children[161].

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[157] From Schuller, T and Desjardins, R., "Understanding the Social Outcomes of Learning" Centre for Education Research and Innovation, OECD 2007, p. 45

[158] ibid. p. 13

[159] Reproduced from "The Acheson Report Up Close" at http://news.bbc.co.uk/2/hi/health/222649.stm

[160] Leigh, J. "The Social Benefits of Education: A Review Article", Economics of Education Review v17 n 3 June 1998 cited in Owens, J " A Review of the Social and Non-Market Returns to Education", 2004

Some researchers have extended the relationship between health and education further. Lleras-Muney found that education directly affects critical thinking skills that are useful in making choices that support better health outcomes. Such skills also give individuals an important advantage by increasing their likelihood of adopting and using new medical technologies.[162].

Civic and Social Engagement (CSE)

Schuller and Desjardins define civic engagement as action, or readiness to participate in action, outside the private domain or market, and with the welfare of others in mind. Political engagement is seen as a sub-set of civic engagement. Social engagement encompasses engagement in activities that are market-oriented or that relate to the private realm. CSE activities therefore span political action of different types, volunteering and the like, as well as social activities. The study also considers 'CSE-related' actions, such as critically interpreting the media and using the Internet, and the underlying conditions for CSE which must include trust in and tolerance of others as well as trust in institutions. One might argue further that a degree of self-confidence and self-esteem is needed to engage with others.

Schooling clearly provides the networks both during and after the years of education, plus the knowledge and skills for CSE. There is also a correlation in the United States between college education and registration to vote, but there is not the same connection to volunteering rates.

The authors try to understand this by drawing on an earlier study that makes a distinction between a relationship between education and types of CSE, is either absolute, relative or cumulative, as outlined below:

- **Absolute** – an individual's level of education is a driving mechanism in explaining an apparent relationship to a specific social outcome.

- **Relative** – education does not have a direct impact by changing or developing the individual; rather the effect is the change of the individual's position in the social hierarchy. It is about the relative education of a person to another.

- **Cumulative** – the outcome is conditional on the average level of education of the peer group.

The table below summarises Schuller and Desjardin's analysis of the strength of the relationship between education and the indicated examples of CSE activities.

Types of CSE	Competitive political engagement	Expressive political engagement	Voting	Volunteering	Institutional trust	Interpersonal trust
Absolute		Strong	Strong	Strong	Strong	
Relative	Strong	Weak	Weak-Strong	Weak		
Cumulative						Strong

Table 46: The relationship between education and types of CSE

This influence of education on CSE is delivered via:

- the direct development of the self, that is an improvement in an individual's agency, knowledge and skills;

- or through the environment, which includes the student's access to networks and association with peers, as well as the values espoused and modelled around them.

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[161] Wolfe, B and Zuvekas, S, "Nonmarket outcomes of schooling" International Journal of Education Research 27 (6), 1997 cited in Owens, J. above

[162] Lleras-Muney, " The relationship between education and adult mortality in the United States", *Review of Economic Studies, 72,*, 2005

Helliwell and Putnam counter this with evidence that increases in both one's own and the average level of education correspond to significant increases in social trust and tolerance. For individuals, this also translates to a greater likelihood of being engaged citizens –in terms of both civic and social engagement and participation in professional organisations.[163] Green, Preston and Sabates make a related argument that improving educational equity can be an important response to growing social fragmentation and cultural division.[164]

With respect to indicators of political engagement, researchers have tended to look at probability of voting, reading of newspapers and membership of political organisations. A study undertaken in the UK and USA found an association between education levels and the degree to which people follow election campaigns in the media, associate with a political group, discuss politics generally and/or work on local community issues.[165] Another found that college education in the United States began to emerge as a valuable predictor of voter turnout in the 1980s, although the effects of rising education levels generally on political knowledge have not necessarily risen.[166]

Social mobility is an important factor when thinking about civic and social engagement more generally. Unsurprisingly, there is clear evidence of a link between educational attainment and social class attainment, given that some occupations (such as medicine and law) are accorded high social class status. Across all generations educational attainment has been found to directly contribute to social class mobility. It therefore remains a fundamental mechanism that acts to either hold individuals in the social class they were born into, or make it possible for them to move from one class to another.[167]

So what can schools do to ensure that those positive influences are there and can be taken full advantage of by all students?

After investigating the contributions of various school 'inputs' – such as extra-curricula activities, group activities and classroom climate – Schuller and Desjardins conclude that "the curriculum, school ethos and pedagogy are key variables that shape CSE (and that) …learning environments that stress responsibility, open dialogue, respect and application of theory in practical and group-oriented work seem to work better than just 'civics education' on its own." [168]

Focussing on developing students' motivation and abilities for CSE therefore means nurturing an interest and trust in civic and political institutions, but also valuing self-belief and creating opportunities for students to engage in respectful dialogue where they can practise safely developing and articulating their own views. It involves a pedagogical focus on the 'how' of learning as much as the 'what '.

Anecdotal evidence would suggest that most schools in Australia incorporate such considerations into their school values and teaching.

However, there is no available measure to assess how well this is done, or what the overall impact on outcomes for students or for society may be. This would mean, for the former, assessing relative capability to navigate life's complexities, to fulfil ambition and to engender trust. For the latter, the expected benefit to be tested would be no less than whether democracy has been 'strengthened'.

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[163] Helliwell, J. F. and Putnam, R. D., Education and social capital. *Eastern Economic Journal, 33*(1), 2007

[164] Green, A., Preston, J. and Sabates, R., Education, equality and social cohesion: A distributional approach. *Compare: A Journal of Comparative and International Education, 33*(4), 2003

[165] Milligan, K., Moretti, E. and Oreopoulos, P., "Does education improve citizenship? Evidence from the United States and the United Kingdom." *Journal of Public Economics, 88,* 2004 See also Dee, T., "Are there civic returns to education?" *Journal of Public Economics, 88,* 2004

[166] Burden, B. C., "The dynamic effects of education on voter turnout". *Electoral Studies, 28,* 2009

[167] Johnson, W., Brett, C. E. and Deary, I. J., "The pivotal role of education in the association between ability and social class attainment: A look across three generations". *Intelligence,* 2010

[168] Schuller, T and Desjardins, R., "Understanding the Social Outcomes of Learning", Centre for Education Research and Innovation, OECD 2007, pp. 13-14

We can look at the curricula, teacher training content and school value statements, but there is no current data that would enable us to directly observe the impact of these approaches on student outcomes and life prospects. This is not to say that we should start measuring such things, for then the fear may be that:

- too much is unreasonably expected of schools – they cannot take responsibility for producing students who are wholly committed and able to engage in civic and political activities. It should be part of the objectives of schooling but not the subject of specific accountabilities.

- we start testing for the 'wrong' things and therefore risk the emergence of perverse results – there would need to be lots of proxies for CSE which would inevitably have an 'inputs' rather than 'outcomes' focus due to measurement challenges.

What is important, however, is to ensure that teachers are well-trained to help students practice debate about ethics, 'civics' and society in a safe and respectful environment; to explain the value of what they are doing; and to instil trust in each other and in institutions in the process. In this case, it is probably enough to have established that there is a relationship between education and CSE. The 'means' probably have enough justification on their own without proven 'ends'.

Wellbeing

There is evidence that suggests a relationship between education and happiness. Several studies drawing on survey data from the US, Canada and UK found that the likelihood of being very or fairly happy increases with compulsory schooling[169]. Oreopoulos used analysis of compulsory schooling laws to evaluate the decision to drop out of high school in terms of lifetime opportunity costs. He a link between more schooling and a decreased likelihood of reporting poor health, depression, looking for work, being in a low-skilled manual occupation and being unemployed. Additionally, individuals with more compulsory schooling had an increased likelihood of reporting being overall satisfied with their life.[170]

Lefgren and McIntyre examine the issue of family stability and suggest that education's noticeable impact on the likelihood of divorce is related to educated women having more information regarding match quality, and educated couples being able to make 'relationship-specific investments' that reduce the incidence of divorce.[171]

Children can experience all sorts of traumas and stresses and schooling can both contribute to them or help build the resilience to help students work their way through such challenges. It is particularly noteworthy that transitions between schools, regardless of the circumstances, are always difficult so there is a particular responsibility of educators to help students prepare and adjust.

Gutman et al[172] have plotted the trajectories of children's wellbeing from the mid- years through to adolescence and found a steady decline in wellbeing through primary school, with an accelerated drop in the early years of high school. Girls experience a steeper drop in 'emotional' wellbeing (anxiety, moods, fears, obsessions) while boys are more likely to experience decreasing 'behavioural' wellbeing. (Behavioural wellbeing covers attitudes to school, truancy, issues with attention or treatment of peers.)

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[169] Oreopoulos, P., "Do dropouts drop out too soon? Wealth, health and happiness from compulsory schooling". *Journal of Public Economics, 91*, 2007; Michalos, A. C., "Education, Happiness and Wellbeing. *Social Indicators Research"*, 87, 2008; Oreopoulos, P. and Salvanes, K. G. (2011). Priceless: The non-pecuniary benefits of schooling. *Journal of Economic Perspectives, 25*(1), 2011

[170] Oreopoulos, P., "Do dropouts drop out too soon? Wealth, health and happiness from compulsory schooling". *Journal of Public Economics, 91*, 2007

[171] Lefgren, L. and McIntyre, F., "The relationship between women's education and marriage outcomes", *Journal of Labor Economics, 24*(4), 2006

[172] Gutman, L.M., Brown, J., Akerman, R. and Obolenskaya, P., "Change in Wellbeing form Childhood to Adolescence: Risk and Resilience", Research Report 34, Centre for Research on the Wider Benefits of Learning, February 2010

While the study does not go into assessing the role that teachers and students can play to alleviate this pattern (admittedly a UK sample but likely to resonate in an Australian context), it is clear from other observations that supporting healthy peer relationships, and being attuned to the dynamics of and influences on student wellbeing are examples where schools can contribute to arresting and reversing the downward trend.

Moreover, as discussed earlier, there is a strong correlation between education and mental health (mostly positive, except for the raised stress associated with assessment). This, along with the nurturing of self-efficacy and resilience in students, underlines the extent to which schooling can support improved wellbeing and a positive outlook.

Crime

Finally, any discussion of education's contribution to wider societal outcomes must address the relationship between schooling and crime. There is ample evidence showing the more education an individual has completed, the less likely he or she will be convicted of a crime. This is not just due to economic factors – that is, a higher proportion of school graduates earning stable incomes (though that is an important factor[173]).

The frequency of more serious crime is significantly higher among lower educated people.[174] The probability of incarceration for those who have completed high school is reduced, and the higher the level of education, the lower the risk of incarceration. In the United States, a direct correlation was also found between state investment in education and a reduced likelihood of youth being incarcerated as adults.[175]

Lochner and Moretti highlight the importance of the economic implications of even small reductions in crime associated with increased schooling. They estimate that a 1% increase in male US high school graduates would amount to $1.4 billion in social benefits from reduced crime[176].

It is not just the fact of being educated that is important. The relationship between schooling and crime points to the values and qualities that can be instilled in the school environment. While students are at school, it is evident that positive influences from the school community, and the existence of a bond with the school itself, can serve to discourage various forms of delinquency that might evolve into criminal behaviour.[177]

This brief overview of the various ways in which education can contribute to the development of more successful individuals – successful in their ability to engage positively with the world, to experience better health and wellbeing, and to be resilient in the face of risk or adversity – offers an indication of the broader societal benefits gained from education. The findings underline the need to continue to focus on the potential outcomes for the individual and the community that extend beyond educational achievement. They remind us of the need to create a safe environment and a strong, positive school ethos.

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[173] See Lochner, L., "Education, work, and crime: A human capital approach. *International Economic Review, 45* (30, 2004

[174] Groot, W. and van den Brink, H. M., "The effects of education on crime". *Applied Economics, 42,* 2010

[175] Arum, R. and LaFree, G., " Educational attainment, teacher-student ratios, and the risk of adult incarceration among U.S. birth cohorts since 1910", *Sociology of Education, 81*, 2008

[176] Lochner, L. and Moretti, E., "The effect of education on crime: Evidence from prison inmates, arrests, and self-reports". *The American Economic Review, 94*(1), 2004

[177] Sprott, J.B, Jenkins, J.M., Doob, A.N., "The Importance of School: Protecting At-Risk Youth From Early Offending", Youth Violence and Juvenile Justice, January 2005