



aisnsw
Institute

ACADEMIC ACHIEVEMENT IN
NSW INDEPENDENT SCHOOLS

Research Briefing – May 2016

ACADEMIC ACHIEVEMENT IN NSW INDEPENDENT SCHOOLS

This paper reports on the findings of research commissioned by the AISNSW Institute into the academic achievement of NSW Independent schools.¹ The findings reinforce the judgement of the parents of some 191,000 students attending 470 Independent schools in NSW that these schools really do make a difference and add value to academic achievement. The evidence suggests that Independent school students benefit from the capability and professionalism of their teachers and a school climate that values academic achievement, provides personal support and a safe and ordered environment, and fosters a sense of belonging to a community.

In an increasingly technological age, education outcomes are a key determinant of social wellbeing and economic prosperity, for the nation and for individuals. There is ample evidence establishing a causal link between a well-educated population and national productivity and social cohesion, stability and engagement. Even relatively small improvements in a nation's education performance have been shown to have a large impact on national productivity and prosperity. Differences in education achievement explain the majority of differences in economic growth rates across OECD countries, at the same time as education performance deficits explain serious shortfalls in economic performance.

The private returns to an individual over a lifetime from a good education are also well established, both

in terms of earnings capacity and quality of life. As economies develop and require higher levels of skill, quality education becomes increasingly important in determining an individual's scope to have a productive and fulfilling life.

Independent school students benefit from the capability of their teachers and a school climate that values academic achievement, provides personal support, a safe ordered environment and a sense of belonging in the community.

Despite its importance however, academic achievement is often a missing element in education debates, overshadowed by issues such as funding, teacher quality and the social background of students. The need to promote high performance and challenge and extend high potential learners is rarely addressed, yet the evidence on education

performance in Australia highlights this as an issue needing serious attention.

Measures of education achievement

NAPLAN, Year 12/HSC results/ATAR scores and PISA tests² are the measures of academic outcomes generally used as indicators of school quality, in the absence of better ways of measuring achievement of the broad goals of schooling, which extend well beyond academic results. Each measure gives only a partial, incomplete picture of school quality.

The annual NAPLAN tests, for example, administered to students in Years 3, 5, 7 and 9, focus on achievement in literacy and numeracy. While these are necessary

² NAPLAN – National Assessment Program – Literacy and Numeracy; HSC – Higher School Certificate (New South Wales); ATAR – Australian Tertiary Admission Rank; PISA – Programme for International Student Assessment.

¹ This research, undertaken by Dr Gary Marks, is presented in a Technical Report, available at www.aisnsw.edu.au

foundational skills, they are but a small part of the wide range of skills students need to develop in their schooling years. NAPLAN results at the school level are reported as achievement below or above minimum standards. They provide useful information about achievement against national standards and allow comparison of various cohorts of students for accountability purposes, but overemphasis on basic skills and reaching minimum standards (which may be set quite low) can be at odds with a pursuit of excellence and high academic achievement.

Academic success in Year 12 examinations is the most objective measure of performance available for those students going on to higher education. Setting high standards and ambitious learning outcomes and testing these through external examinations are internationally recognised hallmarks of high performing

schools and education systems. Despite continuing debate about the value of university entry scores and a prevailing view that end-of-school results are inconsequential, the weight of research findings in Australia shows that university entry scores are the strongest indicator of academic performance at university over the course of a degree, and are related to life chances post-university.

The OECD PISA tests conducted in a three-yearly cycle on a sample of 15-year-olds across the country are broad-based measures of basic knowledge in the fields of science, mathematics and reading literacy; they also measure higher order thinking and problem solving skills in these subject areas. Each PISA assessment cycle has a particular focus on one of the three domains – in 2012, it was mathematical literacy, in 2015 science. The PISA results have high credibility as a measure of the quality of schools and school systems and are a rich source of data on the connections between student performance, attributes of students and their families, and features of schools and systems.

Academic performance in Australia

The NAPLAN results for 2015, published in August 2015, show a relatively stable level of performance

in the basic skills of literacy and numeracy across the nation, with little discernible improvement on previous years' results. The results for NSW were consistent with this national picture, prompting policy commitments to increase the proportion of students in the top performing bands and improve the performance of Indigenous students.

The results of the 2015 round of PISA testing will be available for analysis late in 2016. The full analysis of Australia's performance in the 2012 PISA tests

published in 2013 shows a decline in education achievement, fuelled by a persistent number of low performing students and a fall in the number of students achieving at a high level. Across Australia, performance in mathematical literacy declined significantly between 2003 and 2012.

While Australia is still rated as a high performing, high equity country, its international ranking overall has dropped from 11th in 2003 to 19th in 2012, and the average score in mathematical literacy, the main domain of both the 2003 and 2012 PISA tests, has dropped by 20 score points, from 524 to 504, the equivalent of more than half a year of schooling³. NSW students achieved slightly higher than the national average, with a mean score of 509. The proportions of students in the state performing at low and high levels of proficiency were similar to the national figures.

The proportion of students at low and high proficiency levels is a critical indicator of the effectiveness of an education system. Compared with highly ranked countries, Australia has a high proportion of low achievers – 20%, compared with 4% to 13% for the five top ranked nations – and a lower proportion of students performing at the highest proficiency levels – 15%, compared with 56% to 31% for the five top ranked nations.

Between 2003 and 2012, the proportion of low performing students in Australia has increased by 5% and the proportion of students performing well has decreased, also by 5%.

³ As a point of reference, 35 score points corresponds to about one year of schooling.

Performance of NSW Independent schools

Students attending Independent schools in NSW perform well academically. The various measures of schooling outcomes used by governments and education researchers show that for observed results, Independent school students on average achieve at a high level.

While the NAPLAN results are not officially published by school sector, they are made available to school authorities and individual schools. Research studies using the raw NAPLAN data show students in Independent schools have substantially higher scores in all the NAPLAN domains than students in other sectors, with a higher proportion of Independent school students among the highest achieving cohort and a smaller proportion among the lowest achievers.

These sectoral differences tend to increase as students progress through their schooling, and are mirrored in other sets of achievement data. Independent schools in NSW have consistently performed strongly in the HSC, dominating unofficial lists of the highest achieving schools alongside academically selective government high schools. Research studies have established that students from Independent schools on average have higher university entry scores than students from Catholic and government schools. For example, in 2011 in Victoria, Independent school students on average achieved an ATAR score (a score of 1 to 100) 17 points higher than government school students and 8 points higher than Catholic school students.

Published results of the 2012 PISA tests show that nationally, students in the Independent school sector scored significantly higher than the mean scores for students nationally and in the state. In mathematical literacy, students in Independent schools on average scored 37 points higher than the national average. A significantly higher proportion of Independent

school students performed at the highest proficiency level than the national average – 23% compared with 15% – and a significantly lower proportion of Independent school students performed at the lowest proficiency level – 9% compared with 20%.

In NSW, Independent school students scored significantly higher than the state average for all students, also outperforming the mean score for the state by 37 score points. The mean score in mathematics for NSW Independent school students was 546, compared with the state average of 509, the Australian average of 504, and the OECD average of 494. On the raw data, Independent school students scored 30 to 40 points higher than Catholic school students across the range of PISA domains and 50 to 60 points higher than government school students.

While directly comparable data is not available, the commissioned research shows that, consistent with the national figures, NSW Independent schools have a higher proportion of high performing students and a lower proportion of low performing students than the average across the state.

2012 PISA: mathematical literacy for selected jurisdictions

Jurisdiction	Mean Score	% Top Performers	% Low Performers
Shanghai-China* ¹	613	56	4
Singapore* ²	573	40	8
Hong Kong China* ³	561	33	9
Chinese Taipei* ⁴	560	37	13
Korea* ⁵	554	31	9
Independent schools NSW	546	**	**
Independent schools Australia	541	23	9
Finland* ¹²	519	15	12
ACT all schools	518	18	16
Canada	518	16	14
Catholic schools Australia	514	14	14
NSW all schools	509	17	19
Australia* ¹⁹	504	15	20
Victoria all schools	501	12	20
New Zealand	500	15	23
United Kingdom	494	12	22
OECD average	494	12	23
Government schools Australia	489	13	25
United States	481	9	26

*Ranking in 2012 PISA.

**Directly comparable data is not available for NSW Independent schools.

Looking beyond the observed results

These achievements of Independent school students are often dismissed as being no more than a function of selection and privilege. Arguments are made that Independent schools themselves add no value as they select students on the basis of academic merit or potential; that students in Independent schools are far better resourced; and that Independent school students have the benefit of a wealthier, more advantaged family background.

In reality, there are very few academically selective schools in the Independent sector; neither national nor international evidence establishes a link between per student resources and achievement; and while it is unarguable that on average the socioeconomic status of families choosing Independent schools is higher than that of families whose children attend Catholic or government schools, each sector caters for families from all income levels and the distribution of schools in the three sectors by socioeconomic status is quite similar.

For decades now, education research has recognised the strong link that exists between family socioeconomic status and schooling outcomes, yet deeper analysis of achievement data show that family background typically can explain only a small part of the variation in student achievement (on average across the OECD, about 15% of the variation in PISA scores). Parents' education levels and the value they place on education appear to be the critical elements of family background rather than wealth. In addition to their family background, students' performance at school is influenced by their own attitudes and behaviours and by school and teacher quality. Family background itself is far from deterministic. When other factors such as student ability, quality teaching, expectations and attitudes and non-cognitive attributes such as motivation and perseverance are taken into account, socioeconomic background has been found to be only weakly related to achievement.

Recent studies in NSW using multilevel modelling, which compares achievement while controlling for student and school factors, show that the correlation between outcomes and socioeconomic status is much weaker than the link between outcomes and prior performance. Prior achievement is more than 10 times more influential than student socioeconomic status on outcomes for primary students, and more than 20 times more influential for secondary students.

In most public presentations of school achievement data, one or two layers of socioeconomic analysis are applied to the raw results. In the case of the Australia-wide 2012 PISA results, for instance, when

students' socioeconomic background was taken into account, students in Independent schools still performed at a significantly higher level than the national average, but the difference is reduced

by about one-third. Similarly for NSW students, the difference between Independent school students and the state average remains significant but is about halved if the family background of students is taken into account.

When an additional layer of school-level socioeconomic background was also applied to the national PISA data, the differences in performance across school sectors were found not to be significant. The validity of the school-SES measurement, which is explained in terms of social peer group influence, school resources and the school environment, has been questioned by researchers on both conceptual and empirical grounds. In recent research, the large school-SES effects prominent in some analyses of data have been described as a statistical artefact or phantom effect. Once prior achievement is taken into account, school-SES effects become negligible.

School features and high achievement

PISA tests are accompanied by questionnaires on student and school attributes and students' learning experiences which throw light on the many interrelated factors associated with high and low performance. In

In PISA 2012, NSW Independent school students scored significantly higher than the national and state averages.

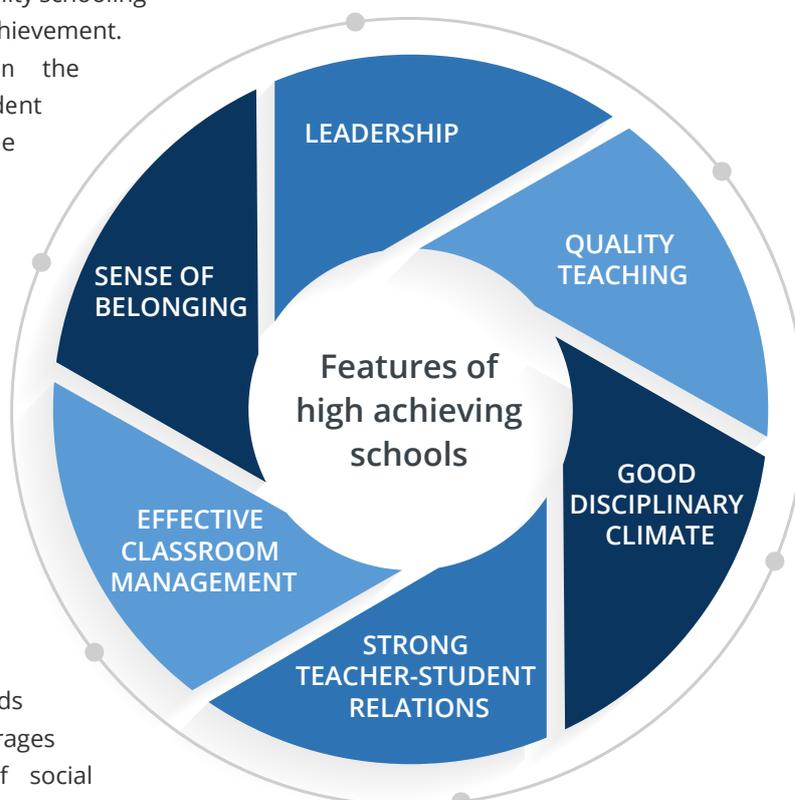
PISA 2012, students were asked to evaluate features of their learning environment encompassing teacher quality, teaching practice, school climate and their own motivation and engagement.

These are all recognised features of a quality schooling experience associated with higher achievement. Teacher quality is without question the greatest school-related influence on student outcomes. The many dimensions of the most effective teaching include strong pedagogical and content knowledge, a commitment to continuing professional development, a good knowledge of assessment and how to use it to remediate and extend students, and the capacity to use a range of teaching strategies for different students, to build positive relationships with students, to set high expectations, to manage the classroom environment and to collaborate with colleagues. Among the characteristics of the most effective schools are an emphasis on high standards and a school climate which encourages respect, orderliness and a sense of social cohesion that is felt by students and staff. Positive student-teacher relations are strongly associated with higher achievement and student wellbeing.

The 2012 PISA results for Australia show that in most of these areas, Australia rates positively when compared with the OECD average. The exception is students' perception of the disciplinary climate of their class, where Australia scored below the OECD average on the basis of student responses to questions on the frequency of students not listening, noise and disorder, and teachers having to wait for students to quieten down.

Analysis of the NSW data show that Independent school students have more positive perceptions of their schooling experience than other students on several aspects of classroom practice and school climate, namely disciplinary climate and classroom management, teacher-student relations, teacher

support, the student orientation of teachers and a sense of belonging. There were no significant differences between the sectors on teachers' use of formative assessment and teacher-directed instruction.



High performance at school is linked above all with quality teaching and leadership.

Implications of these findings

The evidence shows on average, Independent school students perform well at all stages of schooling. While sectoral differences in achievement are reduced if the socioeconomic status of students' families is taken into account, they remain significant.

In all sectors, analysis of the data show the effect of family background is far weaker than the effect of prior achievement.

When a measure of prior ability is used in the analysis, the results show that Independent schools add value, especially at higher stages of schooling. For students at the highest levels of prior achievement, sectoral differences are less pronounced.

Research has established that individual ability and personal attributes as well as family support and encouragement are important influences on student achievement. Engaging parents and tackling low performance at an early stage through appropriate targeted interventions reduce the risk of low performance. Teachers who show an interest in each student's learning, provide personal support, hold high expectations for all, work with enthusiasm and take pride in their school have better results. Schools add value through the capability and professionalism of teachers, by creating a climate that values academic achievement and sets challenging goals, by providing a safe and ordered environment and by fostering a sense of belonging to a community. These are features of quality schools in all sectors.

This research briefing draws on the national report for Australia on PISA 2012 produced by ACER (Thomson et al, 2013), a specially commissioned analysis of sectoral differences in the 2012 PISA results undertaken for the AISNSW Institute by Dr Gary Marks, Australian Catholic University, (Technical Report), and other research findings on school achievement. Other main sources for the evidence cited in the paper are:

Albury, D., Beresford, T., Caple, K., & Peterson, A. (2016). *Innovating for global excellence: Australia's education opportunity*. Retrieved from: <https://www.aisnsw.edu.au/Publications/Other/Documents/Innovating%20for%20Global%20Excellence.pdf>

Birch, E., & Miller, P. (2007). A national study of students' performance at university. *Australasian Journal of Economics Education*, 4(2), 223-236.

Lu, L., & Rickard, K. *Value added models for NSW government schools*. Sydney: NSW Department of Education and Communities. Retrieved from http://www.cese.nsw.gov.au/images/stories/PDF/VAPaper_v3-1Final.pdf

Marks, G. N. (2015). Are school-SES effects statistical artefacts? Evidence from longitudinal population data. *Oxford Review of Education*, 41(1), 122-144. doi:10.1080/03054985.2015.1006613

Marks, G. N. (2015). Do Catholic and Independent schools "add-value" to students' Tertiary Entrance Performance? Evidence from longitudinal population data. *Australian Journal of Education*, 59(2), 133-157. doi:10.1177/0004944115586658

Miller, P. W., & Voon, D. (2012). Government versus non-government schools: A nation-wide assessment using Australian NAPLAN data. *Australian Economic Papers*, 51(3), 147-166. doi:10.1111/j.1467-8454.2012.00429.x

Nghiem, H. S., Nguyen, H. T., Khanam, R., & Connelly, L. B. (2015). Does school type affect cognitive and non-cognitive development in children? Evidence from Australian primary schools. *Labour Economics*, 33, 55-65. doi: 10.1016/j.labeco.2015.02.009

OECD. (2016). *Low-performing students: Why they fall behind and how to help them succeed*. PISA. Paris: OECD Publishing.

PISA OECD. (2012). *Results in focus: What 15-year-olds know and what they can do with what they know*. Retrieved from: <http://www.oecd.org/pisa/keyfindings/pisa-2012-results-overview.pdf>

Thomson, S., De Bortoli, L., & Buckley, S. (2013). *PISA 2012: How Australia measures up: the PISA 2012 assessment of students' mathematical, scientific and reading literacy*. Melbourne: Australian Council for Educational Research.