

Rural and remote education: Literature review

Centre for Education Statistics and Evaluation



Introduction

The importance of rural and regional education is highlighted by the fact that nearly one in four New South Wales students attends school outside metropolitan areas. Less than one per cent of New South Wales school students attend schools in either remote or very remote areas (894 students attended a very remote school in 2012). However, 40 per cent of schools are located outside metropolitan areas, including 3 per cent in remote and very remote areas.

This report uses the umbrella terms 'rural and remote' or 'non-metropolitan' frequently. This carries with it the risk of 'homogenising rural and remote Australia', and 'constructing non-urban locations as inherently deficient and marginal'¹. Assuming all non-metropolitan areas are similar is problematic: as one source points out, 'Everything is so contextual. You drive out here but even the school down the road might not be the same'².

Nonetheless, this paper uses umbrella terms for a number of reasons. While outcomes are generally worse for students further away from major

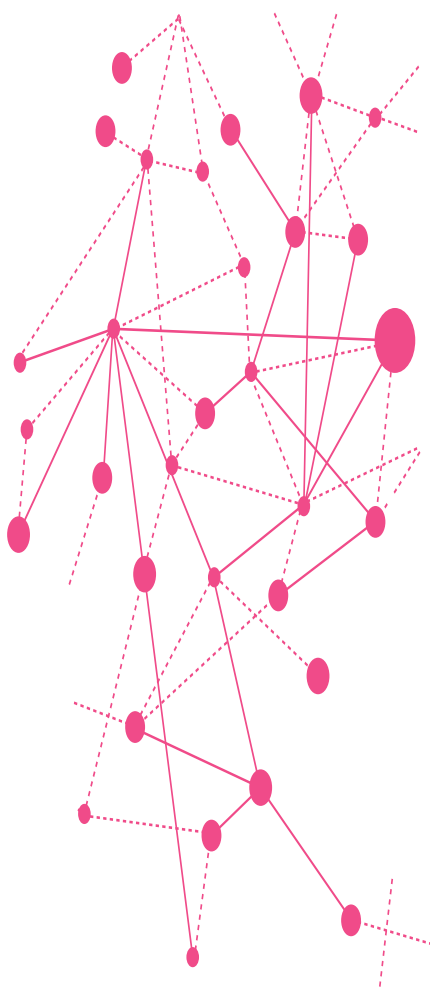
centres, the data also tells us that there are general educational trends across non-metropolitan areas that are distinct from trends in metropolitan areas. Furthermore, the comparatively small numbers of students in remote or very remote schools arguably impacts on data being less robust, when disaggregated at this level.

Education in rural and remote communities has been the subject of many government and non-government reports, including the Commonwealth Schools Commission's report on *Schooling in rural Australia* (1998); the Human Rights and Equal Opportunity Commission's *National inquiry into rural and remote education* (2000); the NSW Teachers' Federation's report, *Staffing an empty schoolhouse: Attracting and retaining teachers in rural, remote and isolated communities* (2004), and the Senate Standing Committee on Rural and Regional Affairs and Transport's report on *Rural and regional access to secondary and tertiary education opportunities* (2009).

The issues most frequently identified in these reports include the poorer educational outcomes of students in rural and remote areas, (including lower levels of attendance, engagement, and transition to further study) and the difficulties involved in recruiting, retaining and developing high-quality teachers and school leaders.

The first part of this paper analyses student data, describing and then seeking to explain the differences in outcomes attained by students in rural and regional areas. This analysis demonstrates that most of the differences in outcomes can be explained by factors that we already know have a strong impact upon student outcomes, in particular, socio-economic status, and the proportion of Aboriginal students.

The second part of this paper examines the national and international literature available on rural and regional education, identifying major issues and responses to those issues. It is, however, beyond the scope of the present paper to attempt comprehensive reviews of all identified and relevant issues, such as effective education for students from low socio-economic status backgrounds, or Aboriginal education more broadly.



Part 1: Student outcomes

Analysis of New South Wales performance data reveals three broad trends in regional and rural education. Although not true in every instance, these trends can be seen throughout the education system, from indicators of early childhood development to transitions to tertiary education. For a more detailed analysis of performance data, see 'Further Analysis' at the end of this paper.

1. There is a sizeable 'remoteness gap' in student outcomes

In their first year of formal full-time schooling, children in very remote Australia are almost three times more likely to be developmentally vulnerable on two or more domains of the Australian Early Development Index (AEDI) than children in major cities.

Once in secondary schools, New South Wales students from remote areas have lower NAPLAN results in Year 7 than metropolitan and provincial students do in Year 5³. Further, one in three HSC course awards in metropolitan areas are in the top two performance bands, compared to one in five in provincial areas, and fewer than one in ten in remote areas.

2. The gap is not exclusive to New South Wales, but it is a bigger problem here

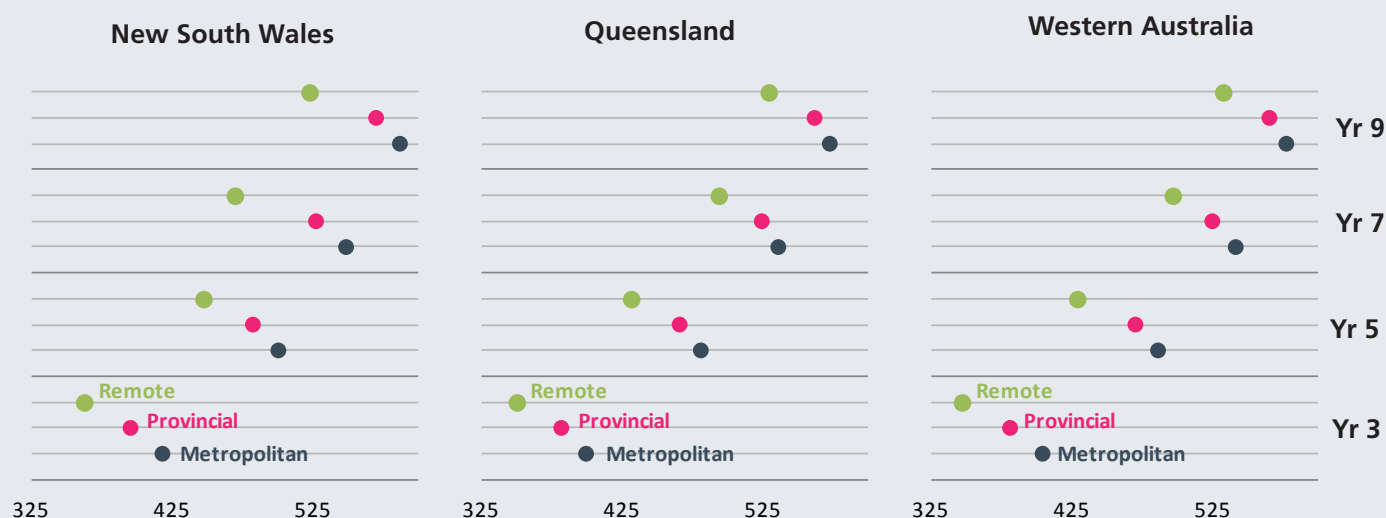
Average reading and numeracy NAPLAN scores are higher in metropolitan schools than in provincial and remote schools for every state in Australia excluding Victoria⁴, from Year 3 to Year 9 (scores for selected states are shown in Figure 1).

Internationally, students from rural areas perform worse in the PISA reading test than students from cities in almost every country in the OECD. However, the remoteness gap is larger in Australia than the average of other OECD nations, and it is larger in New South Wales than almost any other state in Australia.



Figure 1

Average NAPLAN scores by geolocation of school, selected states, 2012



Source: CESE analysis using NAPLAN 2012 data

3. The gap is increasing over time

In 2008, metropolitan schools in New South Wales obtained Year 3 NAPLAN scores that were on average 15 points higher than non-metropolitan schools. By 2012, this gap had widened to 24 points, an increase of 62 per cent. In Years 5, 7, and 9, the gap increased by between 28 per cent and 57 per cent over the same time period.

The proportion of HSC course awards in the top two performance bands remained steady in metropolitan areas from 2008 to 2012, while in provincial areas it declined by four percentage points and in remote areas it declined by three percentage points.

This trend looks likely to continue into the future: results from the latest Trends in International Mathematics and Science Study (TIMSS) tell us that the proportion of metropolitan Year 8 students who expect to go to university increased from 33 per cent in 2006 to 40 per cent in 2011, while for non-metropolitan students the proportion declined from 30 per cent to 25 per cent.

Factors contributing to the gap in educational outcomes

The primary driver of the difference in outcomes between metropolitan and regional students is difference in socio-economic status (SES). This is true across countries, as well as within New South Wales. Relative to metropolitan schools, regional schools in New South Wales are concentrated at the bottom end of the SES spectrum, with 65 per cent of provincial and remote schools in the two lowest SES quartiles. An internal analysis shows that differences in FOEI (Family Occupation and Education Background Index, one commonly used measure of SES) alone account for between 56 and 73 per cent of the variation in New South Wales schools' outcomes between Year 3 and Year 12⁵.

As the gap between metropolitan and non-metropolitan schools has increased, the relationship between SES and outcomes has also changed. Figure 2 shows the average school proportion of Year 3 students at or below the minimum reading standard, broken up by FOEI decile, in 2008 and 2012. In 2012 non-metropolitan schools falling in the most disadvantaged 20 per cent of schools did worse than in 2008, while higher SES non-metropolitan schools and all metropolitan schools did better.

Other factors contribute to the difference in student outcomes. In addition to differences in SES, as measured by FOEI, rural and regional communities tend to have higher proportions of Aboriginal students, lower proportions of students from a language background other than English (LBOTE), and tend to be smaller (Figure 3). These factors have repeatedly been shown to be correlated with lower levels of student attainment⁶.

Figure 2

Average percentage of Year 3 students achieving at or below minimum standard in Reading, by SES (FOEI) decile



Source: CESE analysis using NAPLAN 2012 data

Figure 3

Characteristics of school by remoteness

	Primary Schools		Secondary Schools	
	Metropolitan	Non-metropolitan	Metropolitan	Non-metropolitan
Average enrolment	381	260	832	519
% Aboriginal students	5%	14%	5%	15%
% LBOTE students	34%	7%	38%	4%
SES (standardised FOEI)	0.39	-0.29	-0.2	-0.61
Principal's years of service at school	3.9	4.2	5	3.8
Teachers' years of service at school	6.9	7.5	7.5	7.1
NAPLAN Year 3 average score	411	386	N/A	
NAPLAN Year 5 average score	494	474	N/A	
NAPLAN Year 7 average score	N/A		522	510
NAPLAN Year 9 average score	N/A		561	555
% in top 2 HSC bands	N/A		22%	16%
Attendance rate	Metropolitan: 93.3% (primary and secondary combined) Non-metropolitan: 91.3% (primary and secondary combined)			

Source: CESE analysis using DEC data

Note: The attendance rate is for all schools. Schools with fewer than five students taking the NAPLAN test have been excluded. Selective schools have been excluded from secondary schools. Central schools are included in both the primary and secondary school categories.

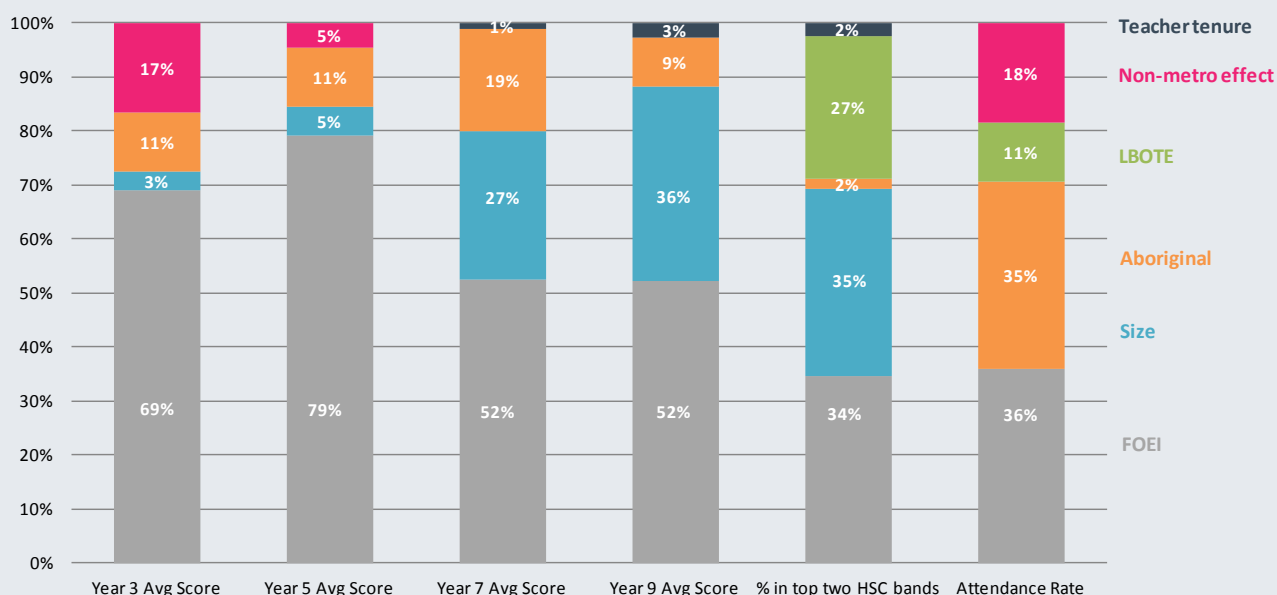
FOEI is calculated across both primary and secondary schools. Because non-government and selective schools are excluded from the sample, the average FOEI for secondary schools is negative.

By constructing a predictive model of school performance, the relative impact of each school characteristic can be estimated⁷. That is, we can determine the amount of the outcome gap between metropolitan schools and non-metropolitan schools that can be attributed to factors such as student demographics or school size. This also allows us to estimate the portion of the gap that is not explained by these differences. This 'non-metro' effect could be due to systematic differences in factors that could not be measured (for example, the culture of the school or parental expectations), or more inherent difficulties associated with schools being located in more remote areas⁸.

Figure 4 shows the breakdown of the gap in various outcomes between metropolitan and non-metropolitan schools, excluding selective schools and schools with fewer than five students taking the NAPLAN test. For all outcomes other than Year 3 and Year 5 performance and attendance rate, the gap between metropolitan and non-metropolitan schools can be fully explained with reference to differences in demographics of students or school size. Even in the cases of Year 3 performance and attendance rate, where its contribution is largest, the unexplained 'non-metro' effect represents a relatively small portion of the gap in outcomes⁹.

Figure 4

Breakdown of performance gap between metropolitan and non-metropolitan schools



Source: CESE analysis using DEC data

Note: Excludes selective schools and schools with fewer than five students taking the NAPLAN test.

Socio-economic status (as measured by FOEI) explains the majority of the gap in performance from Year 3 to Year 9. However, it explains much less of the gap in HSC or attendance rates. School size explains a progressively larger proportion of the gap in later school years. This may be due to the curriculum getting more specialised towards the end of secondary school, requiring dedicated resources and classes that smaller schools have less capacity to provide. The proportion of students that are Aboriginal explains one-fifth of the Year 7 score difference, though this effect declines by the HSC. However, differences in the proportion of Aboriginal students explain almost a third of the performance difference in attendance rates between metropolitan and non-metropolitan schools.

The relationship between remoteness, the proportion of LBOTE students and school performance is more nuanced. Schools in metropolitan areas have much larger proportions of LBOTE students than schools in non-metropolitan areas (34 per cent versus 7 per cent in primary schools and 38 per cent versus 4 per cent in secondary schools). If schools with higher proportions of LBOTE students had better outcomes, this may explain part of the performance gap. As it turns out, this relationship only holds true for secondary schools and only in relation to the HSC (where proportion of LBOTE students explains 27 per cent of the performance gap). On average, schools with higher proportions of LBOTE students tend to have poorer literacy and numeracy outcomes up to year 9, which means that the distribution of LBOTE students cannot explain the difference between metropolitan and non-metropolitan NAPLAN performance at the school level.

The average number of years teachers had been at the school accounted for a small portion of the gap in Year 7, Year 9 and HSC performance. It did not account for any of the gap in Year 3 and Year 5 because while the tenure of teachers is positively related to performance in the models, teachers at non-metropolitan primary schools had longer tenures than teachers in metropolitan primary schools. This pattern reversed in secondary schools.

Part 2: Evidence base

The majority of published research seeks to identify, quantify and/or explain the problems experienced in rural and regional education. Research relating to programs and projects that seek to provide solutions is scarce, tends to be descriptive and lacks rigour. A review of strategies for small and remote schools conducted by the University of Western Australia (which examined numerous programs, including some that are New South Wales-based) concluded that:

... one of the challenges facing Australia regarding quality provision for small and remote schools is the lack of programs that have been independently or even internally reviewed. Without robust evaluations, claims of the program remain as merely claims and wide implementation by policy makers is seriously compromised¹⁰.

More rigorous evaluation of strategies aiming to provide a solid evidence base of 'what works' in regional and rural areas may help identify solutions to some of these seemingly intractable problems.

Students' expectations and pathways

We guide our boys and girls to some extent through school, then drop them into this complex world to sink or swim as the case may be. Yet there is no part of life where the need for guidance is more emphatic than in the transition from school to work – the choice of a vocation, adequate preparation for it, and the attainment of efficiency and success¹¹.

How to help students make a successful transition from school to work, from childhood to adulthood, is not a new consideration. It is widely understood that this transition will be easier for some young people than for others. In the case of young people from rural and remote communities, the transition into post-school pathways is likely to be more challenging.

Where a student lives makes a difference to their post-school expectations and the pathways they take into further study or employment. In Australia, students in rural and remote areas are less likely to expect to go to university than their metropolitan peers. Living in a rural location exacerbates the effect of socio-economic background on tertiary expectations, with low- (and middle) SES students in rural locations less likely to expect to attend university than their metropolitan peers (Figure 5). It magnifies the effect of gender on university aspirations, with provincial boys being the least likely to aspire to attend university. Living in a rural location also adversely impacts on the aspirations of high-performing students¹².

Figure 5

Proportion of NSW 15-year-olds who expect to go to university, by SES quartile



Source: CESE analysis using PISA 2009 data

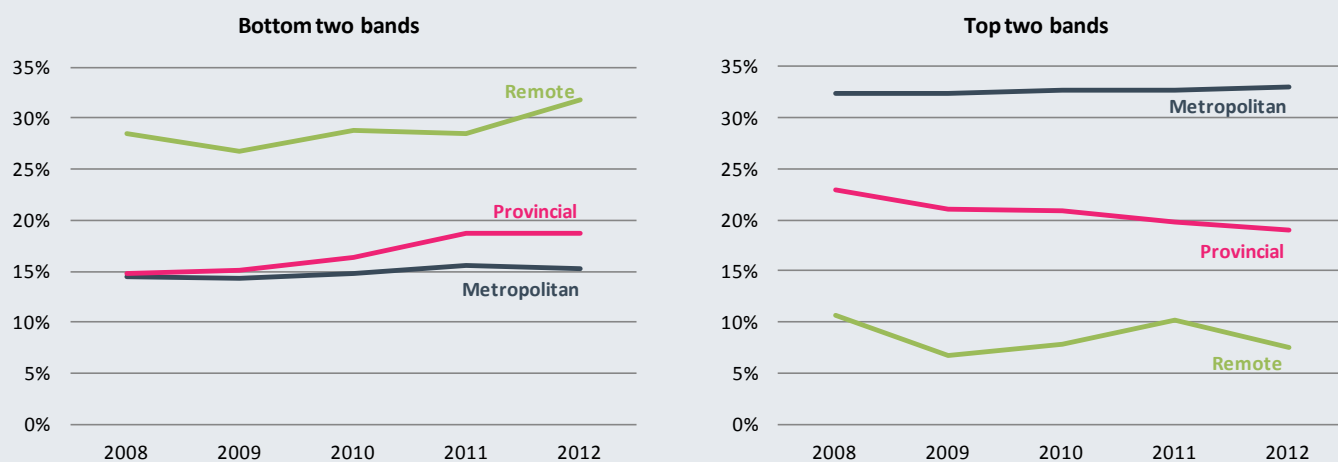
Rural students' lower aspirations for post-school study are accompanied by lower school completion rates. School completion declines the further students live from metropolitan areas, and young people living in remote or very remote locations are more than 20 percentage points less likely to finish school than their metropolitan peers¹³.

Higher School Certificate results are also lower for rural and remote students who do stay at school to complete Year 12. Metropolitan students are more likely to be in the top two performance bands, and less likely to be in the bottom two performance bands, than provincial students. Provincial students in turn outperform their remote peers. This gap in performance has widened since 2008 (see Figure 6).

The effect of lower aspirations and poorer HSC results can be seen in rural and remote students' attendance at university. New South Wales metropolitan young people are more likely to attend a university than non-metropolitan young people, and the gap increased noticeably between 2006 and 2011. Slightly more young people from regional New South Wales attend technical or further education than their peers from metropolitan New South Wales¹⁴.

Figure 6

Proportion of HSC course awards in the bottom and top two bands, 2008-2012



Source: CESE analysis using Board of Studies unpublished data

Obstacles to further study

Available research has identified a number of obstacles to rural students participating in post-school study, particularly university, in greater numbers, and there is broad agreement about these impediments to rural students' post-school aspirations and eventual destinations. The themes of difficulty of access, financial cost and social cost associated with leaving family and community are dominant in the research. Other obstacles include lower parental aspirations, limited subject availability in secondary schools, and the early stage at which students' aspirations begin to form.

Access to tertiary institutions

Research on impediments to rural students' tertiary pathways identifies the most obvious obstacle: lack of access to a tertiary institution located in, or near, their community. Even though some tertiary institutions are now located in regional centres or operate rural campuses, rural communities are widely geographically dispersed and significant travel or relocation may be necessary. In addition, there is no guarantee that a regional campus will offer the course a student wishes to study. Wider access to TAFE institutions is partly reflected in the higher proportion of rural students who choose to study at TAFE¹⁵.

One study of Victorian university students from a rural background found that over 60 per cent of students were studying at a location at least 150 kilometres from their home. The author acknowledged that students in other, larger states and territories would be studying at distances that were much further from home¹⁶. A recent Senate inquiry into rural and regional access to education found that distance and cost were the two key, inter-related factors preventing students from attending higher education¹⁷.

Financial concerns

For rural and remote students, the decision to move away from home to study, brings with it significant financial costs. The greatest costs relate to housing, transport and food, as well as equipment required for university study¹⁸. One estimate puts the cost of studying away from home at \$15,000 – \$20,000 a year, plus a vehicle¹⁹.

The Australian Council for Educational Research found that additional costs for students related to transport to university, and moving out of home, are having a significantly greater impact on university choice than previously²⁰. Secondary students themselves express their concerns about financial pressures, about having to find part-time work, and balance work and study commitments²¹.

Parents also identify financial concerns as an impediment to their children's further study²², and rural students are highly conscious of the potential financial impact on their family. A Senate Committee investigating rural and regional access to secondary and tertiary education heard evidence from a rural secondary school principal that some students completing Year 12 who wish to go on to university apply for scholarships without telling their parents. The principal reported that students would only tell their parents if they obtained the scholarship. If they were not successful, then their parents would not find out that they had tried to find a way to attend university that would not impact on the family finances²³.

Financial pressures can lead students to defer their attendance at university. A study by Polesel investigated the reasons for the increasing rate of deferral of university places given by nearly 900 Victorian students from a rural background. Financial barriers and cost-related factors were prominent in the reasons students gave for deferral. Seventy per cent of students went on to take up their offer a year later, 9.3 per cent were in a vocational education and training program and another 3 per cent were in an apprenticeship or traineeship. However, 16 per cent had not taken up their offer and were in full- or part-time employment. A very small proportion were unemployed.

This study also provides some insight into the challenges of balancing work and study for rural students. More than half (52 per cent) of the participants who were studying reported that they were also working (with many more looking for work). Just over half of this group were working up to ten hours a week, but 37 per cent were working 11–20 hours a week, and another 13 per cent were working 21 hours or more. It could be expected that students in the upper two brackets could be experiencing considerable difficulties balancing work and study commitments.

Socio-economic status played a major role in determining which students took up their offer. Eighty per cent of all participants in this study came from a low-SES background, but the participants who took up their university offer after one year were much more likely to come from higher SES quartiles. They were also more likely to come from the two higher quartiles of achievement compared with those who did not take up their offer²⁴.

For those young people who decide not to take up their university offer, the research suggests that the transition to paid work was less than optimal. These young people were mostly employed in low-status and poorly paid occupations, and were frequently working part-time. Only a third had received any formal training for their role. The majority (60 per cent) reported that they would not like this type of job as their future career.

The social cost of leaving family and friends

Rural communities are known for being close-knit, and leaving behind the support of family and friends to study at a distant location is a genuine obstacle to a tertiary pathway for rural young people. This is not just an impediment to leaving home in the first place, but can be an ongoing issue for rural students throughout the course of their studies²⁵. In response to these emotional challenges, rural students may lower their aspirations to maintain their connections to the family and community²⁶. Some research has found that rural family networks are more inclined to focus on helping young people find work in the local area rather than encouraging them to finish school and consider moving to undertake further education and training²⁷.

Lower parental expectations of further study

Even from an early age, it appears that rural and remote parents have different expectations for their children's post-school pathways. The Longitudinal Study of Australian Children found that 62 per cent of metropolitan parents of boys aged 8–9 years expected their sons would go on to university, compared with 50 per cent of inner regional parents and 40 per cent of outer regional parents²⁸. New South Wales' rural parents

also expressed lower expectations for their children attending university than metropolitan parents²⁹. One reason for this may be that fewer parents living in rural and remote areas have attended university themselves and quite probably appreciate limited value in a university education.

A report by the Alliance for Excellent Education found similar results in the United States. The percentage of rural parents who expected their children's highest level of education to be less than a bachelor's degree was higher for rural parents (42 per cent), than urban (30 per cent) and suburban parents (25 per cent). The report also notes that the percentage of rural parents whose highest level of education is a high school diploma is higher than in cities in suburbs³⁰.

Young people (and parents) from rural and remote areas may traditionally have held lower educational expectations because post-secondary schooling has not been required for local job opportunities in most rural industries. However, recent literature cautions that the move to a knowledge-based economy will also have implications for rural industries, and young people from rural and remote areas will need to gain post-secondary qualifications to take advantage of rural employment opportunities in the future³¹. Another obstacle to high aspirations, higher levels of secondary school achievement and tertiary study, may be the more limited access of rural and remote secondary students to a wide selection of courses. Limited subject choice is discussed later in this paper.

Education and career aspirations are set early

Discussion of students' study and career aspirations often focuses on students in secondary school, as they are closest to making this transition. However, one strand of the literature on student aspirations is concerned with the long-term development of children's career aspirations. Research has found that career choice is a developmental process that begins in early to middle childhood.

Children aged 9–13 years become more aware of the link between education, occupation and income, parental expectations, and their own ability. They begin to engage in career exploration using their interests and abilities to guide them. They also begin to reject jobs they think will be too difficult for them to achieve³². Given that aspiration starts to fall away so early, research suggests that there is a need for increased career development at an early stage.

For example, a study of rural Queensland children in upper primary school found that children were able to identify jobs they were most interested in doing when they grew up. Even at this early age, girls were more likely to prefer jobs that would involve university study, while boys preferred jobs requiring vocational or trade training. For this age group, parents (44 per cent) and other family members (20 per cent) were identified as the biggest influence on future occupational choice, compared with teachers (11 per cent)³³.

Another study of fourth grade children in rural, mid-western United States, administered the Childhood Development Scale, an instrument designed to assess student progression in the growth of career development on nine dimensions. The dimensions on which these students had the lowest scores

were: curiosity (learning); information (about jobs); key figures (role models); and time perspective (planning now for future jobs). Boys scored significantly lower than girls in this study on curiosity. The authors concluded that rural primary school students generally may benefit from increased efforts to foster students' desire to learn more about careers and the world of work, to be exposed to career role models who also increase their curiosity and illustrate for students what they can become. Young rural students could also benefit from increasing their understanding about how choices influence their future career development³⁴.

Overcoming the obstacles

While the available literature on student aspirations is in broad agreement about the challenges facing rural and remote students who wish to take tertiary pathways, there is less clarity about how to overcome them. As Alloway and Dalley-Trim point out: 'The obstacles ... are diverse, and will require an equally diverse range of responses if they are to be addressed'³⁵.

The financial costs associated with tertiary study may be the biggest hurdle facing rural students. In the Australian context, financial assistance is available to rural students from the Australian Government, principally through Youth Allowance. In its report, *Rural and Regional access to Secondary and Tertiary Education Opportunities*, a Senate Committee called for additional financial assistance to be provided to rural and remote students³⁶. However, a detailed examination of income support measures is outside the scope of this literature review.

The lower aspirations held by some rural and remote parents and communities may contribute to rural young people's own lower expectations. At the same time, the literature acknowledges that schools are often the social and activity hub of rural communities and can play an important role in promoting the positive development of young people³⁷.

Further, the small, close-knit and self-reliant nature of rural communities may facilitate schools and parents working together to encourage students to hold high expectations, continue with post-secondary education and connect them to university and career resources³⁸.

The literature on career aspirations supports more intentional career education programs that could increase rural and remote students' awareness of different careers, challenge gender stereotyping and encourage higher aspirations. The internet is seen as an important resource for providing career information to rural and remote students³⁹. Other research suggests that younger rural children, especially boys, need encouragement to be curious about, and explore the possibilities of career options other than those that are available in their immediate community. This may include exposure to adult role models. Rural students may also benefit from more explicit advice from teachers about how their subject choices and achievement levels can affect their future career choices⁴⁰. Finally, it has been shown that schools that organise to take students to university information sessions have a positive effect on student destinations⁴¹, although this would carry higher costs in the rural context.

Ultimately, for rural and remote students to take a tertiary pathway, they must not just aspire to further study, they must also achieve the academic results that will enable them to go to university. The next section of this paper discusses the evidence about the quality teaching practices that can support rural and remote students to improve their educational outcomes.

Teaching approaches

Students in rural and remote areas benefit from the same range of quality teaching practices as their metropolitan peers. Certain characteristics of schooling in non-metropolitan areas however, either significantly raise the stakes for high-quality teaching, or make it more difficult for students to access adequately supported, high-quality educational opportunities.

Composite classes

Smaller enrolments mean that students in non-metropolitan areas are more likely to be in composite classes. Figure 7 shows that half of all students in non-metropolitan New South Wales government primary schools are in composite classes, compared with 31 per cent of primary students in metropolitan areas, and nearly nine out of ten students in very remote areas.

This situation is not unique to New South Wales. Almost half the respondents to a Western Australian survey of graduate primary and early childhood teachers in non-metropolitan areas indicated that they were teaching a class made up of children from more than one age level⁴². In addition, while composite classes in city locations are most often comprised of students from adjoining school years within the same stage, multi-grade classes in non-metropolitan locations may span multiple years and stages. In small rural schools, according to Lloyd, '[a] common division is into two classes – a 'lower' K-2 or K-3, and an 'upper' 3-6 or 4-6'. Lloyd also notes that rural schools are more likely to have multi-grade classes on a permanent basis, in contrast to composite classes in larger schools, which 'come and go on a yearly basis'⁴³.

Multi-grade classes are also common at the secondary level in rural and remote schools, particularly at the senior secondary level. One study focused on the effective teaching of mathematics and science in rural and remote New South Wales found that 'many teachers [were] expected to teach senior secondary students (in Years 11 and 12) as a single group even though the students may be enrolled in different courses of study'⁴⁴. According to the SiMERR National Survey of Science, ICT and Mathematics teachers, more than one third of provincial area schools and half of remote area schools formed composite senior classes in these subjects⁴⁵.

Composite classes are commonly believed to be less desirable arrangements for teaching and learning, by teachers, school leaders and parents⁴⁶. Teachers of multi-grade classes identify a range of challenges associated with this structure, including: greater workload; lack of time for preparation and for teaching required content; difficulty of planning for multiple grades; parental concern about their children's academic achievement; and difficulties in organizing the class for independent practice or learning due to the wide range of abilities⁴⁷.

Figure 7

NSW government primary enrolments by class type and remoteness, 2012

Remoteness	Regular Class Enrolments	Composite Class Enrolments	Total Enrolments	Composite Class Enrolments %
Metropolitan	223,928	102,896	326,824	31.5%
Non-Metropolitan	52,526	53,192	105,718	50.3%
Provincial	51,570	51,621	103,191	50.0%
Remote	911	1,238	2,149	57.6%
Very Remote	45	333	378	88.1%
Total	276,454	156,088	432,542	36.1%

Source: CESE analysis using NAPLAN 2012 data

A systematic assessment of the evidence for the impact of multi-grade classes on student outcomes is outside the scope of this review. In addition, the issue is complicated by an inconsistent distinction in the research literature between multi-grade and multi-age classes. Multi-grade classes most commonly refer to classes formed through necessity, while multi-age classes reflect a philosophical belief that such arrangements are educationally preferable. These boundaries obviously blur, however, in terms of classroom teaching practice, and at least one qualitative study indicates that very different approaches to the task of teaching multi-grade classes can be successful⁴⁸.

Overall, it is likely that academic achievement is neither positively nor negatively impacted by more diverse class grade structures, though it is possible that analytic studies of multi-grade classes are weighted heavily towards the primary years. Page, writing in 2006 cites Veenman's 1996 meta-analysis, which found no significant differences in achievement between multi-grade and graded classes, and a three-year longitudinal study of school and teacher effectiveness in multi-grade classes in Victoria, which found 'little, or a slightly negative, effect'⁴⁹. Lloyd cites Veenman and a number of other studies supporting the same broad position⁵⁰. There is some indication that students in multi-grade / multi-age classes enjoy social/emotional benefits, including an increased liking for school. This may be attributable to the fact that friendships across a wider range of ages results in fewer isolated children and increased classroom harmony⁵¹.

Meeting the needs of individual students

Composite and multi-grade classes – particularly in their more extreme manifestations, such as single-teacher schools – undoubtedly highlight many of the challenges associated with teaching diverse groups of students. To focus on the challenges associated with teaching and learning in composite classes however, can overestimate the homogeneity of single-grade classes. According to Page, 'the assumption that students of the same age are developmentally similar ... is seldom true'⁵². It follows from this that the skills for teaching multi-grade classes are the skills of effective teaching more generally⁵³.

Effective teaching means accurately understanding the needs of, and catering to, individual students in ways that foster their engagement with learning, build a sense of competence, and support students to realise their potential. This can be challenging regardless of place. The comparatively smaller staff in rural and remote locations means that expertise must be located in every teacher, rather than within implicitly or explicitly identified specialist positions. National and international literature on rural and remote education repeatedly identifies the higher need of teachers in these locations for knowledge and skills in meeting the needs of gifted and talented students, of students who are struggling significantly, and (in the Australian context) of Aboriginal students⁵⁴.

The identified need for additional skills in assisting remedial learners is corroborated by a study of differences in third grade reading achievement by geolocation in the United States. While the analysis found no difference in reading achievement at third grade when controlling for SES, it did find that location

impacted on student outcomes when controlling for a student's prior achievement. Specifically, 'rural students who were low achievers at the beginning of kindergarten have fallen behind their suburban and urban counterparts by third grade', even when SES is controlled for⁵⁵.

Effective use of student assessment data

The first step to addressing individual student learning needs is to understand accurately their current strengths and weaknesses. There is strong evidence of the advantages of teachers using data from assessment for formative purposes. One study found that when teachers used high-quality assessment data, student achievement gains accelerated at twice the expected rate, with the lowest-performing student gaining the most⁵⁶. Not all educators feel well equipped in this area, however. In a study designed to identify challenges specific to American rural education administrators in Minnesota, nearly one third of respondents nominated data analysis as a primary concern:

We're standing hip deep in data with all of this stuff from the state, and our local data. Our teachers don't necessarily know how to use it ... We just don't know how, at least in my district, to do that well and keep focusing on it⁵⁷.

While the National Partnerships in New South Wales have given teachers significant support to develop data analysis skills for the purpose of effective teaching, research literature in the Australian context would suggest that these skills are not yet universal⁵⁸.

Quality teaching practices work everywhere but are not evenly distributed

A comprehensive American review of research on rural education concluded that 'identifying ways to help rural schools improve teachers' "pedagogical skills in ways that have the greatest impact on student achievement" should be a priority area of research⁵⁹. There is general agreement, however, about effective teaching practices, as identified by major Australian and international studies, and no reason to assume that they differ significantly by geolocation. In fact, 'most researchers conclude that the interventions that work for struggling students anywhere work equally well in rural settings'⁶⁰. Unfortunately, however, Australian research has found that 'high quality pedagogy was least prevalent where it is most needed in low-SES and high Aboriginal contexts'⁶¹.

The importance of clear and explicit teaching

The Centre for Education Statistics and Evaluation's report *Great teaching, inspired learning: What does the evidence tell us about teacher effectiveness?* highlights the following elements of effective teaching, which are repeatedly identified in research literature:

- Monitoring and feedback
- Strong subject knowledge
- Explicit teaching techniques.

There is a close alignment between these practices and the 'direct teaching' approach, the efficacy of which has been validated by studies over the past 50 years, and found to be particularly effective for disadvantaged students⁶². Similarly, an analysis of the New South Wales Quality Teaching model:

... pointed to the effectiveness of explicit teaching. It found, for example, that there were differences in the effect of different dimensions of the Quality Teaching model on certain students: 'the strongest positive results for Aboriginal students came from tasks where students were given clear criteria for the quality of the work required, when expectations were high and when they had some choice in their work'⁶³.

In Alabama, the Department of Education has launched the Instructional Strategies Project (ISP) to support its mission to ensure that all students graduate [high school] college and career ready. While Alabama's state standards identify the content of instruction, the ISP 'aims to define the concepts of the "how" of instruction'. The ISP seems aligned with broad direct instruction principles, focusing on 'teaching curriculum standards, effective pacing and purposeful instruction with active student engagement, and daily formative assessment', though it emphasises the fact that it is a process not a program, a different approach to planning, delivering, assessing and reflecting on instruction⁶⁴.

Literacy and numeracy

Literacy and numeracy are priority areas of learning for all students, due to their significant influence on a student's educational trajectory. Some researchers have even used the term 'Matthew effect' (the 'rich get richer and the poor get poorer') 'to describe the cumulative effects of good or poor reading skills on later academic success'⁶⁵.

A broad review of literacy and numeracy programs is outside the scope of this paper. The effectiveness of an explicit reading curriculum in a rural context has been demonstrated by one quasi-experimental study in the American Midwest. This study on the effectiveness of the Reading Mastery program with elementary students shows a statistically significant positive effect for students in the study, compared with students in the nation as a whole. The effect was stronger the earlier students entered the program, and other studies suggest that effects are stronger the more faithfully teachers implement direct instruction curricula. This is not surprising, but has implications for teacher professional development (discussed later in this paper)⁶⁶.

An Australian case study, St Joseph's School in Wyndham, Western Australia, drives a focus on literacy and numeracy through high expectations of learning and support. Teachers are expected to articulate the purpose and outcome of every classroom activity for every student. New teachers are given appropriate support to achieve this:

When a new teacher comes they are given our curriculum documents. We can say 'this is what your literacy block needs to look like and this is what the reading should look like and this is what the writing should look like, and these

are the kinds of texts you should be using. These are the running records, this is how assessment works'. There's no confusion. The same is true for maths. And not only that, a senior staff member will go into their classroom and work with them for at least a couple of weeks.

The school's West Australian Literacy and Numeracy assessment results placed Year 3 students above the state benchmark for the first time in 2005, having trended up over previous years⁶⁷.

The importance of the early years

This paper focuses on rural and remote schooling. As the AEDI data indicates, however, differences in developmental vulnerability emerge before children arrive at school. While approaches to early childhood education and care are outside the scope of this paper, approaches to building literacy and numeracy in young children and families are frequently mentioned in the context of rural and remote education⁶⁸. This reflects research findings that 'parental involvement in their children's literacy development has a greater influence on later literacy achievement than other family characteristics, such as socio-economic status, parental education and family size'⁶⁹. Interestingly, the significance of early childhood to the broader educational agenda is identified not just by researchers, but by rural stakeholders themselves⁷⁰.

As the Canadian Council on Learning's report outlines, there is a wide range of strategies that have been developed to encourage and support parents to engage in early literacy activities with their children. While evidence shows that these can foster children's enthusiasm for reading, comprehension and parental involvement, programs designed specifically to provide literacy training for parents have been largely unsuccessful. Programs emphasising parents' development of other skills, such as dialogic reading or engaging in conversation with children, can nonetheless build literacy-related skills in children. The Canadian Council on Learning recommends a particular focus on fathers and other male role models in literacy, as Canadian data indicates that the rural context exacerbates the existing gender divide in literacy outcomes, and that the rural/urban gap for boys increases over time⁷¹.

Student motivation

Rural educators frequently identify intrinsic problems with student motivation, although Redding and Walberg find little evidence that this is any more marked an issue in rural locations. To the extent that some students may be inhibited by a 'low horizon' mindset, the solutions are the same as elsewhere, and teachers' instructional practices play an important part: 'inspired teaching, attentive to each student's interests, personality, and readiness for mastery, can lift the student's sights beyond the local horizon'⁷². A student's motivation is dependent on their estimation of two key things: the goal's value, and likelihood of success. Teachers can influence both of these, but can particularly increase students' perception of self-efficacy, encouraging effort, persistence and performance, through teaching practices consistent with quality and explicit teaching principles:

... (1) encouraging students to set goals that are specific, challenging, but attainable, (2) modelling effective responses to tasks, (3) providing feedback that encourages students to stay on course until mastery is achieved, and (4) making attributional statements that help students understand and appreciate that they are improving their own abilities by accepting challenges and maintaining effort⁷³.

High expectations

Having high expectations for all students is important to realising each student's potential, regardless of their location. To a great degree, having high expectations of students is a principled stance and practice on the part of teachers. As one teacher in a study of the development of 'rural pedagogies' states:

And so my role is for them to see that they are so much a part of a cohort of thousands of kids in the state ... I set higher benchmarks because that's where I want them⁷⁴.

At the same time, it may be harder for teachers and schools to establish and support these high expectations. The same teacher observes that '... in rural schools the parents want their kids to succeed. They want their kids to learn. ... I just think the more isolated the community is that they don't see the bigger picture so much.'

The broader question of student and parent aspirations for post-school life and learning are discussed in more detail elsewhere in this paper. Here, it is worth noting that the responsibility of teachers to foster and maintain high expectations for all students may be in tension with the equal need to maintain close, productive, mutually sustaining community relations when community and educational aspirations do not always align.

Within the school environment, rural and remote teachers face a number of issues setting and maintaining high expectations. Benchmarking can be particularly difficult in small rural schools, for both teachers and students. As Pegg and Panizzon ask:

How do you ensure that expectations or standards remain high or where they should be: ... How do you know that the criteria and expectations established around levels of performance are accurate and valid when you do not have other comparisons?⁷⁵

Professional development, including participation in the marking of high-stakes external examinations, is one of the answers to these questions. Professional development is discussed in more detail elsewhere in this report.

High expectations also need to be underpinned by students' access to a broad and rigorous curriculum, including extension options. For example, studies of urban youth in America (a significantly disadvantaged population) have indicated that 'enrolment in academically rigorous tracks (that is, college preparatory) is positively related to school achievement and educational aspirations', with similar findings for rural youth⁷⁶. Such findings are embraced by the Alliance for Excellent Education in the United States, which states that 'every rural student should benefit from taking demanding classes in the core subjects of English, history, science and math during all four years of high school'⁷⁷.

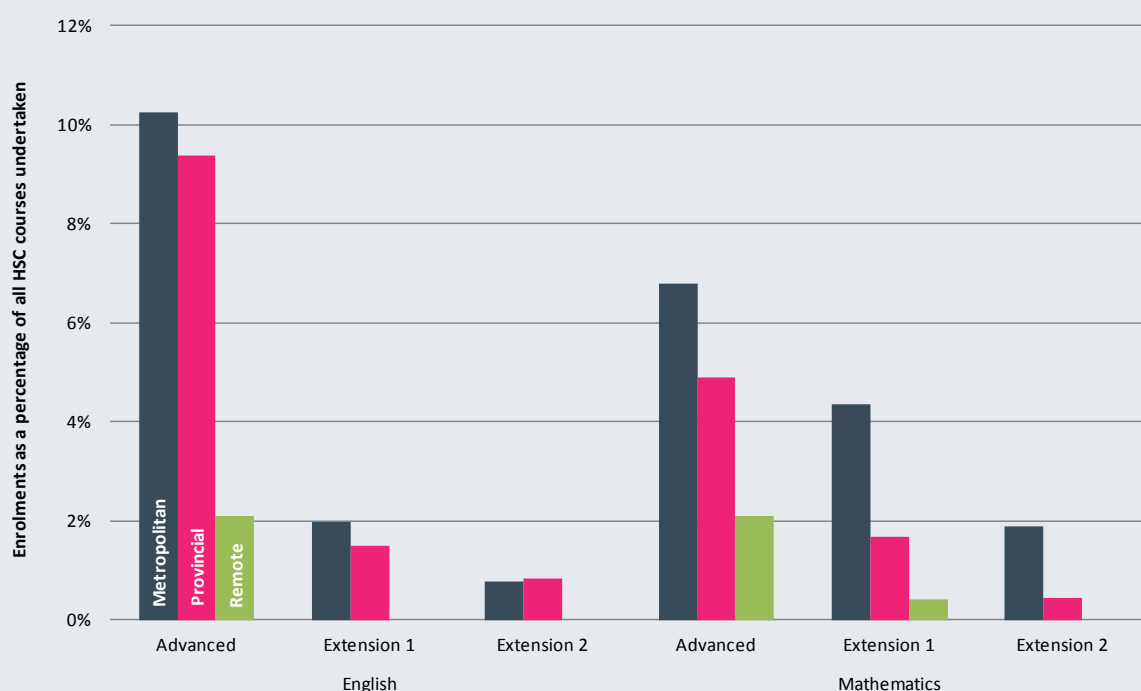
The Alliance recommends that all students should have a detailed plan for graduation by Year 9, including the specific courses they should take⁷⁸. A study of strong performing rural and remote schools in New South Wales identified career goal setting and subject identification in Year 10 as highly motivating⁷⁹. However, in its report *Current challenges and opportunities in preparing rural high school students for success in college and careers*, the Alliance notes that rural high schools can have compromised ability to offer rigorous classes in basic academic subjects, career and technical education programs, community college dual-credit options and Advanced Placement courses. The report compares the proportion of rural students attending schools offering Advanced Placement courses (69 per cent), with the proportion of urban and suburban students (93 and 96 per cent respectively)⁸⁰. Similarly, in its 2009 submission to the Senate Inquiry, the Isolated Children's Parents' Association of Australia stated:

In smaller centres the education facilities frequently do not have the resources to meet the needs [of] all their students. Subject choice is often limited to a range which potentially narrows the student's career choices. Lack of competition, interaction and learning with class members are all things which leave these teenagers at a disadvantage when class sizes are small⁸¹.

Australian students themselves have identified lack of access to a broad range of subjects, specialist teachers, teacher turnover and lack of high performance benchmarks within their peers as barriers to forming career aspirations⁸². As a result, students in provincial New South Wales government schools are between 8 and 24 per cent less likely than their metropolitan peers to elect to complete advanced and extension HSC courses in English, and are between 28 and 61 per cent less likely to choose advanced and extension courses in mathematics. Almost no remote students choose to complete extension courses in either English or mathematics (Figure 8). While distance education can facilitate access to a broader range of subjects for some students, it is commonly understood to demand extra self-discipline and dedication on the student's part⁸³.

Figure 8

Enrolments in selected English and Maths units as a proportion of all HSC courses, 2012



Source: CESE analysis of Board of Studies unpublished data

Ultimately not every student will go on to university, and it is important that all students develop the skills necessary to make positive transitions to post-school life. The literature on rural education frequently refers to the need for vocational education and training options within the curriculum, but it can be more difficult to ensure the quality of these options too in non-metropolitan areas⁸⁴. In small rural communities, the limited availability of appropriate work placements can be a significant problem, particularly in high-demand subjects such as Hospitality or Information Technology. Difficulties in attracting and retaining specialist teaching staff also impact on vocational education and training (VET) curriculum offerings.

Research has found that VET is most effective when provision targets local needs, and that collaboration and partnerships are key to achieving this in rural and remote areas. It is important, however, that VET does not unintentionally reinforce lower expectations for any individual or groups of students. Researchers have pointed out that 'alternative' courses for the 'less academically inclined', underpinned by the 'rhetoric of choice, individual and community relevance, and democratically diversified curriculum ... [have] an underside which in some other senses [is] not so democratic' and amounts, in effect, to 'a new form of streaming'⁸⁵. This may be particularly problematic for boys. A case study of a small, rural high school in New South Wales revealed that girls were being steered into subjects that were pathways for tertiary education while the school had introduced VET courses and particularly encouraged male students to enrol in them⁸⁶.

The role of 'place-based' learning

Much of the literature on rural and remote education refers to 'place-based' learning. Place-based education is defined as 'hands-on learning opportunities that are rooted in local history, culture, art and environment'⁸⁷. American literature in particular refers to the benefits of place-based education in increasing student engagement and thus performance by enhancing the apparent real-world relevance of the curriculum. In a comparatively extreme example of this school of thought, Shamah and MacTavish identify a tension between place-based knowledge and an increasing focus by schools on 'basic academic skills', arguing that the latter can drive an (undesirable) shift in young people's aspirations 'toward an urban life'⁸⁸.

While the term is less frequently used in Australian literature, similar concepts are frequently evoked. Page argues that 'situating learning in the local area has positive effects on student motivation for and engagement in learning and on achievement ... because students are able to connect subject matter to their lives and surroundings'⁸⁹. Clarke and Wildy assert that '[p]rincipals and teachers in small and remote schools who are effective leaders of learning use pedagogies that are grounded in local needs and interests'⁹⁰. In another, substantial report reviewing innovative strategies for small and remote schools, the same authors reflect that '... approaches to teaching, learning and assessment that encourage student-centred and community-oriented learning seem to be effective'⁹¹. Clarke and Wildy highlight the example of the Cowell Area School Certificate of Aquaculture, started in 1991 by local

oyster growers, as training a school can provide that will result in students having job opportunities in their own area⁹². The concept is particularly commonly invoked with reference to schools serving predominantly Aboriginal communities.

While a strong theme in the literature on rural and remote education, the concept of place-based learning warrants scrutiny. On one hand, all education is contextual and place-based, whether the community in question is rural or metropolitan, and teachers everywhere need to make learning relevant and engaging for their students. On the other hand, an over- or wrongly-pitched emphasis on place-based learning has the potential to cut across the agenda of high expectations for all. These tensions are summed up in quotations from two rural teachers in the 2006 study of 'rural pedagogies' by McConaghy and co-authors. While one teacher located learning firmly in the local context – 'We do stuff like count the sheep in twos' – another saw a role in exposing students to material they may not otherwise encounter: '[You] sometimes amaze kids with something that might be stock standard for others. ... This presents as a challenge in a reading programme – pig-shooting and opals is not the only way to teach!'⁹³.

The New South Wales Quality Teaching Model, introduced in 2003, identifies three core strands to quality teaching practice – Intellectual Quality, Quality Learning Environment and Significance. Significance is defined as that dimension of teaching that 'link[s] the work of ... students to personal, social and cultural contexts outside of the classroom'⁹⁴. While not place-specific, the focus on significance could be seen as contiguous to some aspirations and articulations of place-based learning. Research into the differential impact of the three Quality Teaching elements on closing the achievement gap between Aboriginal and non-Aboriginal students, found that 'task significance was not as important for closing the gap ... as was the intellectual rigour, high expectations and explicit quality criteria of tasks'⁹⁵. Importantly, this is not to deny the broader importance of school-level inclusivity and connectedness to community in fostering student willingness to engage with learning, especially in schools with substantial Aboriginal populations⁹⁶.

Effective use of ICT to support quality teaching and learning

Information and Communications Technology (ICT) is frequently identified as a major mechanism for addressing the challenges of ensuring all students have access to a broad range of quality learning experiences, regardless of their location. Howley, Wood and Hough outline international literature identifying 'the special role that technology can play in addressing the needs of rural students' and 'showing that distance education works to improve educational equity for impoverished rural students and their families' in a number of countries⁹⁷. The Queensland Government's Action plan for rural and remote education 2011-2015 states that 'ICT and technology is critical to the effective implementation of statewide strategies in rural and remote settings'⁹⁸.

Given the influence of secondary school size on the performance gap between metropolitan and non-metropolitan schools, ICT may be particularly advantageous in addressing rural and remote students' access to a broad curriculum, especially specialist,

higher-level subjects with smaller candidatures at the HSC level⁹⁹. According to Redding and Walberg, the most extensive synthesis of research covering 232 control-group studies found that 'student achievement, attitude, and retention were the same for classroom and online Internet instruction'¹⁰⁰. Similarly, an international meta-analysis of 14 web-delivered distance education programs found neither positive nor negative effects on student achievement, suggesting it may be comparable to traditional instruction. Researchers generally agree, however, that it is not appropriate for all students¹⁰¹.

ICT by itself will not transform student outcomes. Despite extensive investment in ICT for education in a number of countries, including the United States and Australia, robust evidence of significant positive impact on student achievement is comparatively rare. Technology can be a powerful tool for stimulating student engagement and motivation¹⁰², but this is an intermediate outcome. There is substantial research following the lead of Cuban in 2001, indicating that many teachers either resist incorporating technology, or use it in 'limited and unimaginative ways'¹⁰³. Hattie shows that the ways in which teachers use technology are associated with differences in student outcomes. For instance, use of computers is more effective when diverse teaching strategies are used; when teachers are trained in the use of computers; and when the student is in charge of learning¹⁰⁴.

Rural schools can face additional or more acute challenges integrating ICT effectively. These include access to adequate bandwidth (videoconferencing, for example, is bandwidth intensive), access to professional development for technology integration, access to technical assistance, and access to maintenance¹⁰⁵. According to Canadian data:

... rural students use computers and other forms of ICT as much as urban students. However, rural schools are less likely to have a well-trained ICT specialist who does not also have teaching responsibilities; rural schools are less likely to provide technical training for their teachers; and rural schools have slower internet connections¹⁰⁶.

In the Australian context, the SiMERR national survey of the circumstances and needs of Australian teachers involved in science, ICT and mathematics education identified a high unmet need for support managing ICT resources and supporting staff in their effective use¹⁰⁷. One recent study did, however, find that 'students in rural schools were perhaps better positioned to benefit from such [ICT] approaches than their counterparts in non-rural schools because their teachers already had more positive attitudes towards technology integration'¹⁰⁸. The same study confirmed other findings that adequate technology and professional preparation are indeed predictive of technology integration in terms of the sophistication of student technology use.

Teachers and school leadership

In its 2000 inquiry into regional and remote education, the Human Rights and Equal Opportunity Commission found that teacher training did not adequately equip new teachers to work in rural and remote Australia, and reported that teachers did not have the skills needed to teach Indigenous children and children with special needs¹⁰⁹. The inquiry report recommended:

All teacher training institutions should require undergraduates to study a module on teaching in rural and remote communities, offer all students an option to undertake a fully-funded practical placement (teaching experience) in a rural or remote school and assist rural and remote communities in the direct recruitment of new graduates for their schools¹¹⁰.

However, it appears that education courses delivered today are still largely metro-centric¹¹¹, and do not adequately prepare teachers for work in rural and remote schools¹¹². For instance, the three year 'Teacher Education for Rural and Regional Australia' (TERRAnova) project found that although teacher education was central to addressing the staffing crisis in regional and rural areas,

... the majority of Australian universities have no explicit focus on rural education in their teacher education programs; have random and ad hoc rural practicum opportunities and no obvious link to any of the various financial incentives across Australia to encourage graduates to work in rural areas¹¹³.

Practicum

Pre-service education aiming to prepare and encourage teachers to work in regional and rural areas necessarily involves more than university classes¹¹⁴. One research project conducted in Western Australia found that even those pre-service teachers who have expressed an interest in working in rural and remote areas are 'under-informed' about the reality of life in these areas. Misinformation (whether positive or negative) may harm recruitment and retention¹¹⁵.

Visiting a rural or remote community (through a practicum or internship) has been shown to have a positive impact upon student teachers' attitudes towards these areas¹¹⁶ and to encourage students to consider working in regional and rural areas¹¹⁷. A practical pre-service component builds on the theoretical base learnt at university by helping teachers develop relationships with the local community and understand the context their students live in¹¹⁸. The earlier such a placement takes place the better, as by the final year of a student teacher's study they may have already decided on their pathways¹¹⁹.

For this reason offering subsidies or stipends may be a valuable investment. For instance, participants in the West Australian Student Teacher Rural Experience Program (STREP) which provides students participating in rural practicums with a weekly stipend, were surveyed in 2005. Although only a small number of surveys were returned¹²⁰, the responses were encouraging. More than 70 per cent said that the practicum had encouraged them to apply for rural or remote positions, and 40 per cent said that they would not have applied for the remote practicum without STREP support¹²¹.

Importantly, a practicum or internship also gives a school the opportunity to trial pre-service teachers¹²². Further, knowledge of rural and regional areas not only improves recruitment, it strengthens retention: teachers who make informed decisions about rural or remote placements are more likely to stay on. As one rural practicum participant pointed out 'There is no point relocating to find out in 3 weeks that teaching in the country is not for you. It is not fair on the children and the school'¹²³.

Finally, shorter-term visits or 'field trips'¹²⁴ provide an alternative to internships and practicums for pre-service teachers who are not able to spend long periods of time away from family and work commitments. White and Reid cite these commitments as obstacles to people taking up rural practice-teaching placements¹²⁵. One example of such a program is the 'Beyond the Line' program in New South Wales, which takes trainee teachers to rural and regional areas on short visits¹²⁶. Halsey surveyed pre-service teacher education providers from 23 institutions, and reported that programs such as Beyond the Line have had a positive impact and increased the number of students considering a rural practicum¹²⁷.

Staff turnover

Studies have consistently identified teacher retention as a major issue in regional and remote schools: new teachers 'do not always expect to stay for long'¹²⁸ and teachers in remote schools are six times more likely to report high staff turnover than teachers in metropolitan schools¹²⁹.

Analysis of New South Wales Department of Education and Communities data shows that on average, teachers working in metropolitan schools have 12.9 years experience; but those working in remote schools have only 7 years experience. Teachers have spent an average of 7.1 years in their current school in metropolitan areas, compared to 4.7 years in remote areas¹³⁰.

These findings are not limited to New South Wales. The Staff in Australia's Schools (SiAS) survey involved responses from thousands of primary and secondary teachers and leaders across Australia, and identified that greater proportions of primary and secondary principals experienced 'major' difficulty in suitably filling staff vacancies in provincial and remote areas: while 6 per cent of secondary principals in metropolitan areas expressed this difficulty, the proportion rose to 15 per cent of provincial and 23 per cent of remote principals. Principals also experience greater difficulty in retaining staff outside of metropolitan areas: 3 per cent of primary principals in metropolitan areas experienced 'major' difficulty in this area compared to 7 per cent in provincial and 15 per cent in remote areas¹³¹. Many teachers leave country placements within their first five years, partly as a result of isolation¹³². SiAS found that teachers working in remote areas are more likely to plan on resigning or to be unsure about their career paths¹³³.

These findings are troubling as many teachers 'churning through' these rural placements are younger and less experienced¹³⁴. Analysis of New South Wales data shows that staff in remote schools are on average five years younger than those working in metropolitan schools. In Australia, 30 per cent of primary and 24 per cent of secondary teachers in remote schools had been teaching for five years or less¹³⁵, and teachers working in remote schools have about two years less experience than teachers in metropolitan and provincial schools¹³⁶.

Staffing problems are at their most severe in the more remote and disadvantaged areas, where schools are allocated relatively greater numbers of new teachers and teachers stay for shorter periods of time¹³⁷. The high turnover of staff means that schools may have to constantly pay for the professional development of new staff, who may then leave before the school receives any benefit from this development¹³⁸.

Some reasons for this high turnover may include reduced curriculum diversity and educational opportunities (including tertiary); fewer social and cultural opportunities; other issues related to distance; and fewer employment and training opportunities¹³⁹. SiAS found that teachers in remote areas experienced 'markedly lower' levels of job satisfaction than other teachers¹⁴⁰. Further, some teachers may struggle with the loss of privacy or anonymity that comes with working in a smaller community¹⁴¹.

However, it is important to recognise that not all rural teachers go through this 'churn'. Research from the US cites higher levels of satisfaction among teachers working in rural areas¹⁴². Further, Boylan and McSwan surveyed 427 long-staying rural teachers in 1998 and found that 80 per cent were either moderately or highly satisfied with teaching at their schools. Teachers surveyed identified three main reasons for staying on in rural areas: work-related reasons such as enjoyment of classroom teaching and job satisfaction; personal reasons relating to family, lifestyle, and a sense of belonging; and community reasons such as social relationships and environmental factors¹⁴³.

Recruitment and incentives

Teachers are often encouraged to work in rural and regional areas through financial and other incentives. The NSW Department of Education and Communities, for instance, provides various incentives to teachers working in selected rural or remote schools including extra training days; 70-90 per cent training subsidies; preference in future transfers; an annual 'retention' benefit of \$5,000 (available in some isolated schools); locality allowances; and additional holidays¹⁴⁴.

Opinion is divided, however, on the ultimate effectiveness of incentive schemes in producing sustainable solutions for staffing schools. On one hand, a national survey of parents and primary and secondary science, mathematics and ICT teachers found that financial incentives such as preference for future transfers, cheaper accommodation and allowances attracted metropolitan teachers to rural and regional schools¹⁴⁵. Seventy-nine per cent of respondents to a NSW Teachers Federation survey saw bonded teacher training scholarships as very or moderately successful in attracting teachers to rural and remote schools¹⁴⁶. Kline, Lock and Smith argue that incentive schemes are under-used and under-promoted¹⁴⁷.

On the other hand, it may be that the use of such incentives initially attracts people, but does not encourage them to stay. Roberts argues that the use of economic benefits or the promise of a move elsewhere is a 'deficit model of school staffing as it attracts people by being the pathway into permanent employment and then promising a way out rather than positively promoting the career and a rural placement'¹⁴⁸. Such an approach views rural and remote schools as a 'purgatory' that must be endured before the opportunity arises to move somewhere preferable¹⁴⁹. Ankrah-Dove argues that a better approach 'presupposes that rural life is worth living and that teachers can gain intrinsic satisfaction and advance their careers deep in the bush'¹⁵⁰. Under this model there would be a focus on the professional opportunities available in regional and rural areas, for instance the empowerment of teachers to 'develop the self-reliance to meet the challenges of living and working in rural and remote areas'¹⁵¹.

Providing teachers for rural and regional schools is not simply a matter of ensuring each classroom has a teacher: it is a matter of ensuring that these classrooms are staffed by 'quality teachers, quality teaching and quality programs, in conditions conducive both to teachers' work and student learning'¹⁵². Arguably, such an approach is more likely to mean that the 'right teachers' are appointed¹⁵³, and stay longer¹⁵⁴.

Retention

Effective mentoring and induction programs are vital to improving teacher retention in all schools, however these programs are even more important in rural and regional areas, as beginning teachers are more isolated and are often adapting not just to a new job but to a new culture¹⁵⁵. The Vinson Inquiry reported that:

... no aspect of the recruitment, preparation and induction of new teachers received more comment ... especially in remote areas, than the support and guidance they need in the first years in the profession¹⁵⁶.

American and Canadian studies have found that mentoring, induction programs, teacher networks and opportunities to collaborate with other teachers lead to significantly higher retention rates¹⁵⁷. The possibility of online mentoring expands the options available to people working in more remote communities, with one study finding that a combination of both face-to-face and online mentoring is optimal, and in fact there are some advantages in particular to online mentoring. Online mentors are not a part of the culture or politics of their mentee's workplace, and are not in a position of direct authority over their mentee¹⁵⁸.

However, one of the most effective methods of attracting and retaining staff may be to recruit teachers who come from regional and rural areas. A national survey found that teachers tend to work in areas similar to those in which they lived while studying: 73 per cent of those who lived in rural areas while studying were working in rural areas; while only 5 per cent of those who lived in rural areas worked in metropolitan areas¹⁵⁹. This supports an earlier study by Boylan and McSwan, which found that 72 per cent of long-staying teachers in rural and regional areas had grown up in a rural area. Further, 60 per cent of primary teachers and 22 per cent of secondary teachers had studied at a rural teacher education institution¹⁶⁰.

It may be necessary to exercise some caution with this approach, as education courses in regional universities tend to have lower entry requirements than those in major cities. For instance in 2012 the median ATAR of direct entrants to initial teacher entrants courses was 51.8 at Southern Cross University (at Tweed Heads, Lismore and Coffs Harbour in New South Wales), and 56.45 at the University of New England, but 87 at the University of Sydney¹⁶¹. It is important that children in rural and regional areas have access to teachers of the same quality as those who attend schools in metropolitan areas.

Professional development

The central role of professional development in supporting rural and regional teachers to provide quality direct instruction to their students has been identified both in Australia and internationally¹⁶². The need for professional development is

substantially higher amongst teachers working outside of metropolitan areas: the SiMERR national study found that this was particularly the case for primary teachers in remote areas, and for science teachers in provincial and remote areas. The survey found there was a particular need for professional development in relation to teaching Indigenous students, students with special needs and gifted and talented students¹⁶³. Problems with accessing professional development extend to further tertiary study or opportunities for HSC marking¹⁶⁴.

The need for professional development increases with distance from metropolitan areas¹⁶⁵. However, centrally provided professional development opportunities become more time-consuming and expensive, and relief teachers more difficult to access, in more remote areas¹⁶⁶.

A range of solutions have been suggested to overcome the limitations of distance¹⁶⁷. To give one example, Queensland provides an 'extensive range' of online professional development opportunities for its staff in rural and remote areas¹⁶⁸. However, one literature review has found that 'regardless' of the online strategy developed, face-to-face contact was important for teachers in rural and regional areas, to combat professional isolation¹⁶⁹.

In light of the potential for isolation, continuous informal professional development with colleagues within a teacher's own school may be of particular use in schools that do not have the resources to constantly send their teachers to larger centres for formal, more discrete units of professional development¹⁷⁰. 'Clustering', or informally grouping teachers from different schools or sectors, is a further option that has been used in some jurisdictions¹⁷¹. At the same time, in rural contexts colleagues can also comprise a teacher's primary social network, potentially compromising their ability to offer constructive criticism.

School leadership

As is the case with teaching, quality school leadership in rural and remote areas shares many characteristics with quality school leadership in metropolitan areas. For instance, a recent study of 11 improving remote schools across Australia found that school leadership played a 'critical role' in improving both teacher practice and student outcomes¹⁷². The study specifically cited examples of best practice in remote schools promoted by leaders, such as high expectations for students and providing instructional leadership¹⁷³ – practices that are widely accepted to be effective¹⁷⁴.

However, as is the case with teaching, there are particular challenges faced by rural and remote schools in relation to school principals, including higher turnover, earlier promotion, and the heightened complexity of their roles.

One literature review reports that 'it is not uncommon for two or three principals to occupy a post within one school year'¹⁷⁵. New South Wales data reveals that principals in metropolitan areas have on average almost twice the level of experience of teachers in remote schools: 26.5 years compared to 13.5. Further, principals in remote areas have spent an average of 2.4 years in their current position, compared with the 4.2 years principals have spent in their metropolitan positions¹⁷⁶.

One West Australian program provides a model for recruiting principals to rural areas. The 'Rural Aspirant Program' was devised to attract principals to towns which previously had difficulty attracting educational leaders. Under this program a principal participates in a two-year trial in the position, after which they may either return to their previous position or request substantive appointment to the role. This program has been successful in increasing the number of applications to schools that previously received few or no applications. It is now more difficult to obtain one of these positions, as there is a range of high-quality applicants. Under this scheme, 30 principals have been appointed with only 1 dropping out¹⁷⁷.

Due to the accelerated nature of progression to leadership areas in rural areas¹⁷⁸, recruitment drives must be complemented by support for new leaders. Although there are some benefits to smaller school size, which may allow principals to exert greater influence over teaching and learning in their schools¹⁷⁹, Cornish's study of leadership practices in rural schools highlights the potentially negative impact of early promotion on principals who may feel unsupported, and may struggle to balance teaching and leadership roles¹⁸⁰.

This balance may be more difficult for principals in rural and remote communities, who tend to play more complex roles than their metropolitan counterparts: they are more likely to have teaching responsibilities and less support for administrative duties (for instance, to have a deputy)¹⁸¹. Principals may also need to have 'social and creative entrepreneurial skills' in order to attract resources – including staff – to their schools¹⁸². Principals are expected to learn these complex roles 'on the job' – an approach considered by Wildy and Clarke to be inadequate¹⁸³. Some funding is available to support principals' professional development through, for instance, online programs, which compensate to some extent for the difficulties they experience in leaving their schools to attend programs in person¹⁸⁴.

One of the most important responsibilities of a principal in a rural or remote school is that of establishing strong relationships with the local community. These skills are particular to each community¹⁸⁵, and are essential to successfully driving school improvement. For instance, the local community can provide support to the school and access to more resources, despite financial constraints¹⁸⁶: rural communities' history of self-reliance allows rural residents to help schools find creative ways to overcome limited resources and geographic isolation¹⁸⁷. Masumoto and Brown-Welty 2009, also concluded that effective leaders in rural schools know how to leverage the resources available to them¹⁸⁸.

In addition to supporting the school with resources, a strong connection to the community means principals gain support in developing a culture of high expectations and pushing for strong academic achievement. In a study of high-performing, high-needs rural schools, Barley and Beesley found factors for success included strong relationships with families, where teachers concern for their students went beyond the classroom¹⁸⁹. They also attended to students' social and behavioural needs. Stewart and Hopkins also suggested that better performance by students in smaller districts may be the result of closer family and community ties¹⁹⁰.

Conclusion

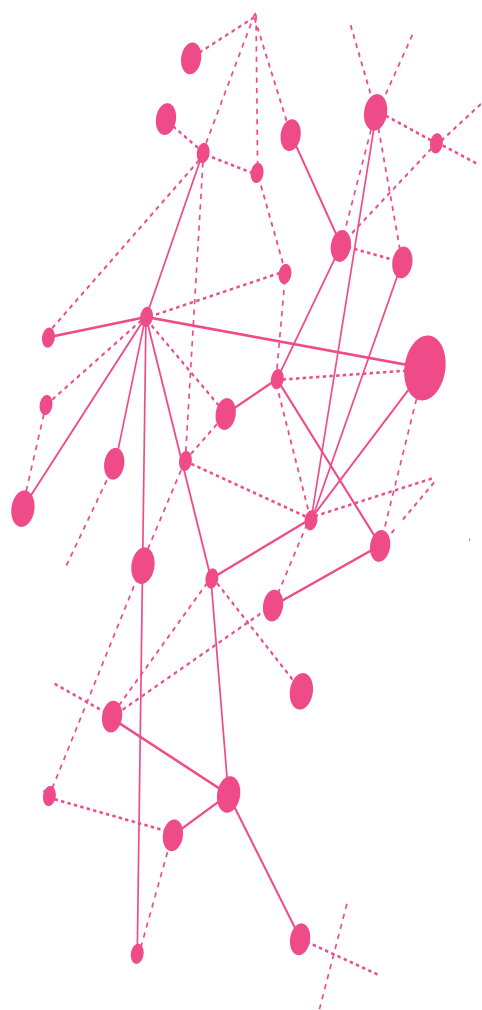
This paper provides data in relation to an issue that is internationally understood to be true: that students attending schools in rural and remote areas tend to have worse academic outcomes than students attending schools in metropolitan areas. However, this gap is a particular problem in New South Wales, and perhaps most disturbingly (and despite numerous government and non-government reports on the issue), the gap is increasing. This increasing gap places at risk key priorities aiming to improve outcomes for students in rural and remote areas, such as the aim that 90 per cent of 20-24 year olds in rural and regional New South Wales will have attained at least Year 12 or equivalent by 2020¹⁹¹: currently, only 65 per cent of 20-24 year olds in remote or very remote New South Wales have attained this level of qualification, with these numbers rising to 70 and 76 per cent in outer and inner regional areas respectively¹⁹².

This analysis confirms that the difference in outcomes can be very largely explained by student and school characteristics broadly understood to impact upon outcomes, including socio-economic status and Aboriginality. However what is unique to rural and remote areas is the concentration of multiple forms of disadvantage (schools are more likely to have more students who are low-SES, and more likely to be smaller). Further, increasing geographical remoteness heightens the impact of this disadvantage.

To take the example of professional development, teachers located furthest away from centres offering development opportunities will have to incur the greatest expense to access those opportunities, and are least likely to be able to access casual relief teachers. Although some online opportunities for professional development exist, it appears that personal, face-to-face contact cannot be entirely replaced by online mechanisms.

Some researchers have noted innovative solutions to problems such as these, for instance, the creation of informal networks within a school or a cluster of nearby schools. However, in a trend that is symptomatic of the wider research on rural and remote schools, few if any of these programs have been evaluated in a manner that is sufficiently rigorous as to indicate whether those programs should be more widely replicated.

Supporting students in rural and remote areas means supporting teachers and principals. Improving the educational outcomes of students in rural and remote areas is an equity issue but it also has significant implications for economic wellbeing at state and national levels. If Australia can no longer ride on the sheep's back, it will need to rely on the intellectual capital of all Australians, not least those who live outside of major cities.



Further analysis of educational outcomes

AEDI

The Australian Early Development Index (AEDI) is a measure of all Australian children's development in their first year of formal full-time schooling. There are five developmental domains: physical health and wellbeing, social competence, emotional maturity, language and cognitive skills, and communication skills and general knowledge. Currently, only 2009 data is available by geographic location.

Table A1 shows the proportion of children that are assessed to be developmentally vulnerable on those domains. The results show that the more remote the region¹⁹³ becomes, the more likely children are to be developmentally vulnerable on one or more domain/s (and on two or more domains). For example, 22.5 per cent of children were developmentally vulnerable on one or more domain/s in major cities of Australia compared with 47.1 per cent in very remote Australia.

Table A1

Proportion of Australian children developmentally vulnerable on AEDI domains, 2009

Geographic Location	Vulnerable on one or more domain/s	Vulnerable on two or more domain/s
Major Cities of Australia	22.5%	11.0%
Inner Regional Australia	23.6%	12.1%
Outer Regional Australia	26.8%	14.1%
Remote Australia	29.5%	16.0%
Very Remote Australia	47.1%	30.5%

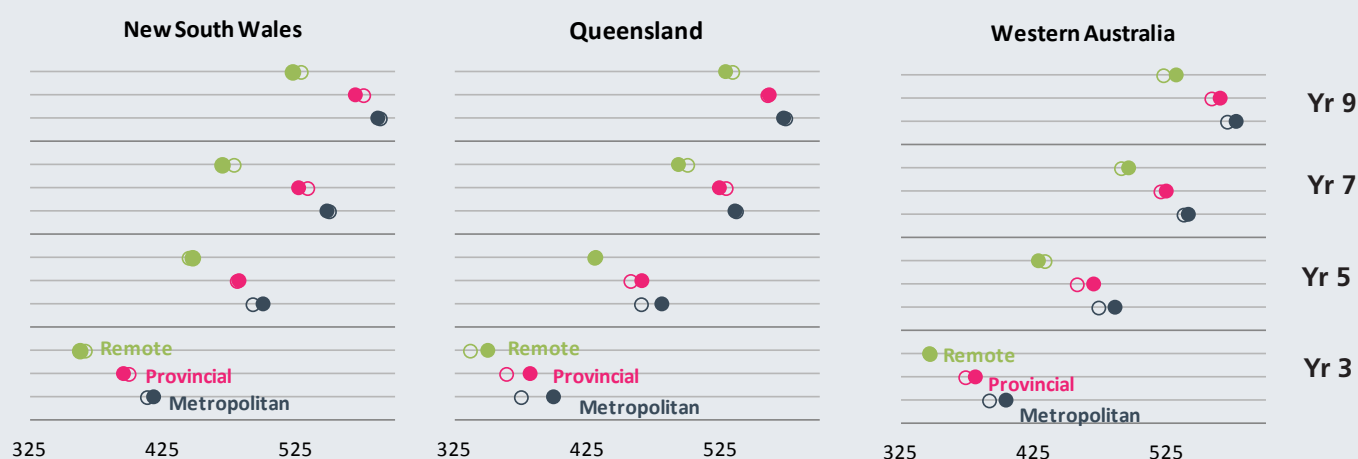
Source: AEDI 2009

NAPLAN

Figure A2 shows the average reading and numeracy NAPLAN score by geolocation for New South Wales, Queensland and Western Australia. The unfilled circles indicate performance in 2008 and the filled circles indicate performance in 2012.

Figure A2

Average NAPLAN scores by geolocation of school, selected states



Source: CESE analysis using NAPLAN 2012 data

New South Wales has the largest gap of any state between its provincial and metropolitan schools, and the largest gap between remote and metropolitan secondary schools (see Figure A3).

Figure A3

Average difference in NAPLAN mean scores from metropolitan schools by state, 2012

		NSW	VIC	QLD	SA	WA	TAS	NT	ACT
Year 3	Provincial	-23	-17	-18	-12	-20	-13	N/A	N/A
	Remote	-56	-33	-49	-49	-78	-12	N/A	N/A
Year 5	Provincial	-18	-16	-15	-11	-17	-8	N/A	N/A
	Remote	-53	-3	-50	-50	-75	-8	N/A	N/A
Year 7	Provincial	-21	-17	-12	-10	-16	-12	N/A	N/A
	Remote	-79	10	-42	-42	-63	-41	N/A	N/A
Year 9	Provincial	-17	-14	-11	-10	-16	-15	N/A	N/A
	Remote	-64	4	-44	-44	-64	-53	N/A	N/A

Source: CESE analysis using NAPLAN 2012 data

Note: NT does not have metropolitan schools. ACT has only one provincial school.

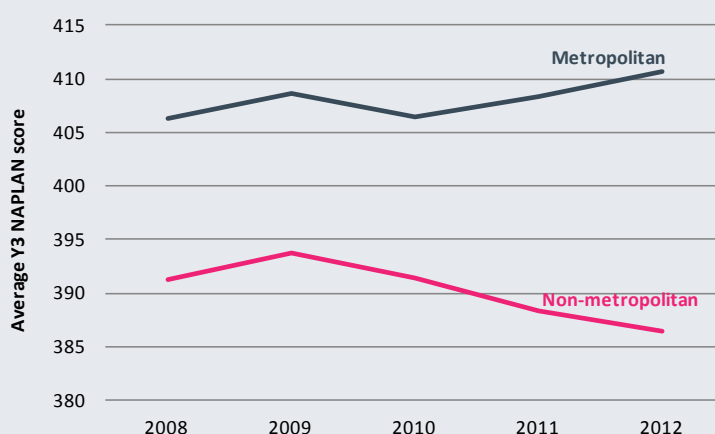
Figure A4 shows the average Year 3 NAPLAN scores in metropolitan and non-metropolitan schools from 2008 to 2012. While the trend for metropolitan schools appears to be a gradual increase (particularly from 2010), average scores in non-metropolitan schools have been consistently declining from 2009, causing the gap to increase by 62 per cent.

Performance by geolocation in an international context

According to the international PISA reading test of 15-year-olds, there was a difference of 53 score points (or over one and a half years of schooling) between Australian students in city schools compared to rural schools. Even after accounting for differences in socio-economic status, there was still a significant difference of 32 score points, or almost one year of schooling (Figure A5). These differences were higher than the OECD average, as well as higher than in high performing countries such as Finland, Canada, Japan, New Zealand and Korea.

Figure A4

Average Year 3 NAPLAN scores by geolocation, 2008-2012



Source: CESE analysis using NAPLAN 2012 data.

Figure A5

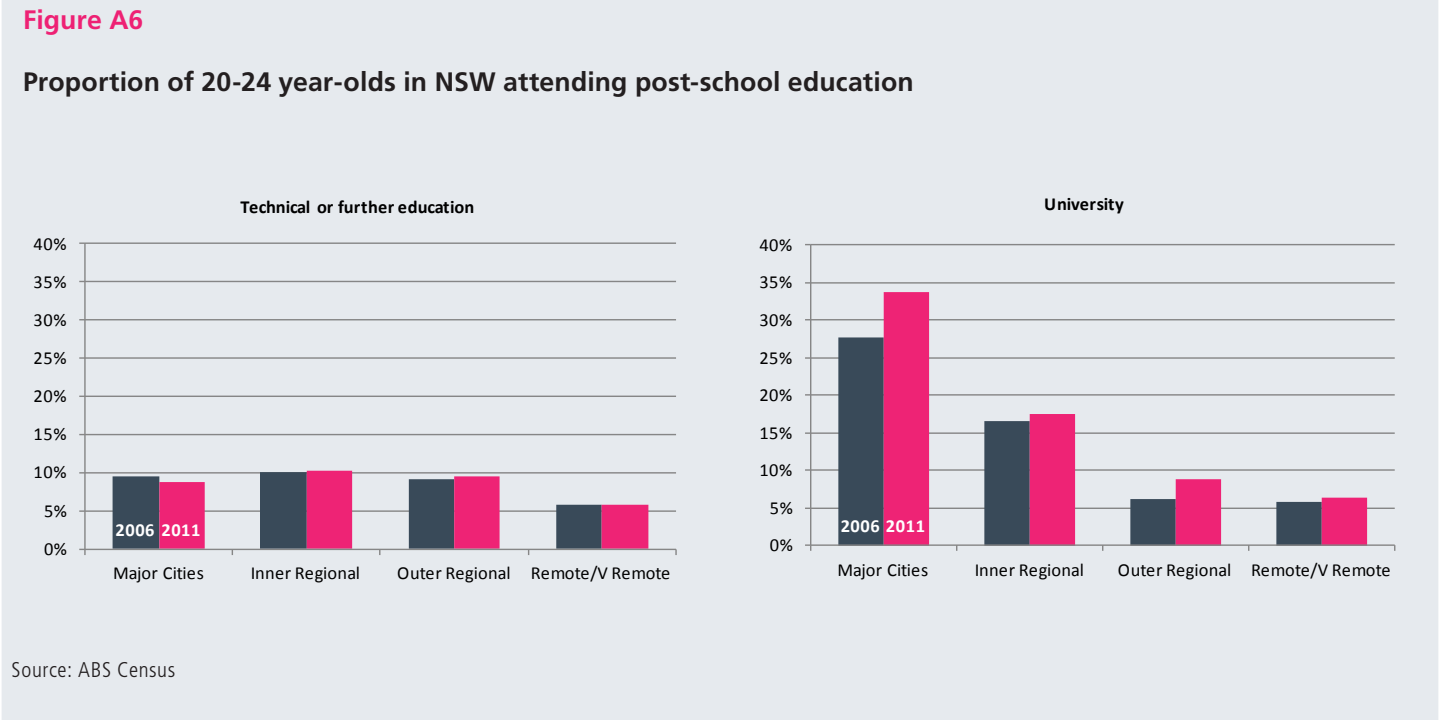
PISA reading performance by geolocation and country, 2009

Country	Score difference – City vs rural schools	
	Before accounting for SES	After accounting for SES
Germany	54	40
Australia	53	32
OECD	40	23
New Zealand	39	15
Canada	30	18
Finland	18	3
United States	7	1
United Kingdom	-20	-14
Korea	-73	-44

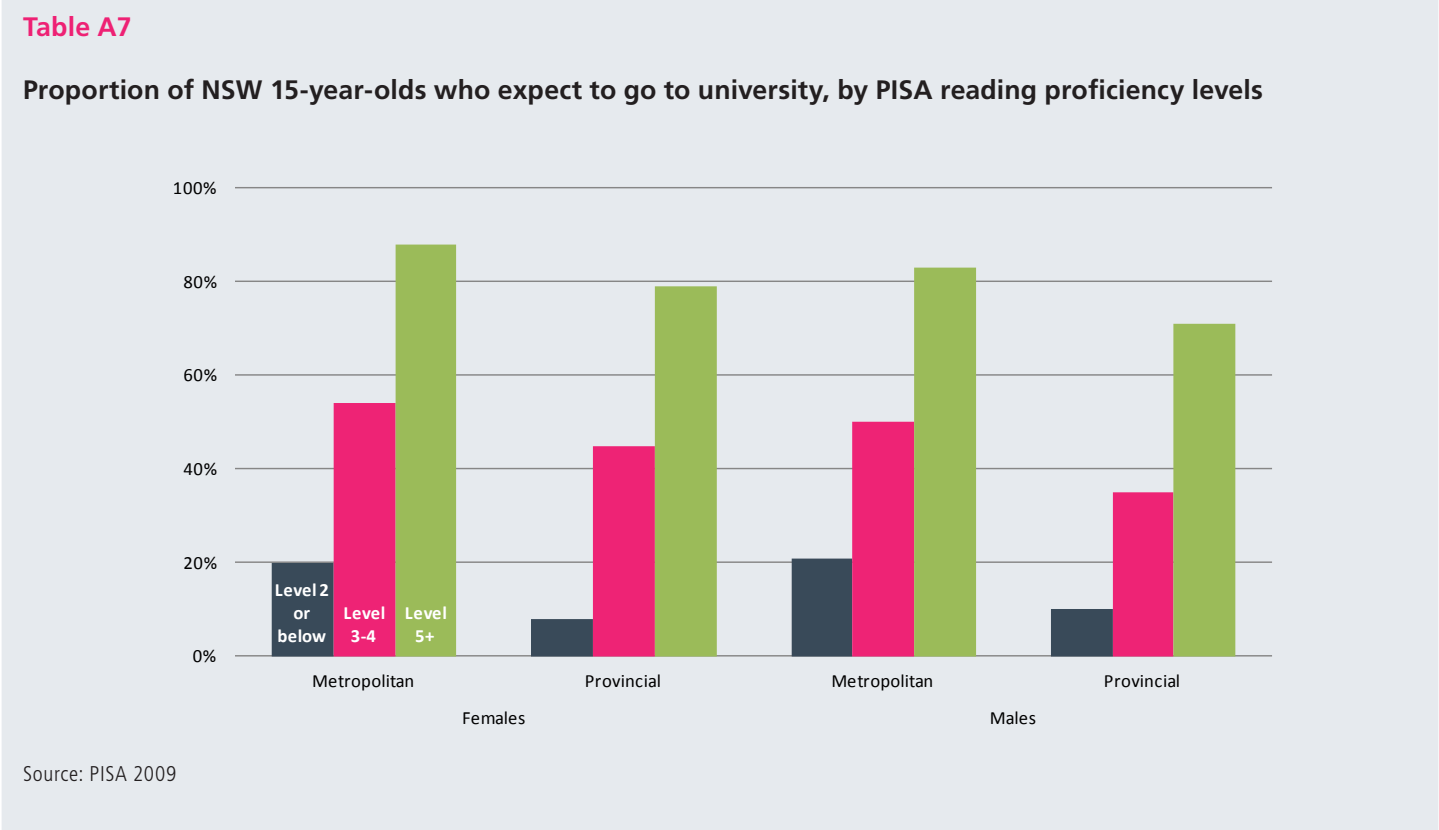
Source: PISA 2009

Post-school destinations

According to data from the last two censuses, slightly more young people from regional New South Wales attend technical or further education than from metropolitan New South Wales. However, far more metropolitan young people attend a university, with this gap increasing noticeably between 2006 and 2011 (Figure A6).



Even among high performing students there is a gap in expectations between metropolitan and regional students, according to the 2009 PISA survey of 15-year-olds. Figure A7 shows that 71 per cent of the highest-performing males in regional areas expect to go to university, compared to 83 per cent of similarly-scoring males in metropolitan areas.



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