

The Rural and Remote Education Blueprint

Interim monitoring and evaluation report

Centre for Education Statistics and Evaluation



List of abbreviations

AEDC	Australian Early Development Census
AITSL	Australian Institute of Teaching and School Leadership
ATAR	Australian Tertiary Admission Rank
ARIA+	Accessibility/remoteness index of Australia +
ARR	Apparent retention rate
BEN	BIJOU Education Network
BOSTES	Board of Studies, Teaching and Educational Standards NSW
CESE	Centre for Education Statistics and Evaluation
CIF	Cumulative incidence function
DPC	Department of Premier and Cabinet
DGO	District Guidance Officer
DoE	NSW Department of Education
DP&E	NSW Department of Planning and Environment
ERG	Evaluation Reference Group
ESL	English as a second language
FACS	Department of Family and Community Service
FOEI	Family Occupation and Education Index
FoL	Focus on Learning
FRS	Family Referral Service
FTE	Full-Time Equivalent
GTIL	Great Teaching, Inspired Learning
HSC	Higher School Certificate
LBOTE	Language background other than English
LDI	Leadership Development Initiative
LGA	Local Government Area
MCEETYA	Ministerial Council on Education, Employment, Training and Youth Affairs
NAIDOC	National Aborigines and Islanders Day Observance Committee
NAPLAN	National Assessment Program – Literacy and Numeracy
NGO	Non-government organisation
NSC	Networked Specialist Centre
NSSC	National Schools Statistics Collection
OCA	Orange Cowra Ascending Education Network
OR	Odds Ratio
PFM	Preschool Funding Model

SAM	School Administration Manager
SCSEEC	Standing Council on School Education and Early Children
SEIFA	Socio-economic index for areas
SES	Socio-economic status
SGLA	Snow Gums Learning Alliance
SSP	School for Specific Purposes
TEN	Targeted Early Numeracy
THA	Teacher Housing Authority
The Department	NSW Department of Education
TTFM	Tell Them From Me
UAC	University Admissions Centre
VIF	Variance Inflation Factor

Publication and contact details

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Table of contents

Executive summary	9
1. Introduction	15
Evaluation of the Blueprint	16
This report	16
2. Evaluation method	17
Definition of rural and remote schools	17
Data sources	17
Third party surveys	19
3. Findings	23
Quality early childhood education	23
Education Networks	28
Networked Specialist Centres	32
Incentives to attract and retain teachers and school leaders	41
Teach. <i>Rural</i> scholarships	46
Aurora College	49
Rural and remote mentoring program	56
NAPLAN and HSC marking	57
Rural teacher exchange program	58
4. Impacts to date	59
Readiness for Kindergarten	59
The quality of teaching	65
Student engagement	71
School retention and ATAR	83
5. Concluding comments	87
6. References	88

Appendix A: Actions in the Rural and Remote Blueprint	89
Appendix B: Examination of representativeness of the principals' surveys	91
Appendix C: Education Network case studies	92
The Snow Gums Learning Alliance	92
The Orange Cowra Ascending Education Network	94
Northern Central Groups 1 and 2	96
The BIJOU Education Network	98
Appendix D: Retention analysis for teachers with new incentive measures	100
Appendix E: Fixed effects models for attendance	103
Appendix F: Technical specifications of multilevel regression analysis of the FoL teacher survey	105
Appendix G: Technical specifications of multilevel regression analysis of the TTFM student survey	106
Appendix H: Technical specifications of multilevel regression analysis of NAPLAN performance for Year 5 and 9 students between 2011 and 2015	107

List of tables

Table E.1: Progress and impacts of key Blueprint actions as of Term 2, 2016.....	10
Table 2.1: Surveys developed for the evaluation.....	18
Table 2.2: Measures assessed in the TTFM survey.....	20
Table 2.3: Measures assessed in the FoL survey.....	20
Table 2.4: Sources of administrative data.....	21
Table 3.1: Schools participating in Education Networks, 2014-2016.....	29
Table 3.2: Participants' reported Education Network objectives and extent of achievement to date.....	30
Table 3.3: Locations and establishment dates of rural and remote NSCs.....	32
Table 3.4: Proportional odds ratios of schools reporting greater ease in obtaining external support for students with complex needs in 2015, relative to schools in other Operational Directorates.....	40
Table 3.5: Uptake of incentives announced in the Blueprint.....	42
Table 3.6: Number of applications and commencements, teach. <i>Rural</i> scholarships.....	46
Table 3.7: Scholarship holders' high school and university locations.....	48
Table 3.8: Subjects and enrolments for Stage 6, Aurora College, 2016.....	50
Table 3.9: Staffing at Aurora College, 2015-2016.....	51
Table 4.1: FoL: Differences in teachers' ratings for the eight drivers of student learning compared to metropolitan teachers' ratings, 2014 and 2015.....	68
Table 4.2: Coefficients from the multilevel regression analysis of relative changes in the locational prevalence of evidence-based drivers of student learning 2014-2015.....	69
Table 4.3: TTFM: Differences in secondary students' ratings of the quality of instruction from metropolitan students' ratings, 2015 and 2016.....	71
Table 4.4: Coefficients from the multilevel regression analysis of relative locational changes in secondary student-reported quality of instruction from 2015 to 2016.....	71
Table 4.5: TTFM: Differences in secondary students' ratings for school engagement between locations, 2015 and 2016.....	73
Table 4.6: Gaps in the percentage of students in the top two NAPLAN bands for reading and numeracy relative to metropolitan students.....	77
Table 4.7: Absolute gaps in mean NAPLAN scores for reading and numeracy relative to metropolitan students.....	80
Table 4.8: Number of rural and remote HSC students taking Creative Arts subjects, 2011-2015.....	85
Table A1: Rural and Remote Blueprint actions.....	89
Table B1: Extent to which principals' surveys responses represent the sampling frame and population.....	91
Table D1: Estimates of subdistribution hazard ratios from the subdistribution hazard model.....	102
Table E1: Results of fixed effects panel data models.....	104

List of figures

Figure 3.1: Enrolments of four to five-year-olds in community preschools in rural and remote locations.....	25
Figure 3.2: Enrolments of three-year-olds in community preschools in rural and remote locations.....	26
Figure 3.3: NSW population projections for three to five-year-olds in rural and remote locations.....	27
Figure 3.4: Enrolments of three to five-year-olds across community preschool capital grants sites where projects completed before August 2015.....	28
Figure 3.5: Services used by schools to obtain support for students with complex and challenging needs.....	34
Figure 3.6: Direct support received from NSCs.....	34
Figure 3.7: NSC interagency projects in rural and remote locations.....	36
Figure 3.8: NSC partner agencies on school and community projects.....	36
Figure 3.9: Reported ability to access external support for students with complex needs in 2014 and 2015.....	38
Figure 3.10: Predicted probability of schools' ease of accessing external support around students with complex needs in 2015, given the reported ease in 2014, by location.....	39
Figure 3.11: Predicted probability of schools' ease of accessing external support around students with complex needs in 2015, given the reported ease in 2014, by Operational Directorate.....	39
Figure 3.12: Effect of incentives on ability to attract teachers.....	43
Figure 3.13: Effect of incentives on ability to retain teachers.....	43
Figure 3.14: Effect of 50 per cent rental subsidy on decision to accept position.....	44
Figure 3.15: Prior teaching experience for new teachers at four, six and eight-point incentive schools in rural and remote locations, 2008-2015.....	45
Figure 3.16: Planned number of years working in rural or remote NSW by experience of living in rural areas.....	47
Figure 3.17: Attitudes towards rural and remote life of teach. <i>Rural</i> scholarship holders by high school location.....	47
Figure 3.18: Scholarship holders' expected ease of teaching in different locations.....	48
Figure 3.19: Aurora College enrolment as at 02 June, 2015 and 2016.....	49
Figure 3.20: Students' perception of the best aspects of Aurora College.....	51
Figure 3.21: Students' views regarding choosing to re-attend Aurora College.....	52
Figure 3.22: Self-reported student engagement by school type.....	53
Figure 3.23: Students' perception of the worst aspects of Aurora College.....	54
Figure 4.1: Kindergarten students at Cluster 2 or above, Best Start, 2010-2016.....	60
Figure 4.2: Children developmentally vulnerable on one or more domains by location, AEDC.....	61
Figure 4.3: Children in first year of school by development category and AEDC domain.....	62
Figure 4.4: Perceived changes in children's readiness to learn when entering Kindergarten, 2014-2016.....	63
Figure 4.5: School attendance rates by location, 2009-2015.....	63
Figure 4.6: Fol: Primary school teachers' ratings of the eight drivers of student learning by location, 2014 and 2015.....	66

Figure 4.7: FoL: Secondary school teachers' ratings of eight drivers of student learning by location, 2014 and 2015.....	67
Figure 4.8: TTFM: Secondary students' ratings of the quality of instruction by location, 2015 and 2016.....	70
Figure 4.9: TTFM: Secondary students' ratings of school engagement by location, 2015 and 2016.....	72
Figure 4.10: Students in top two bands of NAPLAN reading by location, 2009-2015.....	75
Figure 4.11: Students in top two bands of NAPLAN numeracy by location, 2009-2015.....	76
Figure 4.12: NAPLAN reading score by location, 2009-2015.....	78
Figure 4.13: NAPLAN numeracy score by location, 2009-2015.....	79
Figure 4.14: NAPLAN reading performance for Year 5 relative to metropolitan students, 2011-2015.....	81
Figure 4.15: NAPLAN reading performance for Year 9 relative to metropolitan students, 2011-2015.....	81
Figure 4.16: NAPLAN numeracy performance for Year 5 relative to metropolitan students, 2011- 2015.....	82
Figure 4.17: NAPLAN numeracy performance for Year 9 relative to metropolitan students, 2011- 2015.....	82
Figure 4.18: Apparent retention rates Years 10-12, by location, 2012-2015.....	83
Figure 4.19: Percentage of students awarded and HSC that are eligible for an ATAR.....	84
Figure 4.20: Percentage of students taking specialist HSC English, Maths, and Science subjects, 2011-2015.....	86

Executive summary

Students in rural and remote areas of NSW typically tend to underperform on major educational indicators when compared to students in metropolitan locations. The NSW Minister for Education released Rural and Remote Education: A Blueprint for Action in November 2013 to address disparities in educational outcomes between rural and remote and metropolitan students. Overall the report found that implementation of the actions in the Blueprint is progressing as intended, with some closing of the performance gap between rural and remote students and metropolitan students.

The Blueprint commits \$80 million over four years to implement a broad set of reforms and actions aligned with four focus areas:

- quality early childhood education
- great teachers and school leaders
- curriculum access for all
- effective partnerships and connections.

This evaluation report examines the implementation and impact of the specific actions contained in the Blueprint. It also examines important education performance indicators such as attendance, retention, NAPLAN and Australian Tertiary Admissions Rank (ATAR) for any changes in the magnitude of the gaps between rural and remote and metropolitan students since the launch of the Blueprint.

The Department of Education is implementing the Blueprint concurrently with many other reforms and initiatives across early childhood education and NSW government schools. These include Great Teaching, Inspired Learning; Local Schools Local Decisions; Every Student, Every School; and Early Action for Success.

Key findings

This evaluation report considers implementation, impact and changes in indicators of student engagement and performance, and the quality of teaching.

Key findings: implementation and early outcomes of key actions

The implementation of the Blueprint appears to have progressed as intended. There is evidence that some of the actions are already achieving their objectives, although most are experiencing at least some challenges. However, it is important to note that any observed outcomes for rural and remote children and young people may be due, at least partially, to other reforms and initiatives being concurrently delivered. Similarly, where desired outcomes for rural and remote children and young people have not been observed, the failure cannot be solely attributed to the Blueprint.

Table E1 summarises specific findings on the implementation and impact of key actions of the Blueprint as at Term 2, 2016.

Table E.1:

Progress and impacts of key Blueprint actions as of Term 2, 2016

Action	Intent	Progress	Impacts
1.1 and 3.1 Preschool Funding Model	Introduction of a new preschool funding model (PFM) for community preschools which strengthens the commitment for universal access to quality early childhood education programs.	The PFM commenced in January, 2014, with a transition period in place to ensure no preschool received less funding as a result of the PFM. In 2016, the Preschools for Sustainable Communities program was implemented to support service viability in rural and remote areas with limited access to other services.	There is an early indication that enrolments of non-equity three year old children have declined as intended. This has been accompanied by the increased enrolment of three year old Aboriginal children above pre-existing trends.
2.1 Education Networks	Up to 70 Education Networks to be established in rural and remote communities to assist schools to collaborate to develop local solutions to meet the learning needs of their students.	Sixty-seven Education Networks have been funded across the state involving at least 356 rural and remote schools.	There is evidence that the seed funding has led to broader collaboration between schools that in some cases has extended beyond the initial project funded. Case studies and survey responses from principals suggest that most Education Networks will continue into the future, albeit some with reduced membership. This suggests that they have been valuable for seeding enduring collaboration between participating schools.
4.1 Capital works funding for rural and remote preschools	Capital works funding of \$7 million for rural and remote communities with a lack of preschool facilities to enable greater participation in early childhood education	12 projects have been funded which are expected to provide 357 new preschool places in provincial communities. Five have been completed, providing an additional 146 places.	Showing signs of improving access to preschool, with at least 123 of the 146 available additional places to date filled.
6.2 teach. <i>Rural</i> scholarships	Up to 170 teach. <i>Rural</i> scholarships to be offered to attract more of the best and brightest into teaching in rural and remote schools.	To date 97 scholarships have been awarded, with two-thirds to students from rural and remote backgrounds.	Nine in ten survey respondents that commenced their scholarship in 2015 plan on teaching and living in a rural and remote community for longer than 3 years after graduation.

Table E.1:

Progress and impacts of key Blueprint actions as of Term 2, 2016

Action	Intent	Progress	Impacts
7.2 Actions to attract and retain teachers and school leaders to rural and remote schools	A range of new incentives were introduced for rural and remote schools, including a 50 per cent rental subsidy for teachers in certain rural and remote schools.	As of 7 March 2016, 310 teachers have benefited from the 50 per cent rental subsidy at four point incentive schools. Twenty seven temporary teachers at six and eight point schools have been directly appointed into a vacant permanent position. Other incentives introduced under the Blueprint for six and eight point schools have been taken up much less frequently.	<p>A survival analysis of teacher retention indicated that the new 50 per cent rental subsidy incentive for remote and very remote schools is having a significant impact on reducing the risk of teachers leaving their school.</p> <p>The majority of rural and remote principals surveyed indicated that the range of new incentives has had no impact on their ability to attract or retain teachers at their school, although the small number of remote and very remote principals surveyed (n=18) indicated some impact on teacher retention.</p> <p>The rural teacher exchange program has not had any obvious impact to date. Out of 85 expressions of interest, only two exchanges and a secondment have been made to date due to a range of logistical challenges.</p>
7.3 Rural and remote mentoring program	More options will be available to develop the leadership skills of current and aspiring leaders in rural and remote schools, including a rural and remote mentoring program.	<p>Fifteen aspiring leaders in rural and remote schools were paired with mentors and completed a rural and remote mentoring program in 2015.</p> <p>To increase the number of participants and focus on instructional leadership, the program evolved into the Leadership Development Initiative (LDI) in 2016. To date the LDI has paired 51 mentees from rural and remote schools with experienced mentors.</p>	<p>To date the Blueprint has had minimal impact on the quality of school leadership and the development of aspiring school leaders.</p> <p>While the self-reported impact on the leadership capacity of rural and remote mentoring program participants was positive, the reach of the program did not justify the overall cost.</p> <p>However, this appears to have been addressed by the LDI. As Lead accreditation signals exceptional instructional leadership, the LDI appears to have the potential to increase instructional leadership across rural and remote schools.</p>

Table E.1:

Progress and impacts of key Blueprint actions as of Term 2, 2016

Action	Intent	Progress	Impacts
8.2 Real or simulated NAPLAN and HSC marking	HSC teachers will have increased opportunity to experience real and simulated HSC and NAPLAN marking.	<p>In 2015 and 2016, the Board of Studies Teaching and Educational Standards (BOSTES) held a series of HSC marking workshops and a registered online NAPLAN marking module.</p> <p>A total of 65 rural and remote teachers attended workshops in mathematics and biology and 78 in music composition, drama, textiles and design, and visual arts.</p> <p>As of 30 May 2016, 26 teachers from 19 rural and remote schools had completed the online NAPLAN module.</p>	It is too early to draw conclusions about the impact of the online marking. The final report will analyse NAPLAN performance at schools with teachers participating in the NAPLAN training.
9.1 Aurora College (virtual secondary school)	Students across rural and remote NSW will have access to a partially selective virtual secondary school, allowing them to study specialist subjects they cannot access in their home school.	<p>The College began delivering lessons in 2015. There were 125 enrolments in 2015 and 158 in 2016, although there was high attrition (20.9%) in 2015 primarily due to timetabling issues.</p> <p>According to other rural and remote school principals timetabling has been improved in 2016, with the attrition rate to date less than 10 per cent (8.9%).</p>	<p>It is too early to draw conclusions about the impact of Aurora on the academic attainment of students. The final evaluation report will compare Australian Tertiary Admission Ranks (ATARs) of Aurora students with comparable students who did not attend Aurora or any other selective or partially selective school.</p> <p>Data from the Tell Them From Me (TTFM) survey shows that the online learning environment is intellectually engaging students to the same degree as the learning environments at other selective and partially selective NSW Government schools. The high degree of intellectual engagement amongst students was confirmed during focus groups where students reported enjoying the opportunity to learn with other 'like-minded' students and the advanced level of work.</p>

Table E.1:

Progress and impacts of key Blueprint actions as of Term 2, 2016

Action	Intent	Progress	Impacts
13.1 Networked Specialist Centres (NSCs)	<p>Twenty-one NSCs are to be established across NSW by the end of 2016.</p> <p>NSCs are to work with schools and other agencies under the principles of collective impact to increase the capacity of schools to manage students with complex needs.</p>	<p>All 21 NSCs were established by the end of 2015, with 13 supporting rural and remote schools.</p> <p>Rural and remote NSCs are working with schools and other agencies across at least 63 projects. However, rural and remote NSCs are broadly operating under two distinct models with a lack of frontline clarity about the scope of operation.</p>	<p>As most NSCs only began operating in 2015, it is too early to measure the impact of NSCs on strengthening the ability of schools to access support from other agencies and manage students with complex needs.</p> <p>However, given that over half of rural and remote principals surveyed reported challenges accessing specialist support for students, and on average significantly greater challenges than metropolitan schools, NSCs have the potential to improve outcomes for students with complex needs.</p>

Key findings: performance indicators

Important indicators of education performance include attendance and retention, NAPLAN performance and ATAR eligibility. To see if there were any changes in these indicators as a result of the implementation of the Blueprint we have analysed the changes in magnitude of gaps between rural and remote and metropolitan students since 2013, the year immediately preceding the Blueprint.

Attendance

There have been small gains in the attendance of primary school students across provincial¹ (+0.58 days per annum) and remote and very remote (+1.36 days per annum) schools relative to metropolitan schools. Over the same period there have been no significant changes in attendance by secondary school students across rural and remote schools relative to metropolitan schools. In fact, absolute secondary school attendance has declined by 1.6 percentage points across remote and very remote schools.

Retention to Year 12

The retention of students from Year 10 to Year 12 has increased across provincial schools (+ 3.0 percentage points) but has decreased across remote and very remote schools (-6.4 percentage points). This has resulted in the gap between provincial and metropolitan schools closing by 1.7 percentage points but widening by 7.7 percentage points for remote and very remote schools.

NAPLAN

Gaps between the percentage of rural and remote and metropolitan students in the top two bands for reading and numeracy continue to be widest for remote and very remote students. Changes in the performance and the size of gaps are mixed depending on the year group and assessment. For example, the percentage of provincial students in the top 2 bands has decreased across all assessments except Year 5 numeracy. On this measure the gaps between provincial and metropolitan students have widened for all assessments except Year 3 numeracy. In 2015, the gap between provincial and metropolitan students for Year 3 reading was at its widest since 2009 (-13.4 percentage points; +3.4 percentage points since 2013). For remote and very remote students the percentage of students in the top 2 bands has increased for reading and numeracy across all year levels with the exception of Year 7 where performance has declined. As such the gaps closed for reading and numeracy for all year levels except Year 7.

¹ See Jones 2004 and Jones 2000 for a summary of the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) coding.

Absolute mean scores for reading have declined for rural and remote students except for Year 7 students. With the exception of Year 9, mean scores for numeracy have declined for provincial students. For all Year levels mean scores for numeracy have increased for remote and very remote students. Gaps between mean scores of rural and remote and metropolitan students are also widest for remote and very remote students. For provincial students these gaps have widened for all assessments except Years 5 and 7 numeracy. Conversely the gaps have closed for remote and very remote students with the exception of Years 3 and 5 reading.

However, since the start of the Blueprint, the 'location-dependent' component of the NAPLAN gap has closed for primary and secondary school numeracy but not for reading when factors known to impact NAPLAN performance (socio-economic status (SES), Aboriginal status, gender and language background) are accounted for.

Australian Tertiary Admissions Rank (ATAR)

For those students that go on to achieve a Higher School Certificate (HSC) Award, the percentage that are eligible for an Australian Tertiary Admissions Rank (ATAR) decreases with increasing remoteness. Since 2013, the gap between remote and very remote students and metropolitan students has narrowed by 3.8 percentage points, although caution needs to be taken interpreting this as a trend due to considerable year-on-year volatility in this data.

Access to specialised or advanced HSC curriculum

Gaps continue to persist in the access of rural and remote students to specialised or advanced HSC English, Mathematics and Science subjects. Since the start of the Blueprint these gaps have widened for remote and very remote students in HSC Mathematics, Extension Maths, Chemistry and Physics but have remained largely stable for provincial students.

The quality of teaching

Data from teacher and student surveys suggest that the quality of instruction is lower in rural and remote schools compared to metropolitan schools, in particular at secondary schools

Concluding comments

The implementation of the Blueprint appears to have progressed largely to plan, albeit with some challenges, and there is evidence that some of the actions are already achieving their objectives or are likely to in the future. For example, the 50% rental subsidy has improved teacher supply and reduced the risk of a teacher leaving these schools by almost half, 27 teachers have been directly appointed into vacant positions at remote and very remote schools, and potential for a further 357 new preschool places for rural and remote students due to increased capital works expenditure. However, as discussed above education gaps between metropolitan and rural and remote schools and students are not being closed in all areas.

Furthermore, this report confirms previous research that at least until Year 9, gaps in the performance of rural and remote students relative to metropolitan students are not just due to location per se. Other factors that co-vary with location, such as SES, are also significant predictors of educational outcomes. Certainly location appears to influence NAPLAN performance, indicators of the quality of teaching, primarily in secondary schools, and curriculum access in senior secondary years. However, the contribution of the latter two location-dependent gaps on student performance requires further investigation.

With the exception of the preschool funding model and NSCs, there does not appear to be a direct link between the actions in the Blueprint and SES-related barriers to the performance of rural and remote students. However, the Blueprint is clearly attempting to address challenges such as senior secondary curriculum access and the quality of teaching in rural and remote schools. Logically, however, any strategy targeting improved outcomes for rural and remote students should be part of a multi-agency response that addresses social disadvantage in rural and remote communities concurrently with the quality of the learning environment in schools.

1. Introduction

Across New South Wales, approximately 40 per cent of government schools, 25 per cent of students and 25 per cent of teachers are in rural and remote locations². However, students in rural and remote areas of NSW tend to underperform on major educational indicators when compared to students in metropolitan locations.

Research also shows that students in rural and remote areas exhibit lower attendance rates, engagement and transition to further study. Additionally, rural and remote schools exhibit difficulties recruiting and retaining high quality teachers and school leaders, with less experienced teachers and school leaders over-represented (Centre for Education Statistics and Evaluation, 2013a; Green and Novak, 2008).

In November 2013, the NSW Minister for Education announced the Rural and Remote Education Blueprint for Action³ (the Blueprint) to address the discrepancy in educational outcomes between metropolitan and rural and remote students. The Blueprint commits \$80 million over four years to implement a broad set of reforms and actions aligned with four focus areas:

- quality early childhood education
- great teachers and school leaders
- curriculum access for all
- effective partnerships and connections.

The full list of actions is presented in Appendix A.

The objectives of the Blueprint are aligned to these focus areas and aim to ensure that children and young people in rural and remote communities:

- can access quality early childhood education in the year before school
- are taught by great teachers and school leaders
- have access to a broad range of curriculum opportunities and experiences from preschool to Year 12, and
- receive effective support through coordinated services and partnerships and increased collaboration across schools.

The overall goal is to reduce the gap in educational outcomes between rural and remote students and metropolitan students.

The Blueprint is part of a larger reform agenda that includes Local Schools, Local Decisions; Great Teaching, Inspired Learning; Connected Communities; Every Student, Every School, Quality Teaching Successful Students, Supported Students, Successful Students and the Secondary Schools Renewal Program. With these reforms underway, as well as any other reforms and initiatives concurrently being implemented across NSW government schools, it will be difficult to identify effects resulting exclusively from the Blueprint. For the purposes of this report it is acknowledged that other factors might influence the results, although their contribution will not be assessed here.

² <https://data.cese.nsw.gov.au/Schools/NSW-Public-Schools-Master-Data-Set/eqm2-9jpa> and CESE, 2014a.

³ The Blueprint (NSW Department of Education and Communities, 2013) can be found at <https://www.det.nsw.edu.au/media/downloads/about-us/our-reforms/rural-and-remote-education/randr-blueprint.pdf>

Evaluation of the Blueprint

The evaluation will assess the implementation and effectiveness of a number of key actions in the Blueprint (see Appendix A). The evaluation will also assess the extent to which these actions have attained the individual objectives, and together, the Blueprint's overall goal. The evaluation will also provide feedback throughout the course of the Blueprint implementation to support continuous improvement and assess whether it is on track to meet its objectives.

A final evaluation report will be delivered in 2018.

This report

This report is structured as follows:

- **Chapter 2** presents the methods used in this evaluation.
- **Chapter 3** presents the findings related to the in-scope actions of the Blueprint including information on how they have been implemented to date, challenges to date and action-specific outcomes.
- **Chapter 4** examines the impacts to date and the extent to which the education gap between rural and remote and metropolitan students has closed.
- **Chapter 5** provides concluding comments.
- **Chapter 6** presents the list of references.
- **Appendix A** lists the actions in the Blueprint and identifies those which are the focus of this report.
- **Appendix B** examines the representativeness of the survey samples
- **Appendix C** includes the Education Network case studies.
- **Appendix D** details the methods used in the analysis of retention of teachers across schools.
- **Appendix E** details the methods used in the analysis of school attendance and apparent retention rate by location.
- **Appendix F** details the methods used in the analysis of the FoL survey.
- **Appendix G** details the methods used in the analysis of the TTFM survey.
- **Appendix H** details the methods used in the analysis of NAPLAN results by location.

2. Evaluation method

Definition of rural and remote schools

The Blueprint uses the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) Remoteness Classification to define schools as rural and remote⁴. The MCEETYA classification includes metropolitan, provincial, remote and very remote categories, with the last three groups considered as rural and remote in the Blueprint. For the purposes of this report, data from remote and very remote locations are aggregated because of the small number of very remote schools, students and teachers and the inherent volatility that creates in the data.

Data sources

Interviews and focus groups

Semi-structured interviews were held regarding the specified Blueprint actions with the following groups:

Various actions within the Blueprint:

- Directors, Public Schools NSW (n=10)
- Executive Directors, Public Schools NSW (n=2)

Networked Specialist Centres:

- NSC facilitators (n=13)
- Directors, Educational Services (n=2)

Aurora College:

- Aurora College executive (n=5)

Focus groups were held regarding Aurora College with the following groups:

- Aurora College students (n=12)
- Aurora College teachers (n=6)

Additionally, participants from the 2015 Rural and Remote Mentoring Program met at a one-day conference during 2016. Staff from CESE attended this meeting and took notes on small group feedback from 16 participants (four groups of four).

Case studies

Case studies of four Education Networks were conducted during Terms 3 and 4, 2015. The case studies were nominated by the relevant Executive Directors, Public Schools NSW from those that had commenced during 2014. Evaluation staff from CESE interviewed relevant participants in person, by telephone or by video conference. Identification of interviewees was done through a combination of identifying the relevant school principals from Network documentation, nominations from the Directors, Public Schools NSW and referrals from interviewees. Evaluation staff also attended Education Network meetings and obtained further information, including additional documentation through email correspondence with participants.

In total, 42 people provided input into the four case studies.

⁴ See Jones 2004 and Jones 2000 for a summary of the MCEETYA coding.

Surveys developed for the evaluation

Table 2.1 provides a summary of the surveys that were developed and used for this evaluation

Table 2.1:

Surveys developed for the evaluation

Survey	Date	Number of respondents	Response Rate
CESE annual principal survey	Term 1, 2015	n = 184	51.4%
	Term 1, 2016	n = 237 provincial, remote and very remote (Overall n = 624)	49.2%
Recipients of 50 per cent rental subsidy	Term 1, 2015	n = 119	53.6%
	Term 1, 2016	n = 181	66.8%
teach. <i>Rural</i> scholarship recipients (2014 cohort)	April-May 2015	n = 13	86.7%
	November 2015	n = 9	60.0%
teach. <i>Rural</i> Scholarship recipients (2015 cohort)	November 2015	n = 31	81.6%
Aurora College students	October 2015	n = 47	60.3%
Aurora College home school coordinators	Nov-Dec 2015	n = 36	83.7%

Note: Details of each of these surveys are outlined below.

Principals' surveys

A sample of principals was asked to participate in online surveys in Term 1, 2015 and Term 1, 2016. The surveys collected data regarding the in-scope initiatives relevant to respondents' schools. The questions in the 2015 and 2016 surveys differed for the most part as the focus of evaluation questions in 2015 was on awareness and knowledge, whereas the 2016 survey had a greater focus on experiences with, and views of, Blueprint actions.

The 2015 survey was sent to all principals from remote and very remote schools and a sample from provincial schools. The sampling method included randomly selecting 50 per cent of schools for specific purposes (SSPs), central and secondary schools and 33 per cent of primary or infants' schools. The response rate for the remote and very remote schools was 56.3 per cent for both primary and central schools and 50 per cent for secondary schools. The provincial schools had over 60 per cent response rates for secondary and central, and 47.4 per cent for primary schools.

The 2016 survey was administered as part of the first annual CESE principal survey, a larger survey which included questions covering the Blueprint and other major education reforms. Principals from provincial, remote and very remote schools completed a section of the survey about the Blueprint, and all principals were asked to complete the rest of the survey⁵. As in 2015, all principals from remote and very remote schools were invited to participate and a sample was invited from provincial schools. Response rates for remote and very remote schools were slightly lower than in 2015, with 42.9% (primary), 33.3% (secondary) and 57.1% (central) schools participating. Provincial participation rates were similar to 2015, with 48.3%, 49.2%, 65.3% and 45.5% of primary, secondary, central and SSPs participating.

The distribution of the respondents in terms of location or school type did not differ from the sampling frame in 2015 or 2016 (see Appendix B). Although the distribution of the 2015 sample differed from the population in terms of location and school type, the 2016 sample was representative of the population of NSW government schools.

⁵ Although initially a rural and remote initiative, all principals were asked to complete the section on Networked Specialist Centres (NSCs) because they have now been rolled out across the state.

Incentive recipients' surveys

Teachers who had received the 50 per cent rental subsidy were surveyed online about their experiences in the scheme and the influences that this incentive had on their decisions about where they taught and how long they stayed at that school. The 2015 survey was sent to 222 teachers (temporary or permanent) who could be contacted by email and whose Teacher Housing Authority (THA) records indicated that they had received this rental subsidy.

The 2016 survey was distributed to all teachers whom the THA indicated had received this rental subsidy up to 31 January, 2016 and had contact email addresses, with the following exclusions⁶. A small number of teachers who had received a rental subsidy, but for a private dwelling only and had never rented a THA property, did not receive the survey. Teachers who had completed the survey in 2015 and in that survey indicated that they no longer received the subsidy were not invited to complete the 2016 survey. Additionally, an administrative error resulted in a small number of people being sent the survey who were at rural four-point incentive schools that did not provide the 50 per cent rental subsidy incentive. With these caveats, the 2016 survey was sent to 285 eligible people with 181 completing the survey, producing a response rate of 66.8 per cent.

Teach.Rural scholarship recipients

The 2014 cohort of scholarship recipients were surveyed online at the beginning of their second year of university, and a second survey was administered to them at the end of their second year. The first survey had a response rate of 80 per cent (12 out of 15 responding) and the second had a 60 per cent response rate (nine out of 15 responding).

The 2015 cohort of recipients were surveyed at the end of their first year of university with a response rate of 79.5 per cent (31 of 39 completing the survey). The surveys collected data about how the university students first learnt about the scholarship, their views about living and working in rural and remote NSW and their future plans and concerns about living in rural and remote NSW.

Aurora College student survey

A paper and pencil survey was administered to Aurora College students to assess their views and experiences about their first year at the College. The survey was administered in October 2015 while students attended one of Aurora's two annual residential camps. Of the 78 students who had provided written parental consent, the survey was completed by 47 (60.3% response rate). In addition to seeking the students' views about the College and their experiences, the survey included a number of items from the Tell Them From Me (TTFM) survey (see below) to assess student engagement and the quality of instruction at Aurora College.

Aurora College home school coordinator survey

All coordinators were invited to participate in an online survey to collect information about how implementation of Aurora College could be strengthened in the future. Surveys were completed by 36 of the 43 coordinators (83.7% response rate).

Third party surveys

Tell Them From Me student survey

The Tell Them From Me (TTFM) student survey, a component of a suite of surveys developed by The Learning Bar, was administered online in Term 1, 2015 and Term 1, 2016⁷. The secondary school version was administered to 309 schools across NSW (187 metropolitan, 109 provincial and 13 remote and very remote schools) in 2015 with 135,550 students completing the survey (102,100 metropolitan, 32,566 provincial and 884 remote and very remote students). In 2016 the corresponding number of schools was 338 (202 metropolitan, 121 provincial and 15 remote and very remote schools), with 142,003 students completing surveys (108,766 metropolitan, 32,185 provincial and 1,052 remote and very remote students).

⁶ Participants up to 31 January 2016 were used to determine the survey sample. THA subsequently provided participant information up to 7 March, 2016 to determine uptake of this incentive.

⁷ See <http://surveys.cese.nsw.gov.au/> for more information on the survey.

The questions were multiple-choice with individual survey items combined to form valid and reliable measures⁸. The survey included items that related to the measures reported in Table 2.2 which are assessed across all participating schools.

Table 2.2:
Measures assessed
in the TTFM survey

Participation in sports	Homework behaviour	Expectations for success	Positive learning climate
Participation in clubs	Behaviour at school	Bully-victim	Truancy
Sense of belonging	Interest and motivation	Effective learning time	Aspirations: finish Y12, university, TAFE
Positive relationships	Effort	Teaching relevance	Positive teacher-student relations
Values school outcomes	Skills challenge	Teaching rigour	Advocacy at school
Advocacy outside school			

As the process that any school used to select and have students complete the survey was determined within the school, the representativeness of the survey results of the student body at a school, or across schools, is unknown. Analysis of the distribution of schools by location in the samples showed that they differed from the population in 2015 ($\chi^2=15.8(df=2)$, $p<.001$) and 2016 ($\chi^2=23.9(df=2)$, $p<.001$.) In both cases provincial schools were over-represented.

Focus on Learning teacher survey

The Focus on Learning (*FoL*) online survey, also a component of The Learning Bar's survey package, is administered to school teachers and designed to complement the student engagement survey. The FoL survey was piloted in 2014 with a sample of 519 schools (339 metropolitan, 168 provincial and 12 remote/very remote, with 11,018, 4,322 and 237 teachers respectively) and was rolled out to 586 schools in 2015 (420 metropolitan, 151 provincial, 15 remote or very remote schools with 10,518, 2,766 and 239 teachers responding, respectively). The survey was open during a specific survey completion window where schools that have agreed to participate provided the opportunity for their staff to complete the survey. Participation was anonymous and voluntary; however, schools were encouraged to have as many staff as possible complete the survey.

The questions are multiple-choice with individual survey items combined to form the eight drivers of student outcomes Table 2.3.

Table 2.3:
Measures assessed in
the FoL survey

Drivers of student outcomes			
Leadership	Parent involvement	Collaboration	Learning culture
Using data to inform practice	Teaching strategies	Inclusive schools	Using technology

The FoL survey also allows for additional custom questions which are asked of all teachers who complete the survey. In 2015 a question specific to rural and remote education was included and was completed by 10,212, 2,673 and 236 teachers from metropolitan, provincial and remote and very remote locations, respectively.

⁸ The Learning Bar, <http://thelearningbar.com/research/reliability/?lang=au> and <http://thelearningbar.com/research/validity/?lang=au>

As the process that any school uses to select teachers to complete the survey is determined within the school, the representativeness of the survey results within schools is unknown. In terms of the distribution of the location of the schools in the sample, the primary school sample differed significantly from the actual distribution in both 2014 ($\chi^2=10.8(df=2)$, $p<.005$) and 2015 ($\chi^2=50.4(df=2)$, $p<.001$). However, the distribution of secondary schools in the sample did not differ significantly from that of the population in terms of location in 2014 ($\chi^2=0.10(df=2)$, n.s.) although it did differ in 2015 ($\chi^2=6.5(df=2)$, $p<.05$). With these differences in mind, survey results from primary schools in particular should be interpreted with caution.

Document analysis

Documents and other reports were reviewed and analysed to monitor implementation and assist in the evaluation of the Blueprint. The types of documents that were analysed included strategy documents, regular progress reports for the Secretary's meetings with the Minister, other minutes and briefings, other relevant documents related to key features of the Blueprint, media releases, conference proceedings and other internal documents provided to the evaluation team.

Administrative data

This report draws from the administrative data sources detailed in Table 2.4.

Table 2.4:

Sources of administrative data

Data	Source	Notes
Preschool enrolments	Enrolments in Department-operated preschools sourced from Statistics Unit, Centre for Education Statistics (CESE) Enrolments in Department-funded preschools sourced from the Early Childhood Education and Care Directorate	Enrolments are based on a midyear census conducted annually. Data is only available for Department-operated and Department-funded preschools, not Commonwealth-funded long day care centres.
School enrolments	National Schools Statistics Collection (NSSC) data cube, populated with NSW data, held by Statistics Unit, CESE	Enrolments are based on a midyear census undertaken annually in August by the Statistics Unit, CESE. For purposes of reporting, only students in Years 11 and 12 may be part time. Hence there is no difference between 'full-time' and 'full-time equivalent' (FTE) enrolments for Years K-10 or ungraded year groups in NSW government schools.
School attendance	Return of absences census conducted in the final week of Term 2 by the Statistics Unit, CESE	Kindergarten, Year 11 and Year 12 students have been excluded from attendance rates, consistent with national reporting standards. Distance education and SSPs do not participate in the absences collection.
Best Start Kindergarten assessment	Public Schools NSW	Data harvested from entries by Kindergarten teachers into the PLAN database. More information on Best Start is available at: http://www.curriculumsupport.education.nsw.gov.au/beststart/information/index.htm
Australian Early Development Census (AEDC)	Statistics Unit, CESE	More information is available at: https://www.aedc.gov.au/
National Assessment Program – Literacy and Numeracy data (NAPLAN)	Statistics Unit, CESE NAPLAN data cube.	More information on the NAPLAN assessment is available at: http://www.nap.edu.au/naplan
Australian Tertiary Admission Rank (ATAR)	Statistics Unit, CESE. ATAR data extracted from cross-sectoral database and other datasets provided by UAC	Sourced in February each year.

Table 2.4:

Sources of administrative data

Data	Source	Notes
Year 10 -12 apparent retention rates	Statistics Unit, CESE	Retention rates are calculated from enrolment data and are apparent as they do not track individual students through their final years of secondary schooling. They measure the FTE of students in a designated year (i.e. Year 12 in 2015) divided by the total FTE of students in a previous year (i.e. Year 10 in 2013).
Teach. <i>Rural</i> scholarship holders	Human Resources Directorate, Department of Education (DoE)	Details regarding name, email address, secondary school and university were provided.
HSC workshops and online NAPLAN training	BOSTES	Numbers and locations of NSW government teachers who accessed or participated in training was provided.
Exit interviews from Aurora College	Principal, Aurora College	A list of the numbers of students who had left the College and the main reason they provided for doing so was provided to CESE.
Leadership Development Initiative and Rural and Remote Mentoring Program participants	Leadership and High Performance Directorate, DoE	Names of mentors and participants by school were provided.
Education Network participation 2014-2016	Executive Directors, Public Schools NSW	Names of networks, participating schools and summary of aims were provided.
Access to incentives for rural and remote teachers	Human Resources Directorate, DoE	Numbers of people who had accessed the incentives were provided.
Access to 50 per cent rental housing	THA and Human Resources Directorate, DoE	The THA supplied the email address and school for each rental recipient for each of 2014 and 2015. Data for 2016 was provided up 7 March, 2016. Human Resources Directorate provided details of teachers who had received the subsidy for private rental accommodation (not THA properties).
Length of tenure and experience of teachers	Human Resources Directorate, DoE	Information from the Department's permanent and temporary employee databases was used.

Statistical analyses

Administrative data and survey responses were analysed using Stata version 14 or SPSS version 23. Detailed descriptions of statistical analyses can be found in the Appendices.

3. Findings

Quality early childhood education

Quality early childhood education, one of the four key focus areas of the Blueprint, aims to ensure that children in rural and remote NSW are able to access early childhood education in the year before they start school, and that they start school as confident learners. The in-scope actions for this evaluation are:

- Actions 1.1 and 3.1 refer to a new funding model for community preschools that strengthens the commitment for universal access to quality early childhood education programs and that vulnerable and disadvantaged children have access to high quality and more affordable early childhood education.
- Action 4.1 refers to strategies to be in place to enable greater participation in early childhood education.

Approximately one-third of children who participate in early childhood education and care in NSW do so in a community preschool. Of the remaining children participating in early childhood and care in NSW, the majority attend a Commonwealth-funded early childhood education program at a long day care centre.

The Department has developed a new funding model for community preschools (action 3.1) in response to the Review of NSW Government Funding for Early Childhood (the Brennan Review). \$150 million has been made available annually from 2014 to give community preschools a new needs-based funding model.

The model includes a higher base funding level of between \$1,850 and \$5,402 per child, depending on locational relative disadvantage using the Socio-Economic Index for Areas (SEIFA) of a service's suburb. Preschools in remote and very remote areas⁹ receive an additional loading of \$1,281 per child per annum on top of the base rate. Preschools also receive a loading of \$410 per subsidised child with additional English language needs.

Action 4.1 provides for capital works funding for rural and remote communities that lack existing early childhood education facilities. An amount of \$7 million dollars in capital works funding has been allocated to rural and regional areas where children are missing out on early childhood education because of a lack of facilities, and where the market cannot respond effectively to demand because of local economic conditions. This includes \$2 million to complete capital projects under the Preschool Investment and Reform Plan, and \$5 million in 2013-14 for new projects in rural and remote areas identified as having a high level of need for more early childhood education places.

Implementation of the Preschool Funding Model to date

The new PFM commenced on 1 January 2014. Initial allocations were based on the enrolments reported in the August 2013 community preschool census. In 2014-15, a total of 751 preschools were funded with a total funding of \$144.6 million. Ninety-five per cent of community preschools statewide saw an increase in the base funding rate for 4- and 5-year-olds. For 2014-15, 135 outer regional preschools received total funding of \$26.6 million, 17 remote preschools received total funding of \$3 million, and three very remote preschools received total funding of \$435,770. This funding included \$4.6 million of remote service loading allocated across these 155 services. In 2015-16, 135 outer regional services received \$28.0 million, 17 remote services received \$3.3 million and three very remote services received \$462,208.

To give services time to adjust to the new model, a three year transition period (until the end of 2016) was put in place. So that no preschool received less funding as a result of the new funding model during 2014 and 2015 transition funding was provided if the level of funding a service received under the PFM fell below the allocation it would have received under the previous preschool resource allocation model. In 2016, transition funding was phased down to 50 per cent for services located in major cities¹⁰ and the new funding model will be fully implemented in 2017.

⁹ Remote and very remote locations for early childhood education funding is determined from the ARIA+ location categories.
¹⁰ Major cities are those categorised as 'major cities of Australia' using the ARIA coding system.

Transition funding was not applicable if a service exceeded the level of its 2013 RAM funding allocation in any of the years prior to the full implementation of the PFM in 2017.

In January 2016, the four year Preschools for Sustainable Communities program was implemented to support service viability in rural and remote areas where access to other services is limited. Under the program, rural and remote centre-based preschools with no other neighbouring centre-based services within a 10 km radius will receive 100% of the difference between their 2013 funding level and their 2016 PFM allocation. If there is at least one other neighbouring centre-based service within a 10 km radius, then 80% of the difference will be provided. The Preschools for Sustainable Communities program replaces 2016 transition funding for all eligible services.

During the transition period, the Department implemented an opt-in Operational Support Program to help identified services adjust to the new funding model. Stage 1 of the Operational Support Program provided access to business advisory services through a network of local advisors. Stage 2, which commenced in March 2015 and runs until December 2016, provides access to customised sector-specific advice and mentoring delivered by one of three sector specialists: CareWest; Community Child Care Cooperative and Community Childcare Solutions Australia.

A total of 187 non-metropolitan services are participating in the current Operational Support Program.

A tender process is currently underway to recruit the specialist support needed to continue the Operational Support Program until June 2018. All community preschools that require operational support will be able to access this extended program.

Community preschool enrolments since the implementation of the PFM

Assessing overall access to early childhood education in rural and remote NSW requires analysis across Department-operated preschools, community preschools and long day care centres. At present it is difficult to assess overall participation, as early childhood enrolments in long day care centres have historically been under-reported. Data collection improvements introduced recently suggest these measures will be more accurate going forward. An analysis of early childhood education enrolments is not presented in this report. The commentary below describes enrolment trends across preschools directly under the influence of the PFM (i.e., community preschools).

Figures 3.1 and 3.2 show enrolment trends across community preschools in provincial and remote and very remote locations from 2010-2015. It is important to note that the introduction of the PFM marked a change in the funded 'target cohort' for community preschools, in response to a finding of the Brennan Review that up to 50 per cent of children may be accessing two years of State subsidised preschool, while others missed out entirely. Accordingly, the PFM targets funding for four and five-year-old children to ensure children can access at least one year of quality early childhood education, as well as those children aged three and above who are Aboriginal or from low-income families.

The data show that after an increase in 2010, there was no discernible change in total enrolments of four and five-year-olds across community preschools in provincial locations as of 2015. However, following the introduction of the PFM, the pre-existing downward trend in non-equity enrolments (i.e. non-Aboriginal, non-low-income) has accelerated. This was accompanied by the continuation of pre-existing upward trends in enrolments by Aboriginal and low income four and five year olds across provincial services.

Since 2010 there has been an upward trend in total enrolments of four and five-year-olds, including Aboriginal four and five-year-olds, across community preschools in remote and very remote locations (+16.3%). There is no discernible change in this trend since the introduction of the PFM in 2014, although there was a 9.5 per cent decrease in 2015.

As intended, there has been a clear decline in the total number of non-equity three-year-olds enrolled across provincial and remote and very remote community preschools since the introduction of the PFM in 2014. There is also preliminary evidence that the PFM is beginning to influence the enrolment of Aboriginal three-year-olds across provincial services, with a 12.5 per cent increase in 2015 against an average annual increase of 5.8 per cent from 2011 to 2014. It is too early to determine a pattern for Aboriginal three year olds in remote and very remote services, despite a 14.3 per cent increase in enrolments from 2014 to 2015. There was an identical increase from 2012 to 2013, making it too early to conclude if this latest increase represents the beginning of a PFM-induced trend or is merely the continuation of a trend that began in 2012.

As shown in Figure 3.3, NSW population projections for three to five-year-olds in provincial and remote and very remote local government areas (LGAs) only suggest an increase in the number of four and five-year-olds in provincial locations since 2011. This suggests that the observed changes in enrolments in community preschools in rural and remote locations are due to structural changes, such as the PFM, rather than population changes.

In summary, since the start of the PFM the intended decrease of enrolments by non-equity three year olds in rural and remote community preschools has been realised, such that a greater proportion of total enrolments are four and five year olds in the year before school and children from disadvantaged backgrounds.

It is important to note that while there are encouraging signs that the intent of the PFM is being realised, the full impact will take several years of implementation to ascertain as continuing transitional arrangements have been in place since its introduction. This will be monitored over the duration of the evaluation.

Figure 3.1:
Enrolments of four to five-year-olds in community preschools in rural and remote locations



Note: Enrolments for subsidised preschools are sourced from NSW Department of Family and Community Services and NSW Department of Education in August each year. Therefore the numbers are a point-in-time snapshot. The data include regulated Department of Education Services only.

Figure 3.2:

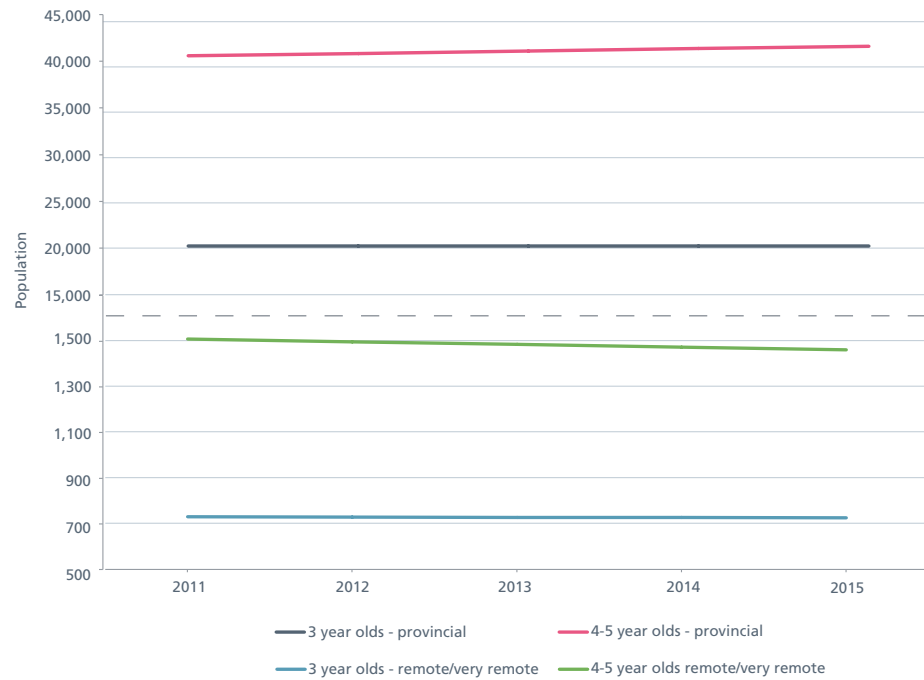
Enrolments of three-year-olds in community preschools in rural and remote locations



Note: Enrolments for subsidised preschools are sourced from NSW Department of Family and Community Services and NSW Department of Education in August each year. Therefore the numbers are a point-in-time snapshot. The data include regulated Department of Education Services only.

Figure 3.3:

NSW population projections for three to five-year-olds in rural and remote locations



Note: Data was obtained from the Demographic Analysis Unit, Asset Management Directorate, NSW Department of Education. The primary source of data is the NSW Department of Planning & Environment's (DP&E) 2014 Population, Household and Implied Dwelling projections. The projections are considered the official NSW Government population projections and are based on certain fertility, mortality and migration assumptions. DP&E only provide data in five year age brackets. The process applied to disaggregate the data into single year age brackets is Ordinary Beers Coefficients. A linear cohort progression model is applied where equal intervals of change are applied between the known time intervals (i.e. 2016, 2021 and 2026). This implicitly assumes identical yearly migration and mortality rates. To derive single year projections, a straight-line method is applied, assuming equal annual change across an intercensal period. Raw data have been transformed using statistical methods to provide the requested projections. Consequently, error is implicitly captured in the modelling and all projections should be considered an indication of change. Projected errors grow the further away from the base year.

Implementation of the capital grants program

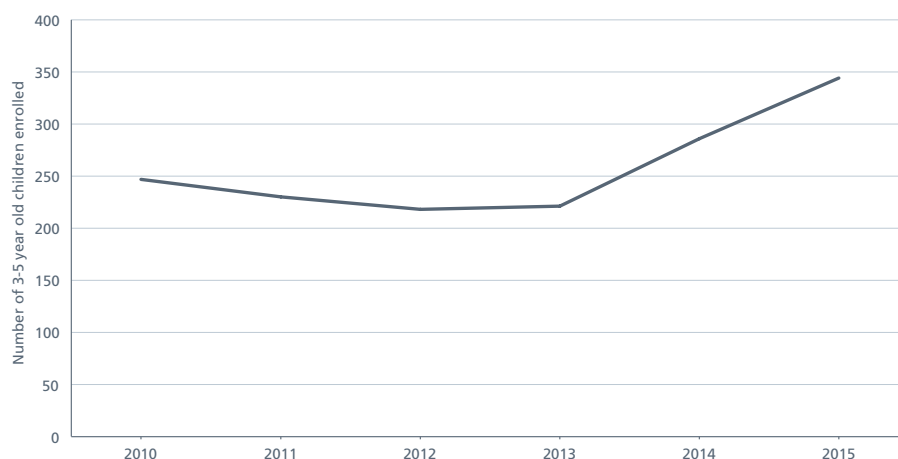
Grants were awarded to 13 projects under the \$5 million capital grants program. All of the projects were in provincial communities and totalled just over \$5.6 million. One of the projects was cancelled due to falling enrolments and concerns over the viability of the service. The 12 remaining projects comprise three new services and nine extensions to existing services. In total, they are projected to provide 357 new preschool places.

To date, five projects, providing an additional 146 places, have been completed. This includes one new service that has delivered an additional 50 preschool places from the first half of 2014. Of the four completed extensions to existing services, one officially opened in December 2015, one in February 2015 and the remaining two in the second half of 2015. The remaining seven projects have commenced or are nearing completion with all on track for completion in 2016.

Two of the completed projects have delivered a combined 23 additional places above projection. Figure 3.4 shows total preschool enrolments of three to five-year-olds across all 12 remaining grant sites. The latest data available is from the August 2015 collection, meaning that the impact of only three completed projects can be monitored for this report. The data show that across these three services, enrolments of three to five-year-olds increased by 65 in 2014 and 58 in 2015, for a total increase of 123 places since the start of the Blueprint. The increase in 2014 was solely attributable to the completion of one new service and the subsequent additional enrolments in 2015 were solely attributable to the completion of a service extension. Enrolments at the third service for which post-completion data is available remained steady in the year following completion (i.e. 2015). This could suggest that there is not the demand to warrant the additional preschool places in this community, although this will become clearer as additional data becomes available.

Figure 3.4:

Enrolments of three to five-year-olds across community preschool capital grants sites where projects completed before August 2015



Note: Enrolments for subsidised preschools are sourced from the NSW Department of Family and Community Services and the NSW Department of Education in August each year. Therefore numbers are a point-in-time snapshot of enrolments. The data includes regulated Department of Education Services only.

The Preschool Investment and Reform Program provided top-up funding by the Department of Education in 2013 for three projects that had been started with capital funding from the then Department of Family and Community Services. As at May 2016, a total of \$1.2 million was provided across three preschools in the Yass Valley, Warrumbungle and Forbes LGAs. These projects are now complete and have increased places at the three funded preschools from 94 to 172.

Education Networks

Under action 2.1 of the Blueprint, Education Networks will be established in some rural and remote communities to help schools collaborate to develop an education strategy tailored to their own communities. This Network approach enables schools to work together, sharing resources and expertise beyond the individual school. Additional funding of more than \$1 million was committed to assist with the establishment and coordination of these Networks. As at June 2016, funding to support these Networks had totalled \$1.13M. Part of the funding agreement for Education Networks was that they would be sustainable within current and future school resourcing and they would be included and monitored in school plans.

Implementation to date

The initial implementation plan indicated that up to 70 Education Networks would be established by the end of 2016. Ten were to be established in 2014, followed by 40 in 2015 and 20 in 2015. To date 67 Education Networks have been established using funding under the Blueprint. Seventeen were established in 2014, 23 in 2015 and an additional 27 to date in 2016. Thirty-five of these involve schools in the Wagga Wagga Operational Directorate, with the remaining 32 in the Tamworth Operational Directorate. Additional Education Networks started in 2016 in the Wagga Wagga Operational Directorate, but as they were funded directly through the Directorate rather than the Rural and Remote Blueprint they are not included here.

Table 3.1 shows that at least 356 rural and remote schools are participating in Education Networks to date¹¹. Thirty seven (37) metropolitan schools are also taking part. Several schools are participating in more than one Network, with 46 in two, 10 in three, four in four and one in five Networks. The case studies (see Appendix C) illustrate that for some membership and/or the activities changed over time as the needs of the participating schools changed. This changing membership and the evolving aims of the groups made it difficult to characterise the participation rate and the activities and aims of Education Networks.

¹¹ Documentation regarding Networks and their participating schools was obtained from the Executive Directors, Public Schools NSW. Participating school lists were available for 65 of the 67 Education Networks - only the lead school was available for two.

Table 3.1:

Schools participating in Education Networks, 2014-2016

Source: Executive Directors, Wagga Wagga and Tamworth Operational Directorates

Primary	Secondary	Central	SSP	Other
261	48	38	4	5

Note: SSP = Schools for Specific Purposes.

Applications for funding included the list of participating schools and the proposed aims of their network. The criteria for supporting proposed Networks included:

- supported by the proven leadership capacity of principals
- sustainable within current and future school resourcing
- linked closely to improved student learning outcomes
- supported by a situational analysis
- principals have agreed to the partnership and are prepared to work collaboratively and contribute resources
- principals have consulted with their school community and where appropriate the wider community and TAFE/universities
- where they are part of an existing Educational Network there is scope for existing arrangements to be expanded
- innovative and new practices are evident in school planning, and
- the initiatives in the Network will be included and monitored in school plans.

Applications and funding decisions were assessed by committees across both Operational Directorates, although slightly different processes were used; in one case by a panel of three people (chaired by the Executive Director), and in the other the Executive Director and all Directors, Public Schools NSW assessed applications during regularly scheduled team meetings. The relevant Directors, Public Schools NSW report regularly to the Executive Directors on the progress of each Education Network.

It is difficult to determine the extent to which the funded Education Networks aligned with all of the criteria, although some anecdotal evidence suggests that it may be variable. For example, the criteria include that principals have agreed to the partnership and are prepared to work collaboratively. However, the case studies suggest that not all participants are necessarily equally involved.

Objectives and activities of Education Networks

The Blueprint encouraged greater levels of collaboration across schools and included a range of suggestions for the scope of Education Networks. One possibility provided in the Blueprint was that a group of schools might decide to operate with one principal at a coordinating school with a full sharing of resources, including one school plan, one budget and staff working across schools. This large scale change has not occurred to date as part of any Education Network. From information on the aims of the Education Networks, it appears that they have focused much more on defined and specific issues.

Principals in Education Networks were surveyed about the objectives of their Education Network and the extent to which they believed these objectives had been achieved to date. Responses and the level of attainment of objectives were identified from 22 different Education Networks where one or more outcomes were mentioned (Table 3.2). The most common objectives related to staff collaboration across schools, professional learning and quality learning. Findings suggest that of the more common objectives nominated, those related to professional learning and staff collaboration had the highest degree of achievement, with at least half of the respondents who nominated them saying they were mostly or fully achieved.

Table 3.2:

Participants' reported Education Network objectives and extent of achievement to date

Source: CESE annual principal survey, 2016, n=22 Education Networks

	Number of Education Networks objective reported for	% Not achieved	% Partly achieved	% Mostly achieved	% Fully achieved
Staff collaboration across schools, including exchanging ideas and expertise	22	4.5	45.5	45.5	4.5
Professional learning	15	0	20	40	40
Quality learning, (improving teaching practices, pedagogy, student engagement)	15	13.3	46.6	26.7	13.3
Broaden curriculum	7	0	42.8	42.8	14.3
Leadership	5	0	40	60	0
Wellbeing	4	0	75	25	0
Student outcomes	4	25	50	25	0
Student links across schools	4	0	75	25	0
Community engagement	2	0	100	0	0

Principals who responded to the survey and participants in the case studies agreed that a positive aspect of their Education Network was the exchange of ideas and expertise. As one principal in a case study said:

"...Principals going to other principals' schools is one of the best models of professional learning that I know. From that you glean so much that you can either bring back to your school to affirm what you are doing or say "I'd like to change that..."

This sentiment about learning through observing other schools was conveyed by several other principals who participated in the case studies. It was also commonly stated that incidental learning, either from discussing a program that one school had implemented or visiting a class as part of a school tour while running a program, was a valuable aspect of their collaboration as it provided them with ideas and feedback about how programs ran in schools with similar contexts.

Professional learning activities were nominated by all but one survey respondent as an activity that their Education Network was engaged in. Similarly, most of the Education Networks also identified this as an objective, suggesting that achievement of this objective was being supported by the groups' activities.

The case studies highlighted that the specific objectives of Education Networks appeared to be closely related to the issues participating schools were facing. For example, the Orange Cowra Ascending (OCA) Network focused on professional development of its leaders to address their challenge of developing leadership skills as teaching principals in small schools. Similarly, the Snow Gums Learning Alliance took part in joint professional learning activities to build the capacity of staff across all its schools to provide the best educational and socialisation opportunities for students. This collaboration has extended so that they now teach across all schools in the Network, using a virtual extended classroom for mathematics.

The Northern Central Networks had an array of activities from which members could pick and choose those most relevant to their context. Whereas the smaller central schools in the Education Network tended to participate in a virtual science faculty to support their students in schools where enrolments were small, other member schools participated jointly in leadership development and succession planning activities.

The case studies illustrate that Education Networks can start with one aim and change as they progress. One principal in the Northern Central Groups 1 and 2 Education Network described their group as 'organic' because it evolved as different issues arose. Schools in the BIJOU Network had an initial focus on professional learning. However, over time they realised it was also necessary to combine financial and human resources that allowed professional learning opportunities and joint school activities, such as participating in the Schools Spectacular and young leaders' camps; these would not have been feasible if each school had acted alone. Similarly, one member of the Northern Central group indicated that the first two years of their collaboration involved setting the 'groundwork'. Schools had visited each other and learnt from observing the practice of others but were now focusing on specific issues within the Education Network, such as how they respond to aspects of the reform agenda.

Four of the Directors, Public Schools NSW interviewed said that the primary difference in terms of collaboration across schools since the Blueprint was introduced was that collaboration was now more strongly supported and that there was an expectation that schools would work together. One Director, Public Schools NSW said that it was 'now more a case of if a school was not working with others it became a question of "why not" rather than "why" as it had in the past when schools worked together'. Participants who were interviewed as part of the case studies also indicated varying levels of collaboration prior to this initiative, with some schools already having a history of working closely together (such as the Snow Gums Alliance which was formed prior to the Blueprint) and others working with some of the schools in their Network for various reasons (such as participating in the 'Orange Small Schools Association' which allows schools in the group to access combined sports carnivals, swimming carnivals, cross country events, science days etc.). All agreed however, that the level of collaboration had increased since their Education Network commenced.

As indicated in Table 3.2 above, the majority of Education Networks where principals responded to the survey reported at least partially meeting their objectives to date. Only a handful appeared not to be achieving at least one of their stated objectives to date. However, the survey data and case studies alone illustrate outcomes from only a small sample of all the schools involved in Education Networks (70 schools out of at least 356). Therefore, it is difficult to ascertain the success of Education Networks more broadly from the data presented in this report. This will be more comprehensively investigated for the final evaluation report due in 2018.

However, the case studies and interviews with Directors, Public Schools NSW provide some indication of the overall importance of Education Networks for helping rural and remote schools overcome some of their challenges. Their relative isolation, low staff numbers and relative inaccessibility to professional learning are common issues. The fact that the Education Networks have enabled schools to engage in activities that specifically combat these issues has likely led to their success. It is also likely that as long as the Networks provide a mechanism for schools to address these barriers they will be seen as successful.

The sustainability of Education Networks

One criterion for funding the Education Networks was that they would be sustainable beyond their initial seed funding. The case studies indicated that sustainability rested with the current and future school staff and with at least some of the schools taking on a lead role. In most cases there was a small number of lead participants, or a core group. In at least two of the case studies, the relevant Directors, Public Schools NSW were initially the driving force of the group, but this leadership role transferred to group members over time. Participants saw the group's ownership of the Education Network as an important contributor to sustainability. Not surprisingly, the members indicated that sustainability was also related to the benefits they were deriving from being in the Education Network.

Support by principals for continued participation in the Education Networks seemed to be less of an issue for non-teaching principals. Participation appeared to be more difficult for teaching principals for two reasons: a (funded) relief teacher was needed for day-long Education Network activities and it meant a whole day that the teaching principal was away from his or her students. One teaching principal explained that 'a day out of the school is a day out of the classroom' and this continuity for the students is a consideration when deciding whether to participate in any non-school-based activities.

The principals in the survey who said they were in an Education Network were asked about their perceptions of how long they expected it to continue into the future. Consistent with the expectations of the Networks, the largest proportion of respondents (18, 60%) believed that their Education Network would continue after the seed funding was expended, and about a further third (11, 36.7%) thought it would continue, but in a decreased capacity. Based on comments in the principal survey, there is a suggestion that changes in leadership and teaching staff were expected to be partially responsible for any decrease in operational capacity of Education Networks. This is supported by a response from one principal who reported that they were new to the school and had not been given any information about the Education Network in which their school was participating. Staff turnover was an issue that was particularly relevant for many rural and remote schools, suggesting that succession planning be included as a condition of Education Network funding, possibly supported by the relevant Director, Public Schools NSW.

Networked Specialist Centres

Under action 13.1 of the Blueprint, NSCs are being established to help schools connect students who have complex and challenging needs more efficiently with coordinated interagency support. Although NSCs are being implemented statewide rather than just in rural and remote areas, 13 of the 21 NSCs support principal networks that include provincial, remote or very remote schools.

Each NSC has a full-time facilitator, employed at the Principal Education Officer level, who reports to their Director, Educational Services.

The NSC model seeks to drive 'collective impact' through the NSC facilitators collaborating with regional and local agency coalitions (e.g. other government agencies such as FACS and NSW Health and non-government agencies such as Mission Australia) to help coordinate resources and services and thereby achieve greater impact and efficiency than could be achieved by working in isolation. The collaborative work of NSCs aims to complement existing targeted school-based services and the learning and wellbeing services administered by the Department's Educational Services teams.

NSCs establishment

As intended, four demonstration NSCs were established in the first half of 2014 at Broken Hill, Dubbo, Tamworth and Wagga Wagga. An additional 17 NSCs were established in 2015, including the nine NSCs that service rural and remote schools. According to the Blueprint, all 21 NSCs were to be established by the end of 2016, meaning that implementation was up to one year ahead of schedule.

Table 3.3 outlines when the NSCs supporting rural and remote schools were established and where they are located. The table shows that while all rural and remote NSCs were established in 2015, all but four have been operating for less than 12 months, limiting the evaluation of NSC activities and impact in time for this report

Table 3.3:
Locations and establishment dates of rural and remote NSCs

Source: Learning and Wellbeing Directorate and interviews with NSC facilitators in April and May, 2016

Networked Specialist Centre	Location/Co-location	Date commenced
Broken Hill	Broken Hill Education Office	January 2014
Dubbo	Dubbo Education Office (co-located with FACS and Juvenile Justice)	January 2014
Tamworth	Tamworth Education Office	June 2014
Wagga Wagga	Wagga Wagga Education Office	June 2014
Shoalhaven	Nowra FACS Office* Batemans Bay FACS Office	July 2015
Deniliquin/Griffith	Deniliquin Education Office	July 2015
Port Macquarie	Port Macquarie Education Office	August 2015
Barwon	Moree Education Office**	August 2015
Central West	Orange Education Office	August 2015
Bega/Queanbeyan	Queanbeyan Education Office Tathra Primary School	October 2015
Maitland/Newcastle	Maitland Education Office	October 2015
Lismore	Goonellabah Education Office Murwillumbah Education Office	October 2015
Wollondilly/Macarthur	Glenfield Education Office***	October 2015

Note: *The Shoalhaven NSC facilitator was intended to be at Nowra Public School but relocated to the FACS offices in Nowra and Batemans Bay due to a lack of office space. **The Barwon NSC facilitator was intended to operate out of Narrabri West Public School but relocated to the Moree Education Office to be closer to other services supporting the region. ***The Wollondilly/Macarthur NSC facilitator was intended to spend two days per week based at Picton Public School. This was discontinued due to a lack of office space and after-hours access.

Date commenced indicates the date the NSC Facilitator commenced according to interviews with these facilitators.

Table 3.3 also shows that 12 of the 13 NSC facilitators are located for at least part of their time within local Education Offices. This reflects the close relationship of NSCs with Learning and Wellbeing teams within Educational Services. All NSC facilitators commented that having a close relationship with Learning and Wellbeing teams has been essential to gaining a better understanding of the complexity of student issues schools are addressing and where system 'blockages' exist in the ability of schools to obtain the necessary support. The decision by some NSC facilitators to locate outside schools reflects a need for sufficient office space and a focus on being closer to, and collaborating with, other service providers supporting the local area. For example, the NSC facilitator for Shoalhaven has relocated from the intended location of Nowra Public School to the FACS offices in Nowra and Batemans Bay. Two other rural and remote NSC facilitators are at the time of writing negotiating co-location arrangements with local FACS offices due to the substantial overlap of cases.

The types of support NSCs are providing to rural and remote schools

Principals were surveyed about the types of issues for which their schools needed specialist support and where they obtain that support. Rural and remote principals who indicated that their schools required specialist support (n=197) commonly highlighted areas such as student learning difficulties (89%), student mental health and wellbeing (86%), student psychological assessment (84%), students with challenging behaviour (84%), student home issues including homelessness (84%) and students in out-of-home care (58%). A smaller number of principals highlighted youth suicide and student alcohol and drug abuse.

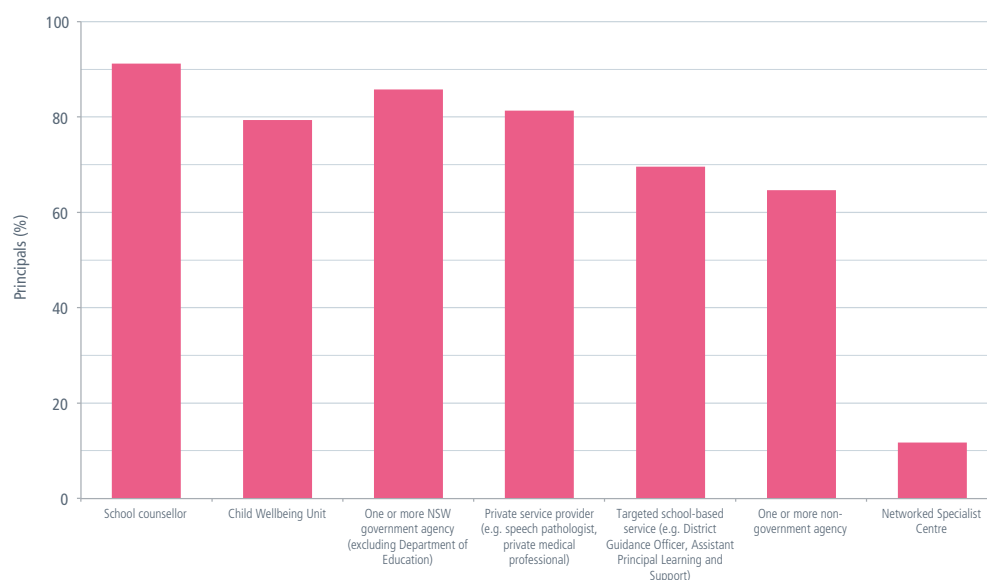
Principals who indicated that their schools required specialist support were asked where they obtained that support in 2015. Figure 3.5 shows that schools were heavily dependent on their school counsellor and other support from within the Department, such as the Child Wellbeing Unit, District Guidance Officers (DGOs) and Assistant Principals, Learning and Support. In interviews, NSC facilitators and Directors, Educational Services felt that Learning and Wellbeing teams supported a substantial number of schools. Figure 3.5 also shows that more than 80 per cent of schools obtained specialist support from other government agencies and private health and wellbeing professionals, and around 70 per cent from non-government organisations (NGOs).

Overall, surveyed principals from rural and remote schools were less likely to report obtaining support from outside the Department. A number of factors might explain this, including the limited availability of services in some rural and remote locations and the large geographic areas that regional service providers often cover. The need for NSCs in rural and remote locations is possibly greater than in metropolitan areas, yet schools may face greater challenges accessing specialist support.

Figure 3.5:

Services used by schools to obtain support for students with complex and challenging needs

Source: CESE annual principal survey, 2016, n=197

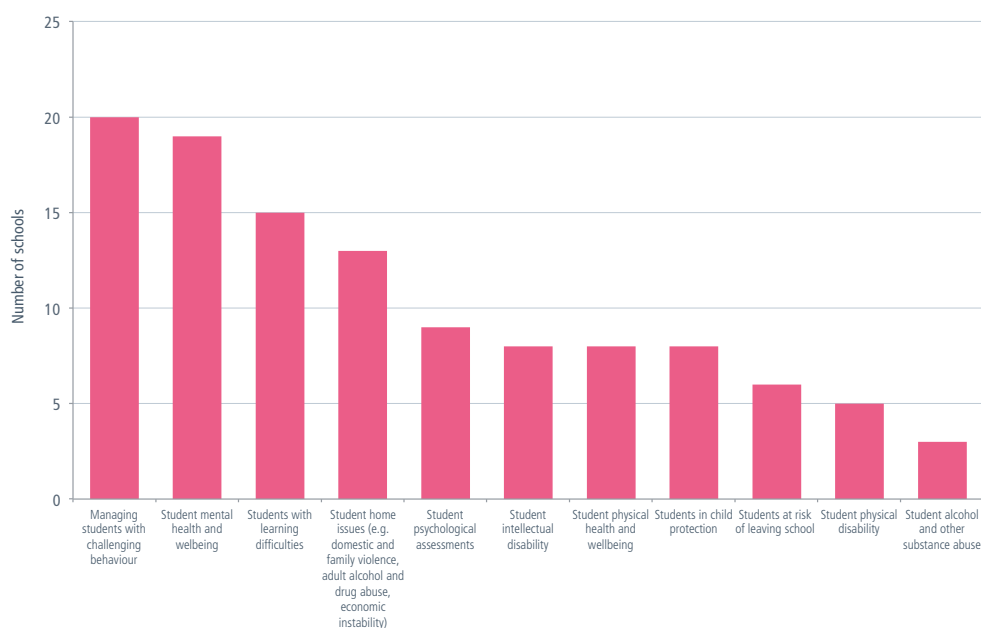


Only a small number of rural and remote schools surveyed obtained direct support from NSCs (n=24, 11.8%). Figure 3.6 shows that direct support provided by NSCs was most commonly for managing students with challenging behaviour, student mental health, students with complex learning difficulties and students with complex home issues. Although only a few schools were directly supported by NSCs, they do receive support across a range of issues on multiple occasions.

Figure 3.6:

Direct support received from NSCs

Source: CESE annual principal survey, 2016, n=24



At first glance, the low engagement of schools directly with NSCs could be perceived as a shortcoming of the program to date. Coupled with this is the observation from the survey of principals that only nine per cent of rural and remote respondents (n=18) had a good understanding of the NSCs' function. However, based on interviews with program managers, NSCs are not intended to duplicate existing functions within Educational Services by providing direct services to schools. Rather, NSCs are intended to support those structures by focusing on improving regional and local service integration around schools and students. NSCs should become involved in case facilitation only where there is a 'blockage' in the ability of schools to obtain necessary support to manage a student with complex needs. The NSC should not only overcome that 'blockage' in the short term but address the systemic issues that created that blockage to develop a sustainable solution. Thus NSCs can be effective despite being somewhat 'invisible' to most schools.

When considering the extent to which NSCs are supporting schools, it should be noted that the NSC operating model varies across rural and remote locations. NSCs in both the Wagga Wagga and Tamworth Operational Directorates are actively engaging in system-level initiatives intended to build the capacity of schools and other services to address students' complex needs collaboratively. A number of NSCs also facilitate professional learning opportunities for schools, including mindfulness training, Bridges out of Poverty training and wellbeing conferences. These activities strongly align with the collective impact and capacity building focuses of the intended NSC model.

However, interviewees indicated that NSCs in the Wagga Wagga Operational Directorate (but not the Tamworth Operational Directorate) provide direct case facilitation for schools. Survey responses from school principals also indicated that of the 24 rural and remote principals who reported receiving direct support from an NSC, 18 were from schools in the Wagga Wagga Operational Directorate. The six principals in the Tamworth Operational Directorate have direct involvement in projects led by NSC facilitators. The level of direct involvement in case facilitation varies across NSCs in the Wagga Wagga Operational Directorate, aligning to some extent with the previous role of the NSC facilitator. Those NSC facilitators who had prior roles in Educational Services or as DGOs appear more likely to be involved in case facilitation than those from alternative backgrounds, although there are exceptions.

In the Tamworth Operational Directorate, an operating model for NSCs was co-designed with Learning and Wellbeing teams targeting school-based wellbeing services. In this model, NSCs built on, rather than duplicated, existing functions. The NSC function in the Tamworth Operational Directorate thus excludes case facilitation; rather, this is left to Learning and Wellbeing teams and targeted school-based wellbeing services. If, as intended, DGOs realign to be closely connected to NSCs, they could, in conjunction with the school counselling service, support some of the case facilitation function currently absent from the Tamworth Operational Directorate operating model.

Interagency and collective impact work by rural and remote NSCs

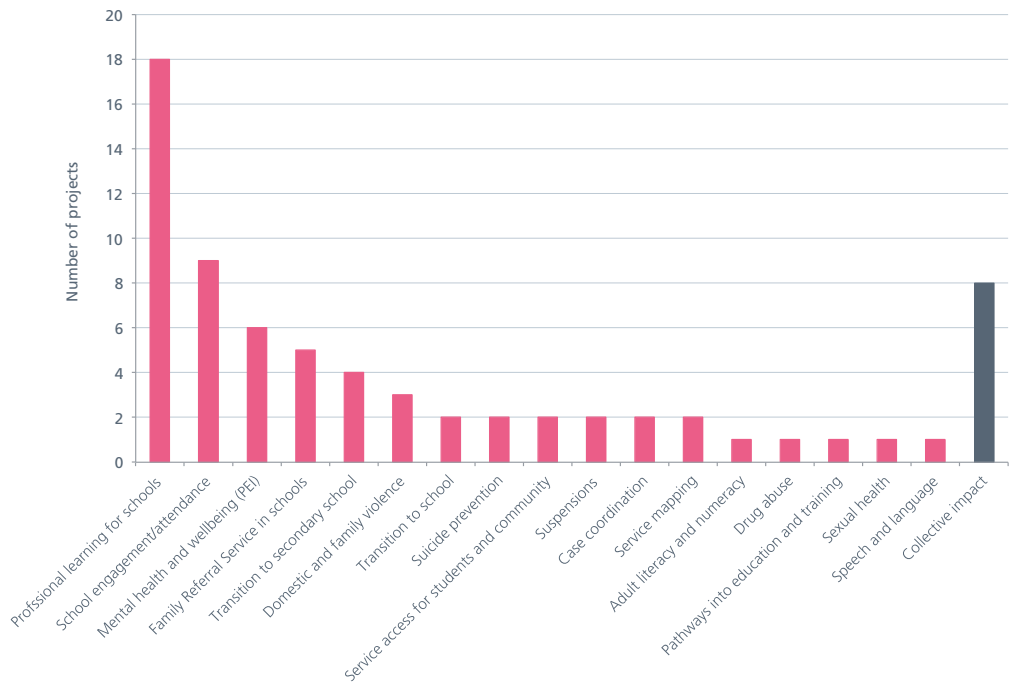
The NSC model is underpinned by the principles of collective impact. All rural and remote NSC facilitators highlighted that interagency project work and collective impact are a key part of their role. The importance of this was highlighted again by the Directors Educational Services, who commented that the case loads of learning and wellbeing teams limited their capacity to focus on 'systems work'. NSCs provide a dedicated strategic emphasis on addressing system blockages, and improving service coordination and collaboration around schools and students.

NSC facilitators reported that they were participating in at least 63 interagency projects involving rural and remote schools. These projects were undertaken to build the capacity of schools to support students with complex and challenging needs (see list in Figure 3.7). NSCs are partnering with a wide range of agencies on these projects, most commonly FACS, NGOs, NSW Police and NSW Health (Figure 3.8).

The most common interagency projects that have targeted this capacity building for schools and other agencies include Bridges out of Poverty, mindfulness training and wellbeing conferences. The next most common projects have targeted school attendance and engagement, and student health and wellbeing (including mental health). These projects have included the health hubs being implemented in partnership with Sydney University's Department of Rural Health across several Far West public schools. Another common project is the Family Referral Service (FRS) in schools (five projects across at least 14 schools), which is delivered by NGOs under the Keep Them Safe funding allocated to NSW Health. Projects are also addressing school transitions, youth suicide, general case coordination and student drug abuse.

Figure 3.7:
NSC interagency projects in rural and remote locations

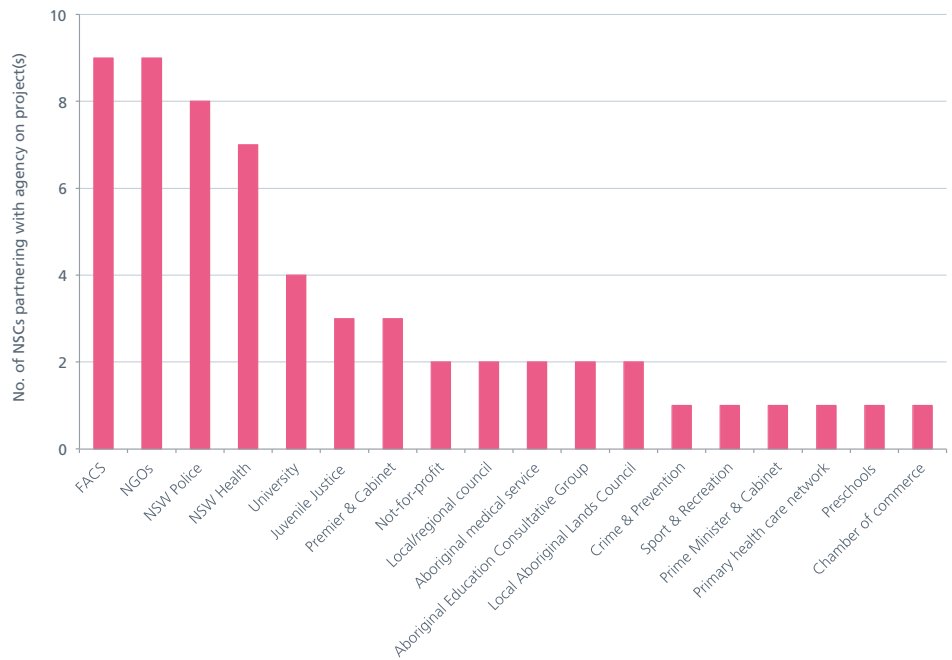
Source: Interviews with rural and remote NSC facilitators



Note: The numbers presented in this figure could under-represent the true number of interagency projects NSC facilitators are involved in as the only data available is that self-reported during interviews.

Figure 3.8:
NSC partner agencies on school and community projects

Source: Interviews with rural and remote NSC facilitators



Note: The numbers presented in this figure could under-represent the true number of interagency projects NSC facilitators are involved in as the only data available is that self-reported during interviews.

NSC facilitators appear to be involved in at least eight projects in rural and remote communities that satisfy the conditions for collective impact as identified by Homel et al (2015)¹². These projects target general service coordination to address community disadvantage (three projects), mental health (two projects), service delivery reform (one project), domestic violence (one project) and juvenile justice (one project). All of these projects are being led by other agencies, mostly the NSW Department of Premier and Cabinet (DPC) and FACS. NSC facilitators are involved in reference groups to plan the overall direction and working groups targeting education-related initiatives such as student engagement and attendance, alternative learning pathways and mental health strategies. In particular, rural and remote NSC facilitators are involved in collective impact projects such as Breaking the Cycle (led by DPC), which targets persistent disadvantage and service coordination in Kempsey, the Northern NSW Mental Health Integration Plan (led by the North Coast Primary Health Network) and a service delivery reform project in Nowra (co-led by DPC and FACS).

The remainder of the projects do not appear to satisfy the conditions for collective impact. While these projects reflect cooperative arrangements that are project-based rather than a strategic shift towards more ongoing collaboration, they are important activities in helping schools address complexity. As most NSCs have been operational for less than 12 months and in some communities have minimal previous interagency collaboration, the number of projects NSCs are involved in is encouraging. In time, and with appropriate support, these relationships could foster the conditions for collective impact to develop more widely.

In addition to project-related interagency work, all rural and remote NSC facilitators represent the Department on interagency groups. This has been limited to some extent by the large number of interagency groups in some communities and the large areas covered by NSC facilitators, but NSC representation appears to give a more consistent and strategic departmental presence on these groups. Theoretically this should contribute to a more strategic alignment of agency and departmental actions and stronger collaboration.

Early impacts of NSCs

Given the short time that the NSCs have been in operation, it is too early to assess their impact on either establishing local conditions for collective impact, or on schools' management of students with complex needs. These will be lines of enquiry for the remainder of the evaluation. The evaluation will also measure the retention, school completion and suspension of students with complex needs as proxy indicators of NSC success.

Baseline data was collected from principals in 2014 and 2015 about the ease of accessing external support for students with complex needs. Principals were asked to rate that ease of access on a 1-10 scale (1 = unable to access support and 10 = support was easily accessed). For comparison over time, data was also collected from metropolitan principals.

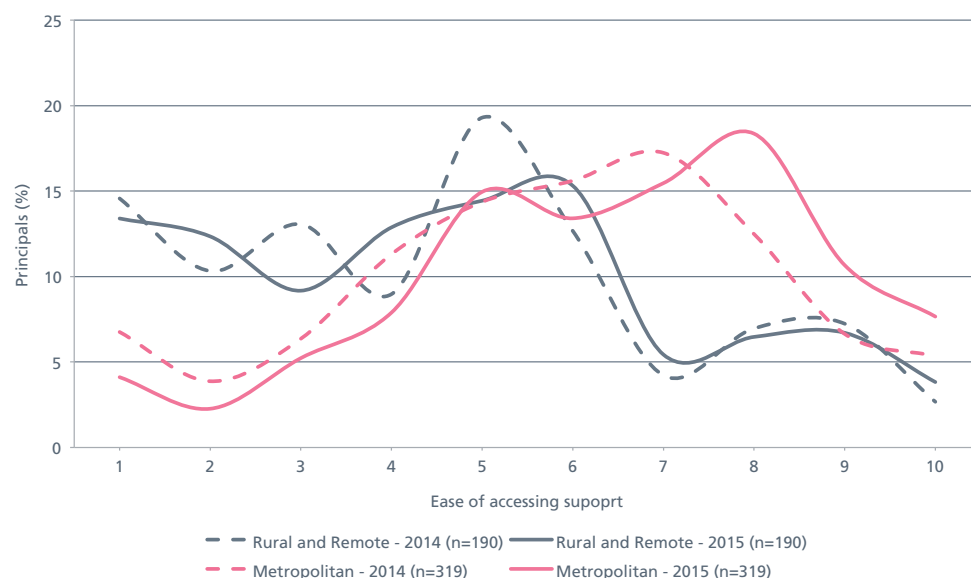
¹² Homel et al (2015) identify a set of principles (CREATE) used as a foundation for preventative initiatives. CREATE stands for collaborative, relationships-driven, early in the pathway, accountable, training focused and evidence-driven. This model enables capacity building which can be evaluated through a set of measures of coalition functioning.

Figure 3.9 shows that in 2014 and 2015, metropolitan schools found it easier than rural and remote schools to access external support for students with complex needs. Wilcoxon signed-rank testing confirmed that in 2015 both metropolitan and rural and remote schools found it significantly easier to access this support compared to 2014 ($p < .001$). This was true for schools in all four Operational Directorates (data not shown), suggesting that service coordination for schools improved in 2015. However, given that most NSCs only began operating in the second half of 2015, it is difficult to attribute this improvement to NSCs

Figure 3.9:

Reported ability to access external support for students with complex needs in 2014 and 2015

Source: CESE annual principal survey, 2016



Principals' responses were also analysed using ordered logistic regression to test whether the change from 2014 to 2015 differed by location. The dependent variable was the reported ease of accessing support in 2015, accounting for the reported ease of accessing support in 2014. A differential change based on location was indicated by the significance of binary variables for location (e.g. rural and remote =1; metropolitan =0)¹³.

Figure 3.10 shows the predicted probabilities of principals in rural and remote or metropolitan schools reporting a given ease of accessing external support for students with complex issues in 2015, given their reported ease in 2014. Figure 3.11 shows the same analysis by Operational Directorate. Table 3.2 shows the proportional odds ratios, p-values and 95 per cent confidence intervals from the models.

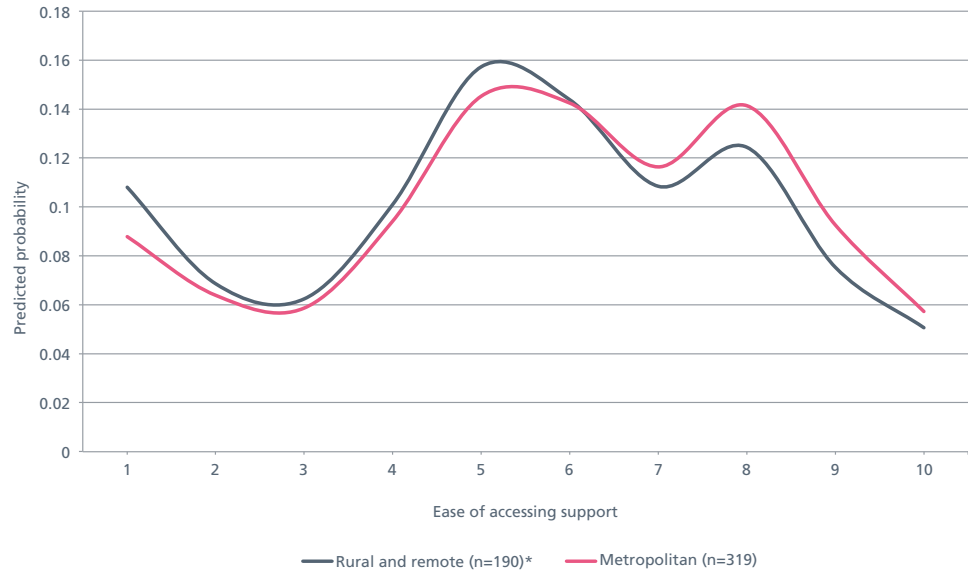
The data shows that the odds of principals in rural and remote schools reporting easier access to external support around complex students in 2015, given their reported ease in 2014, are significantly lower than for metropolitan principals (OR = .653; $p < .05$). In other words, from 2014 to 2015 there was a greater change in the reported ease of accessing support across metropolitan schools than across rural and remote schools.

¹³ Models were tested for and satisfied the proportionality of odds assumption, and were tested to confirm that the relationship between reported scores in 2014 and 2015 did not depend on the 2014 score (i.e. the measurement scale acts as an interval scale and changes over time can be compared despite different starting points).

Figure 3.10:

Predicted probability of schools' ease of accessing external support around students with complex needs in 2015, given the reported ease in 2014, by location

Source: CESE annual principal survey, 2016



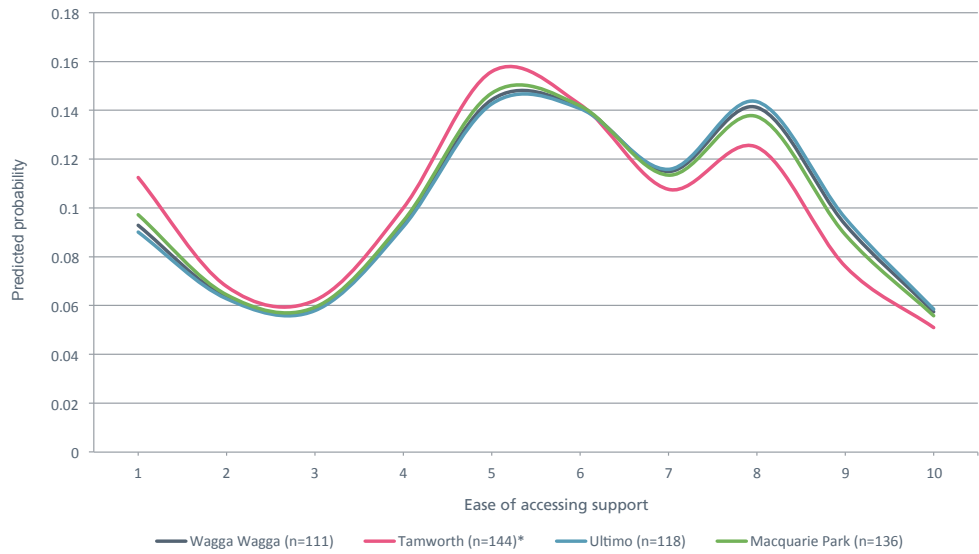
Note: *p<.05, Metropolitan cf. rural and remote.

Figure 3.11 shows that the reported change in the ease of accessing support was lowest in the Tamworth Operational Directorate (cf. Wagga Wagga, OR=0.658, p<.05 cf. Ultimo, OR=0.620, p<.05, cf. Macquarie Park, OR=0.725, n.s.).

Figure 3.11:

Predicted probability of schools' ease of accessing external support around students with complex needs in 2015, given the reported ease in 2014, by Operational Directorate

Source: CESE annual principal survey, 2016



Note: *p<.05, Tamworth cf, Ultimo; and Tamworth cf. Wagga Wagga.

Table 3.4:

Proportional odds ratios of schools reporting greater ease in obtaining external support for students with complex needs in 2015, relative to schools in other Operational Directorates

Source: CESE annual principal survey, 2016

Operational Directorate	Proportional OR	p-value	95 % confidence interval
Wagga Wagga cf. Ultimo	.941	.802	.587-1.508
Wagga Wagga cf. Macquarie Park	1.1	.684	.693-1.748
Tamworth cf. Wagga Wagga	.658	.044	.310-.983
Tamworth cf. Ultimo	.620	.034	.398-.965
Tamworth cf. Macquarie Park	.725	.143	.472-1.114
Ultimo cf. Macquarie Park	1.169	.494	.746-1.748
Rural and remote cf. metropolitan	.653	.015	.462-.921

Taken together, the above results suggest that while schools in all locations reported that it was easier to access support in 2015 compared to 2014, rural and remote schools, and in particular those in the Tamworth Operational Directorate, reported less improvement in their ability to access specialist support than metropolitan schools. The survey also asked about support from beyond the schools and Educational Services Team and thus differential changes in ease of accessing support by schools in various locations may not necessarily be attributed to NSCs but could be the result of external support outside the scope of this study. However, given the reported differential change between schools in the Wagga Wagga and Tamworth Operational Directorates, a question is raised about which of the two models of NSC support operating in rural and remote schools is more effective given the current structure of Educational Services and targeted school-based wellbeing support. It is important to note that once reforms to wellbeing support under Supported Students, Successful Students¹⁴ are fully implemented, the most effective model for NSCs could change. This will become clearer in subsequent years when NSCs have been established for longer and Supported Students, Successful Students fully implemented.

Challenges for NSCs to date

Interviews with rural and remote NSC facilitators and Directors, Educational Services highlighted the following main challenges to date in implementing NSCs:

The absence of a clear and consistent strategic operating scope

It is evident that two NSC operating models are being implemented across rural and remote locations, broadly aligning with the Operational Directorates. It is also possible that the model being implemented across metropolitan networks could differ again, although this is not within the scope of this report.

All the NSC facilitators and line managers interviewed expressed a lack of clarity about the scope and parameters of NSCs, and in particular how NSCs were intended to operate strategically with learning and wellbeing teams while acknowledging place-based variation. Some NSC facilitators indicated that there was tension with learning and wellbeing teams around the scope of NSCs and a perceived role overlap.

The impacts of this tension on the quality of support provided to schools for students with complex needs are unclear; such tension it might lead to inefficiency and support gaps where roles and responsibilities are unclear. However, this tension was the impetus for the Tamworth Operational Directorate to co-design an NSC operating model with Learning and Wellbeing teams. This led to a more defined NSC operational scope in the Tamworth Operational Directorate that recognises local needs and the structure and maturity of local service systems.

The capacity of NSC facilitators

An obvious challenge for NSCs in rural and remote locations is the vast geographical areas they support. Discussions with NSC facilitators confirmed that this constrained their capacity to drive interagency projects, participate in interagency groups and facilitate complex cases.

The first constraint is being addressed by some NSC facilitators by involving DGOs and school-based learning and support teams in projects so that they can drive day-to-day implementation. However, the capacity constraint associated with involvement in complex case facilitation will only be resolved by an integrated operating model across NSCs, learning and wellbeing teams and targeted school-based support.

¹⁴ <http://www.dec.nsw.gov.au/about-the-department/our-reforms/supported-students-successful-students>

Knowledge to initiate and drive collective impact initiatives

Notwithstanding the fact that most NSCs have been operational for less than 12 months, several NSC facilitators commented that they were unsure about how to initiate and drive collective impact initiatives. A lack of knowledge about what is required for collective impact is an understandable gap for some rural and remote communities, bearing in mind that at this stage collective impact might not be realistic due to a combination of distance from senior decision makers, high rotation of agency staff and inexperienced agency workforces. A comprehensive understanding of the preconditions for collective impact, however, would enable NSC facilitators in these locations to take a long-term perspective and as a first step create a platform for collective impact.

Incentives to attract and retain teachers and school leaders

Various schemes have been in place for many years to encourage teachers to live and work in rural and remote parts of NSW, including rental subsidies and other incentives¹⁵. For example, prior to the start of the Blueprint, as well as an array of other location-related incentives, 70 per cent or 90 per cent rental subsidies have been available for teachers in six and eight-point rural incentive schools since 2003¹⁶. Action 7.2 of the Blueprint announced a series of new incentives with more than \$30 million in additional funding.

The new 50 per cent rental subsidy for some four-point rural incentive schools commenced in Term 1, 2014¹⁷. The intent of adding these schools to the subsidy was to encourage teachers to come to, and remain at, these schools. Eligibility for the 50 per cent rental incentive follows similar guidelines to those for the 70 or 90 per cent subsidies. It is open to Department staff employed in permanent or temporary teaching positions and casual teachers may also apply, provided they are employed at least three days per week¹⁸.

Where available, teachers access rental accommodation through the Teacher Housing Authority (THA). If no THA properties are available, teachers can access a subsidy for private accommodation but they must show that they had first sought accommodation through the THA.

In addition to the new rental subsidy, the following other incentives were also announced with the Rural and Remote Blueprint:

- The option for principals at six and eight-point incentive schools to appoint a suitable temporary teacher directly into a vacant permanent position if they have worked continuously for at least two years in the school. In eight-point schools, principals will have the option of appointing those teachers above establishment if there is no vacant position.
- Principals in eight-point incentive schools are able to recommend that a teacher is assessed for direct appointment to an executive role following two consecutive years of successfully relieving or acting in that role.
- Newly-appointed teachers and school leaders in rural and remote schools may be offered a 10-week trial before their permanent appointment is confirmed.
- A recruitment benefit of \$10,000 in rural and remote eight-point schools may be used to attract suitable applicants if two consecutive selection processes have not filled the position.
- Payment of the BOSTES submission fee for accreditation at Highly Accomplished or Lead Teacher if successfully attained.

¹⁵ See for example, NSW Department of Education and Training, 1999, which summarises incentives provided in the 1990s.

¹⁶ The Department provides locality allowances such as rental subsidies and vacation travel expenses, eligibility for priority transfer to a school in a location of choice after a specified period of employment and, in some western NSW schools, an extra week of summer vacation. Details can be found in the teach. NSW benefits calculator. Service in eight, six and four-point incentive schools attracts transfer to a preferred location after a minimum period of service has been completed.

¹⁷ All the schools given the new 50% subsidy are provincial except for one, which is remote.

¹⁸ THA website FAQs: <http://www.tha.nsw.gov.au/FAQ>

Uptake of the new incentives

Table 3.5 shows that the 50 per cent rental subsidy was, by far, the most commonly used of the new incentives, being accessed by 310 staff up to 7 March 2016. Direct appointment of a temporary teacher to a vacant permanent position was the next most frequent, occurring 27 times as at the same date. The other incentives have had very little uptake to date, suggesting that they are neither applicable nor attractive for teachers in any numbers.

Table 3.5:

Uptake of incentives announced in the Blueprint

Source: Human Resources Directorate, Department of Education and Teacher Housing Authority

Incentive	Number accessing
In some four-point incentive schools a 50 per cent rental subsidy is available.	310
In six and eight point schools, the principal can directly appoint a temporary teacher into a permanent position if there is a vacancy.	27
In eight-point schools, the principal can make this appointment without a vacancy.	0
In eight-point schools, a teacher can be recommended for assessment for direct appointment if they have been acting or relieving in an executive position.	0
In six and eight-point schools teachers may be offered a 10-week trial before accepting a permanent position.	0
In eight-point schools, a \$10,000 recruitment benefit may be provided if two recruitment processes have been unsuccessful.	2
Teachers can have their BOSTES submission fees reimbursed if 75% or more of their time completing that accreditation was at a rural or remote school.	3

Note: The numbers are accurate as at 7 March, 2016.

All NSW public schools are allocated transfer points, ranging from one to eight, depending on their location and circumstances. Classroom teachers are able to transfer from one school to another using transfer points accumulated through service in NSW public schools. Generally, for rural and remote schools, the more remote the location the larger the number of transfer points and the school also has more incentive benefits. Eight transfer point incentive schools (which are for the most part remote or very remote schools) receive 90% rental subsidies, six transfer point incentive schools (which are a combination of remote, very remote and provincial schools) receive a 70% rental subsidy and some rural four transfer point schools (which are for the most part provincial) receive a 50% rental subsidy. It should be noted that in addition to four transfer point provincial schools, there are also many with one or two transfer points. Although the majority of metropolitan schools are one transfer point, there are also some categorised as two or four points.

Impact of the new incentives on the ability of rural and remote schools to attract and retain teachers

Rural and remote principals were surveyed about their current ability to recruit and retain teachers at their schools. These self-reported data suggested that the more remote the school, the harder it was to recruit and to retain teachers. Rating the level of difficulty they had in recruiting teachers from 0 (no difficulty) to 10 (extremely difficult), the mean rating of difficulty for recruiting teachers was 4.1 for provincial schools and 7.0 for remote and very remote schools ($t(203)=3.7$, $p<.01$). On an identical scale for retaining teachers, the mean score was 2.6 for provincial schools and 6.2 for remote and very remote schools ($t(201)=5.8$, $p<.001$). This indicates that principals are perceiving greater difficulty attracting and retaining teachers to remote and very remote than to provincial schools.

Rural and remote principals were also asked to rate the extent to which the new suite of incentives had influenced their ability to attract and retain quality teachers at their school. Figures 3.12 and 3.13 show that 80 per cent of principals at provincial schools rated the new incentives as having no impact on their ability to attract and retain quality teachers at their school. This was lower among remote and very remote principals, among whom just over 30 per cent reported a positive impact of the incentives on attracting and retaining quality teachers

The responses of principals who were at schools with the new 50 per cent rental subsidy were examined separately. As only eight principals from the 53 schools participating in the new incentive answered the survey, the responses may not be representative of this group. However, for the ability both to attract and to retain teachers, 12.5 per cent said it had become worse, 62.5 per cent said there was no effect and 25 per cent said it had improved (data not shown).

Figure 3.12:

Effect of incentives on ability to attract teachers

Source: CESE annual principal survey, 2016, n=187 (provincial), n=18 (remote and very remote)

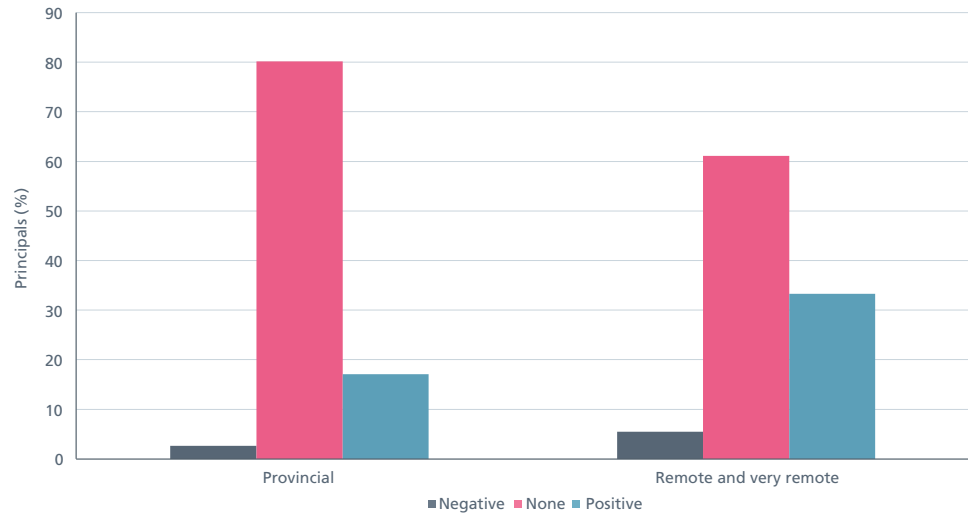
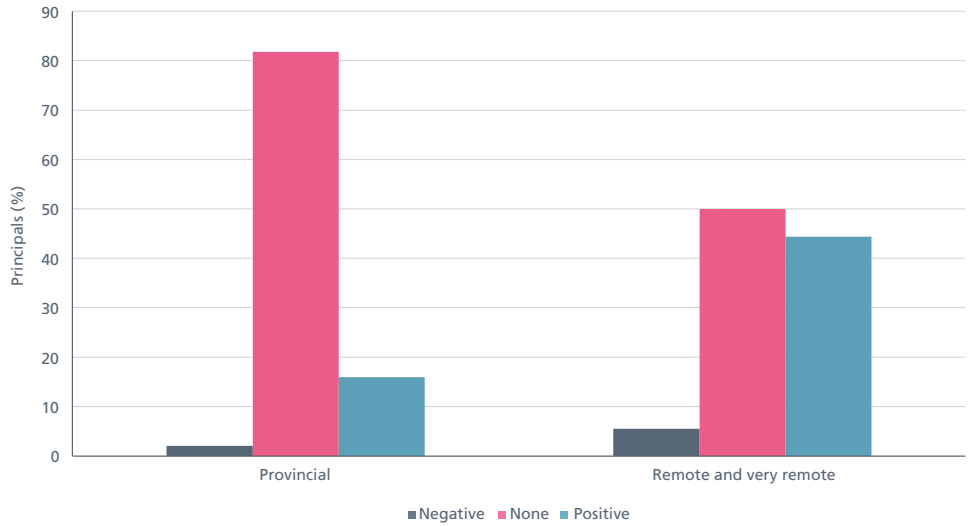


Figure 3.13:

Effect of incentives on ability to retain teachers

Source: CESE annual principal survey, 2016, n=187 (provincial), n=18 (remote and very remote)

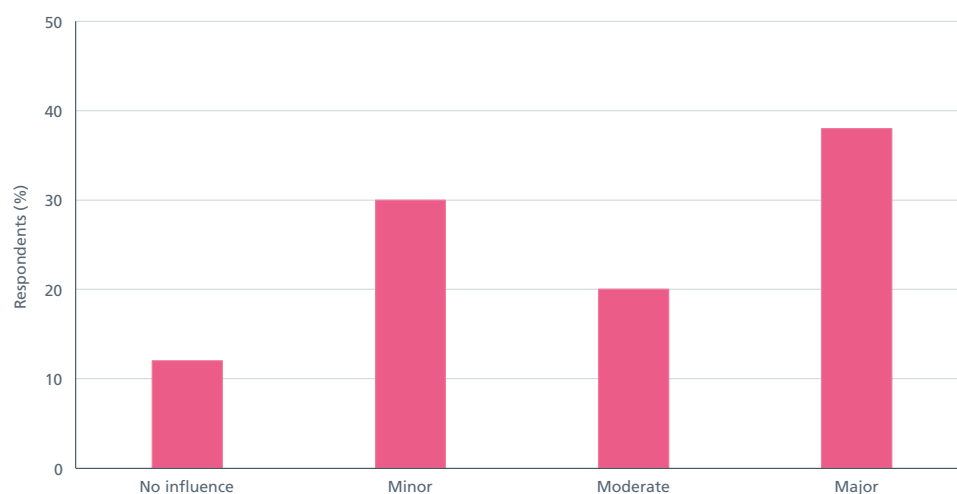


Recipients of the 50 per cent rental subsidy were also surveyed to understand the impact of the incentive on their decision to accept a position at their school. Figure 3.14 shows that the 50 per cent rental subsidy had a moderate or major influence on 58 per cent of teachers in accepting a position at a rural or remote school with the rental subsidy. Given existing teachers also received the incentive, the sample for this analysis was restricted to those teachers who had started at a target school after the incentive was introduced.

Figure 3.14:

Effect of 50 per cent rental subsidy on decision to accept position

Source: Incentive recipients survey, 2016, n= 50



Note: Answer options:

- Did not influence my decision to accept the position. I would have accepted it anyway
- Had a minor influence on my decision to accept the position. I may or may not have accepted it anyway
- Had a moderate influence on my decision to accept the position. I likely would not have accepted it otherwise
- Had a major influence on my decision to accept the position. I definitely would not have accepted it otherwise.

All current 50 per cent rental subsidy recipients were also asked a hypothetical question about their plans to stay at the school if the subsidy was not in place compared to how long they would stay otherwise. Of the 129 who answered the question, 70 per cent said they would stay for a shorter period without the subsidy, while the remainder indicated they would stay about the same length of time. In fact, 16 per cent reported that without the subsidy they would have already left, and 52 per cent reported that the subsidy had already influenced their decision to remain at their school. This suggests that the 50 per cent subsidy was encouraging the majority of the recipients to stay longer at these four-point incentive schools than they would otherwise.

The responses from principals suggested that the new incentives were having a greater impact on retaining teachers than attracting them to remote and very remote schools. To investigate further the impact of new incentives on teacher retention, the number of days teachers remained at a school following the introduction of the incentives was calculated and compared to the retention times of teachers at the same schools before the new incentives were introduced. The premise was that if the new incentives were having an impact on teacher retention, we would see teachers remaining at four, six and eight-point schools longer after the introduction of the Blueprint than before.

Retention was assessed using a survival analysis by the incentive type (for further technical details of this model, refer to Appendix D). The results indicated that prior to the Blueprint there were no significant differences in the risk of a teacher leaving a four, six or eight transfer point incentive school. However, following the introduction of the 50 per cent rental subsidy for four-point schools, the risk of leaving those schools was significantly less than before ($\exp(b_3)=0.52$, $p<.05$) (see Appendix D). In other words, the introduction of the 50 per cent rental incentive reduced the risk of a teacher leaving a four-point rental incentive school by approximately half. The new raft of incentives targeting six and eight-point schools has had no significant effect on the risk of a teacher leaving those schools. These results support the survey data, suggesting that the new incentives introduced under the Blueprint have increased teacher retention at four-point but not at six or eight-point schools.

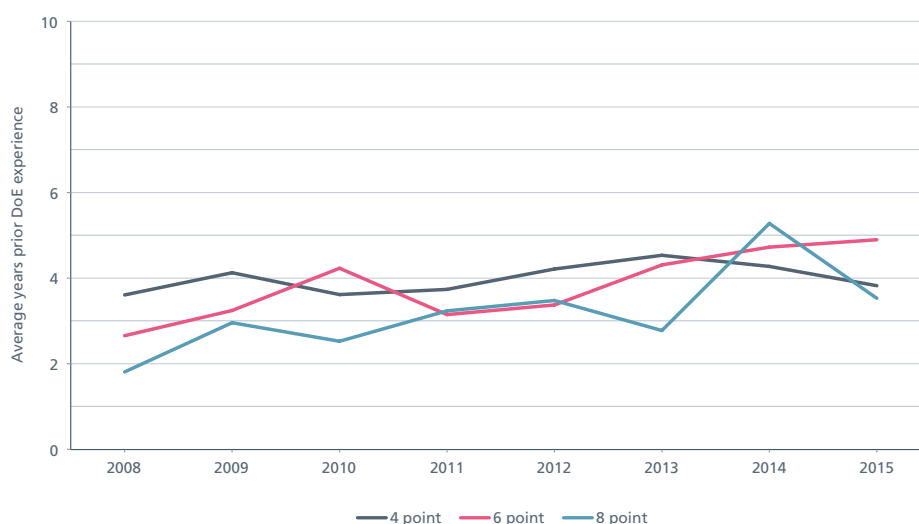
The data above suggest that the 50 per cent rental subsidy, but not the new incentives for six and eight-point schools, has had a positive impact on the recruitment and retention of teachers at rural and remote schools. With respect to recruitment, one of the intentions of the new incentives is to attract quality teachers to areas of need in rural and remote schools. The average length of prior teaching experience for new teachers at four, six and eight-point schools was analysed to determine if it had changed over time.

Figure 3.15 shows that from 2008 the average prior teaching experience with the Department of teachers at appointment trended upwards (+2.2 years) for six-point and (+1.7 years) for eight-point incentive schools. There is no discernible trend across four-point incentive schools since 2008 and from 2013, immediately before the 50 per cent rental subsidy was introduced, the average prior teaching experience of newly-appointed teachers in four-point schools declined (-0.7 years). Since 2013, the average prior experience of new teachers at six and eight-point schools increased by 0.6 and 0.8 years respectively. However, in the case of six-point schools at least, this appears to be the continuation of a prior trend. It is difficult to identify a trend at the eight-point schools due to wider year-to-year variability.

Figure 3.15:

Prior teaching experience for new teachers at four, six and eight-point incentive schools in rural and remote locations, 2008-2015

Source: Human Resources Directorate, Department of Education permanent and temporary employee databases



Note: The data include temporary and permanent employees and only considers an employee's previous teaching experience at the start of their first sequential appointment at a school. Given the small numbers of teachers at 8 point schools overall, changes in even a small number of positions appear to produce dramatic changes, and thus appear less stable.

While the data suggests that the 50 per cent rental subsidy is having an impact on teacher recruitment and retention at four-point incentive schools, there is no evidence that it is motivating more experienced teachers to move to those schools. Nor is there any evidence that the new incentives for six and eight-point schools are directly attracting more experienced teachers. This is supported by data from the FoL teacher survey in 2015 where, of 9,047 metropolitan teachers surveyed, only 18.0 per cent of those with more than two years' total teaching experience said they would consider a move to a rural and remote school given the current range of incentives. Similarly, only 26.7 per cent of the 2,375 surveyed teachers from provincial schools with more than two years' prior teaching experience stated that they would be prepared to move to a more remote location given the current range of incentives. Much higher percentages (30.9% of metropolitan and 45.3% of provincial) of teachers with two years or less teaching experience indicated that they would move to a more rural and remote location. There appeared to be no difference in these propensities between primary and secondary teachers.

Two unanswered questions are: what are the desired characteristics of teachers for various rural and remote settings, and what is the optimal length of time for a teacher to stay at such a school? The latter will obviously depend on the setting, with longer stays in more isolated schools possibly undesirable. However, identifying the desirable characteristics in teachers for rural and remote schools will enable analysis of the most effective range of incentives to successfully match supply and demand in these schools.

Teach.*Rural* scholarships

Under action 6.2, teach.*Rural* scholarships were introduced from 2014. Students completing their final year of secondary school can apply for teach.*Rural* scholarships to support them in a recognised education degree to be commenced the following year. The scholarship provides a \$6,000 annual training allowance while studying full time to become a teacher. The scheme also guarantees permanent employment in an agreed rural and remote location as well as an additional \$5,000 towards relocation costs. As part of the terms, the applicant must agree to accept an appointment as a full-time teacher in a rural or remote location in a NSW government school for a minimum three year period after graduation.

Scholarships awarded to date

Table 3.6 shows that the number of applicants has increased annually since 2014. In 2014 a maximum of 20 scholarships were offered; in both 2015 and 2016 the number of scholarships was increased to 50. The selection process involves examination of the student's grades up to the closing date for applications (HSC marks are not available at the time the decisions are made), references and consideration of how well the applicant's proposed area of teaching matches the need in rural and remote NSW.

Table 3.6:

Number of applications and commencements, teach.*Rural* scholarships

	2014	2015	2016
Applicants	122	140	206
Recipients	15	43	39*

Note: *An additional two people were offered scholarships but as at 6 June, 2016 their acceptance had not yet been registered.

As outlined above, the maximum number of annual scholarships was not awarded in any of the first three years they were offered, suggesting that there were not enough applicants of sufficient calibre to fill all places. Scholarships are offered to 'the best and brightest', and are only awarded if the selection panel determines that the applicant meets a specific cut-off criterion.

Those who did receive scholarships were surveyed about how they found out about them. Two-thirds of respondents from the 2015 cohort found out about them from teaching staff at their school, up from 42 per cent in 2014. The other most common source was the Department's website. This suggests that awareness of the scholarships is increasing, as is further evident from the increasing number of applicants over time. As awareness continues to increase, so should the likelihood that enough suitable applications will be received to receive all available scholarships.

Characteristics of scholarship holders

Of the scholarship holders for whom data were available, 73.3 per cent were planning to teach in secondary schools.

Two-thirds of scholarship recipients were from provincial or remote locations, and had experienced living in rural and remote communities. Indeed, 58 per cent of surveyed scholarship recipients stated a preference for these locations, while 19 per cent had no preference. However, 23 per cent of respondents stated a preference for urban NSW. Despite this, only 10 per cent of the survey respondents who started in 2015 indicated that they intended working in a rural and remote school only for the minimum three year requirement (Figure 3.16).

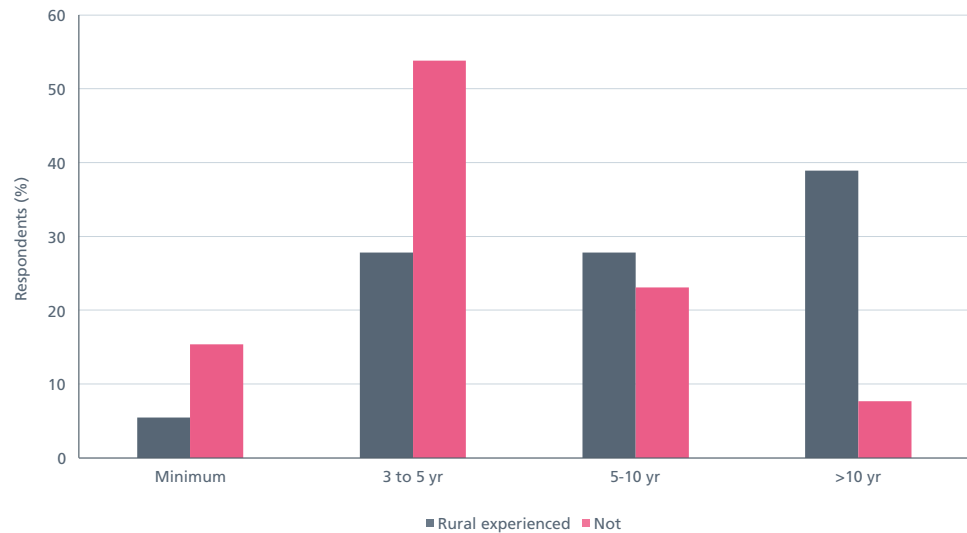
The initial survey of the 2014 cohort also asked about intended length of stay in rural and remote NSW; the shortest time period asked about was less than five years. In this group, only 8.3% indicated that they wanted to stay less than five years, indicating that across both cohorts most were planning to stay longer than the minimum period required.

Together, these findings suggest that most scholarship recipients are accustomed to rural and remote living and plan to stay in these areas to teach beyond the minimum required period. However, these students were only completing their first or second year of university at the time when their opinions were sought, and up to a third of them had minimal experience of living in a rural or remote location. It is possible that the scholarship holders' views may change (in either direction) as they progress through their education or their life circumstances change.

Figure 3.16:

Planned number of years working in rural or remote NSW by experience of living in rural areas

Source: 2015 survey of scholarship holders, n=31



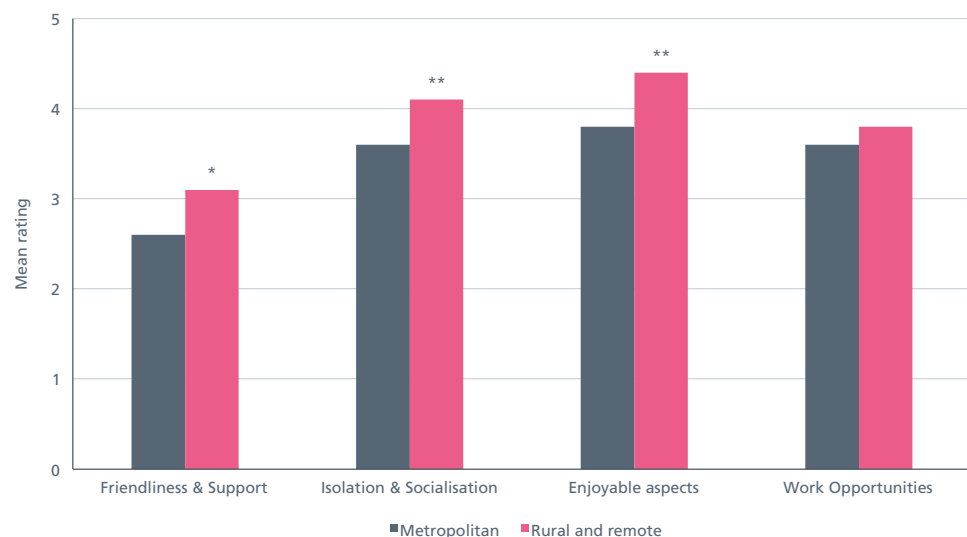
The preparation of scholarship recipients for teaching in rural and remote schools

As discussed above, about a third of scholarship recipients were not from rural and remote locations. Almost 40 per cent of the 2015 cohort who were surveyed said that they were not familiar with living in rural and remote NSW. Indeed, when students were asked about their expected adjustment to living and working in rural NSW¹⁹, those who had attended metropolitan high schools had significantly less positive views of several aspects of living and working in rural NSW (Figure 3.17). It is possible that the attitudes of the scholarship holders towards rural and remote living may become more positive by experiencing rural placements or other exposure to rural living.

Figure 3.17:

Attitudes towards rural and remote life of teach. *Rural* scholarship holders by high school location

Source: 2015 survey of scholarship holders (2014 and 2015 cohorts, April-May and November 2015) Total sample = 43; metropolitan group had minimum of 13 respondents for each scale; provincial, remote and very remote group had a minimum of 26 respondents



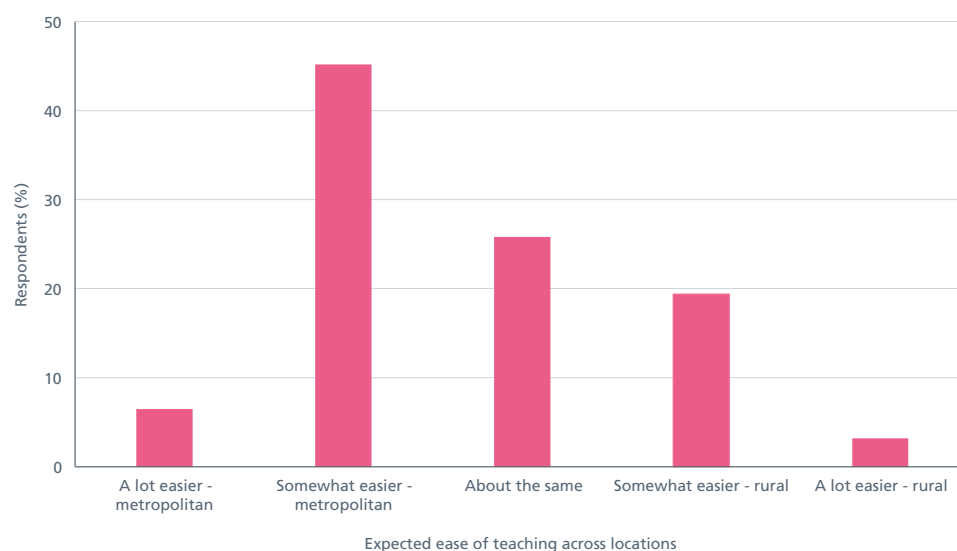
Note: * $p < .05$; ** $p < .01$. A higher mean rating indicates a more positive attitude. The isolation and socialisation scale was reverse scored so that higher ratings represent a more positive view (i.e. less isolation and more socialisation).

¹⁹ An 18 item, four-factor scale adapted from Adams Dollard, Hollins and Petkov, 2005 was used here to assess attitudes of university students studying to become teachers. The psychometric properties of the questionnaire published by Adams and colleagues resulted in four factors and showed good reliability for a newly-developed scale.

Scholarship recipients were also surveyed about how easy they thought teaching in rural and remote schools would be relative to metropolitan schools. Figure 3.18 shows that just over half thought that teaching in a rural and remote school would be more challenging than teaching in a metropolitan school.

Figure 3.18:
Scholarship holders' expected ease of teaching in different locations

Source: Survey of 2015 scholarship holders, and Survey of 2014 scholarship holders, n=44



Given the above, it is important that scholarship recipients are supported to prepare them for living and teaching in rural and remote locations. Table 3.7 shows that at least 38 per cent of scholarship holders to date are attending non-metropolitan NSW universities. This distribution suggests that a substantial proportion is likely to gain professional experience in rural and remote locations.

Table 3.7:
Scholarship holders' high school and university locations

University location	Location of secondary school		Total
	Metropolitan	Provincial and Remote	
Sydney	15	3	18
Other metropolitan NSW	12	21	33
Non-metropolitan NSW	1	34	35
Outside NSW	0	4	4
Total	28	62	90*

Note: *Australian Catholic University has metropolitan and rural campuses and data were not available regarding what campus the three students (all of whom were from metropolitan secondary schools) were located. They are thus not included in the location segmentation.

Given that students studying at non-metropolitan universities are more likely to have greater opportunities for practical experience placements in rural and remote schools, scholarship holders were also surveyed about any professional experience they had undertaken during 2015.

All students who had done placements in 2015 were asked where they had done those placements. A total of 28 locations were identified, including nine metropolitan and 10 provincially located government schools, two preschools and seven private or Catholic schools. The data indicated that the location of the university was closely linked with the location of the placement; of the 10 government school placements by university students at metropolitan universities (in Sydney or elsewhere), eight were in metropolitan schools and two in provincial schools. On the other hand, all the eight placements for students at non-metropolitan universities were at provincial government schools.

This suggests two things. First, not all scholarship holders were experiencing practical placements in the types of locations and schools where they were going to work. Second, not all scholarship holders were experiencing professional placements in NSW government schools. It would seem appropriate, and in the best interests of achieving the objectives of the teach.*Rural* scholarship program, that recipients have preferential access to professional experience placements in rural and remote NSW government schools. This is particularly relevant for those students from metropolitan schools who frequently identified concerns about missing family and friends, and assimilating into a rural and remote community. Greater exposure to rural and remote schools during their studies could help alleviate at least the latter concern. As this requires travel away from home, appropriate accommodation and financial support.

Aurora College

Action 9.1 of the Blueprint is the establishment and ongoing delivery of lessons at a virtual secondary school (Aurora College), with a focus on gifted and talented students. More than \$8 million is committed in the Blueprint to establish and operate the school. The College provides the opportunity for selective classes in Years 7 to Year 10, and enables students to study their preferred subjects in Years 11 and 12 even if they are not available at their home school.

Students in Years 7 to 10 study maths, English and science at extension level at Aurora College and the rest of their subjects at their home school. The school is designed to allow students in rural and remote areas to remain in their local school and community while attending a selective school for these three subjects. It enables students in Stage 6 to study a range of subjects that may not be available at their home school. Students attending Aurora College connect with their teachers and classmates through a virtual learning environment, which includes web conferencing software and the Department's virtual classrooms. In addition to the regular virtual classroom lessons, students meet bi-annually face to face during two four-day residential schools.

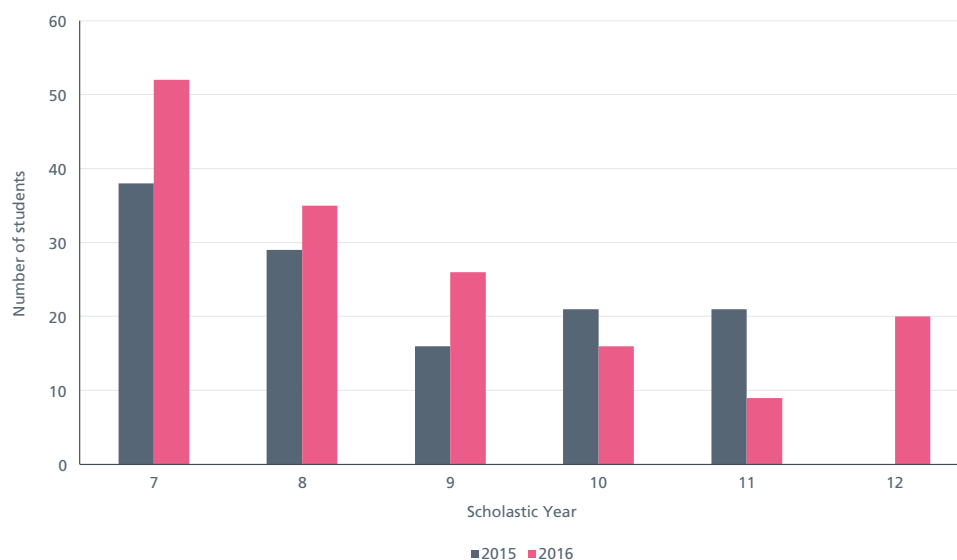
Enrolments and subject offerings

Aurora College opened in Term 1, 2015. Students above Year 7 in 2015 were those who had previously attended Xsel (a smaller scale virtual schooling option for gifted and talented students in Western NSW).

Figure 3.19 shows that there were 125 enrolments at Aurora as at 2 June 2015, and 158 at the equivalent point in 2016. The attrition rate from the beginning of the 2015 school year was 20.9 per cent; in 2016 it was 8.7 per cent, indicating a substantial decrease in attrition. The majority of the 2016 enrolments have been in Year 7, and students have enrolled in all the secondary years. Although there were no Year 12 students in 2015, there are 20 in 2016, all of them having studied their Year 11 subject(s) at Aurora. Of particular note is the 43 per cent reduction in Year 11 enrolments in 2016 relative to Year 10 enrolments in 2015. Although the precise reason(s) for these students not continuing with Aurora is not known, the current enrolment policy prevents Year 10 students from enrolling into Year 11 at Aurora College without the agreement of the home school principal, suggesting that this may be a contributing factor. Follow up of any students who leave Aurora after Year 10 in future should investigate further their reasons for not continuing with Aurora.

Figure 3.19:
Aurora College
enrolment as at 02 June,
2015 and 2016

Source: NSW Department
of Education enrolment
data base and Principal,
Aurora College



All Year 7 to 10 students at Aurora study English, science and mathematics. Stage 6 offers a broader range of subjects with physics and extension mathematics being the most popular (Table 3.8).

Table 3.8:

Subjects and enrolments for Stage 6, Aurora College, 2016

Source: Principal, Aurora College, June 2016

Subject	Year 11	Year 12
Physics	7	8
Italian	1	-
Chemistry	3	-
Mathematics	2	2
Mathematics Extension 1	2	5
Mathematics Extension 2	-	5
English	1	2
English Extension 1	1	1
English Extension 2	-	1
Economics	-	2
Agriculture	-	2

There is evidence that the awareness of Aurora among rural and remote principals is high. The 2016 survey indicated that almost 100 per cent of rural and remote secondary and central school principals reported awareness of Aurora. Importantly, 77 per cent of rural and remote primary principals also reported awareness of Aurora, a 19 percentage point increase from 2015. During 2015, Aurora provided information to all relevant primary schools to place in their school newsletters about the selective schools test and placement at Aurora. This promotion was important, given that one of the main pathways into Aurora is through the selective schools test (which students must apply for when in Year 5).

It is clear that although awareness of Aurora is high, at least among secondary school principals, there is still some uncertainty about what Aurora provides or what students are eligible to study. The recent Rural and Remote Education conference, partially sponsored by Aurora, has probably gone some way to address this as several sessions were aimed at providing information about Aurora. However, to help ensure that the maximum number of students enrol (particularly for Year 7), it appears that further awareness-raising activities could be undertaken, particularly among primary schools.

Among measures already underway to address any issues with awareness, Aurora College funded a 0.2 FTE Community Liaison Officer who has visited several communities in 2016, speaking with groups of teachers, students and parents. The executive from Aurora is also planning to visit all new 2017 partner schools in the second half of 2016.

Staffing at Aurora College

Table 3.9 shows the staffing configuration at Aurora in 2015 and 2016. Similar to the students, the teachers maintain their engagement with their home schools, continuing to teach across both schools. This allows them to remain connected with their home school while expanding their teaching and career options through Aurora.

In 2015 the teaching staff at Aurora was drawn from 40 schools across NSW. This included 17 metropolitan schools, 20 provincial schools and three remote schools. In 2016 the teachers were from 15 provincial, eight metropolitan and two remote schools.

The primary difference in staffing between 2015 and 2016 was that all but five teachers were 0.2 FTE in 2015 and there was a much wider split between Aurora and the home schools in 2016. Half the teachers in 2016 were 0.2 FTE at Aurora, with the rest ranging from 0.3 to 0.9 FTE.

Table 3.9:

Staffing at Aurora College, 2015-2016

Source: Principal, Aurora College, June 2016

Employee	2015	2016
Principal (1.0 FTE)	1	1
Deputy Principal (1.0 FTE)	1	1
Teachers*	40	32
Learning technologies support clerk (1.0 FTE)	1	1
School administration manager (SAM) (1.0 FTE)	1	1
Teacher librarian (0.4 FTE)	1	1
Total headcount	45	37

Note: *In 2015 all teachers were 0.2 FTE except four who were 0.4 FTE and one who was full time. In 2016 there were 16 teachers at 0.2, 1 at 0.3, 8 at 0.4, 3 at 0.6, 1 at 0.7, 2 at 0.8 and 1 at 0.9 FTE.

Based on a focus group with six Aurora teachers during the residential camp in October 2015, the primary reasons teachers were attracted to Aurora College included the opportunity to teach a subject that would otherwise not be offered at their school, and to enhance their knowledge and skills through networking with a wider range of teachers. The group commented that this new knowledge would also benefit their home schools, a sentiment echoed by principals surveyed in 2015 who had one or more teachers at Aurora.

Student satisfaction with Aurora College

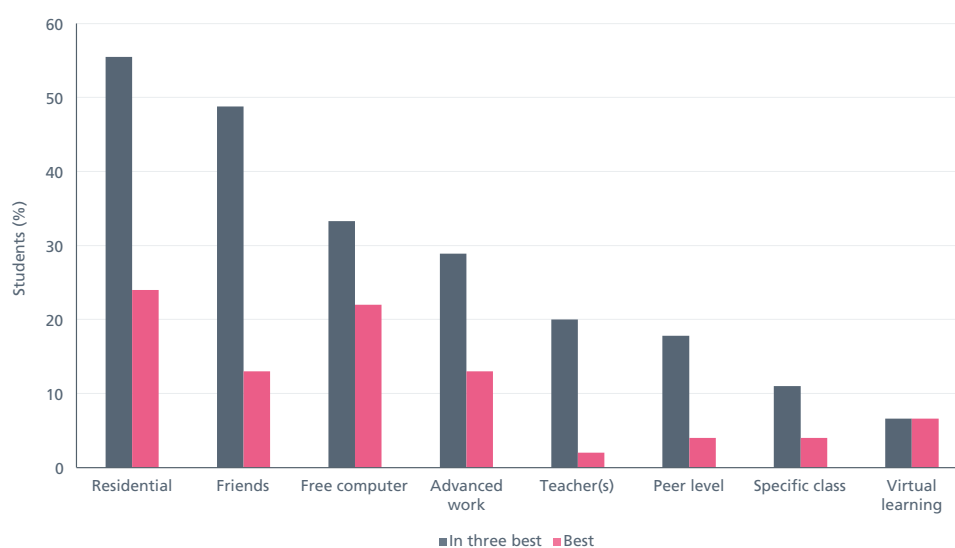
A sample of Aurora students from Years 7-11 (n = 47) was surveyed in Term 4, 2015 about what they liked most about the College. Figure 3.20 shows that the two most popular aspects cited by students were the residential (55%), followed by making new friends (48.8%).

Other commonly cited 'top three' aspects included the free computer, the advanced level of work, the teachers and the like-minded characteristics of their peers at Aurora. In terms of what students found the single best aspect, the residential camp was reported most often. Students participating in focus groups during the residential camp reported similar positive aspects about Aurora. Comments included the opportunity to make friends, to meet like-minded students from across NSW and the opportunity to do science practicals that were not feasible at their home schools. Some students also commented that the teachers at Aurora were 'really good'.

Figure 3.20:

Students' perception of the best aspects of Aurora College

Source: Aurora student survey, Term 4 2015, n=45



Students also indicated that using Adobe Connect was an effective way of accessing lessons. They did not report any major difficulties with this learning platform and some commented that this format was actually preferable in that they did not get disrupted by other students talking in class. However, some students mentioned that a drawback with Adobe Connect was that sometimes the teacher would not see their typed question, particularly if a large number of students tried to comment at the same time or if the teacher was concentrating on explaining a concept.

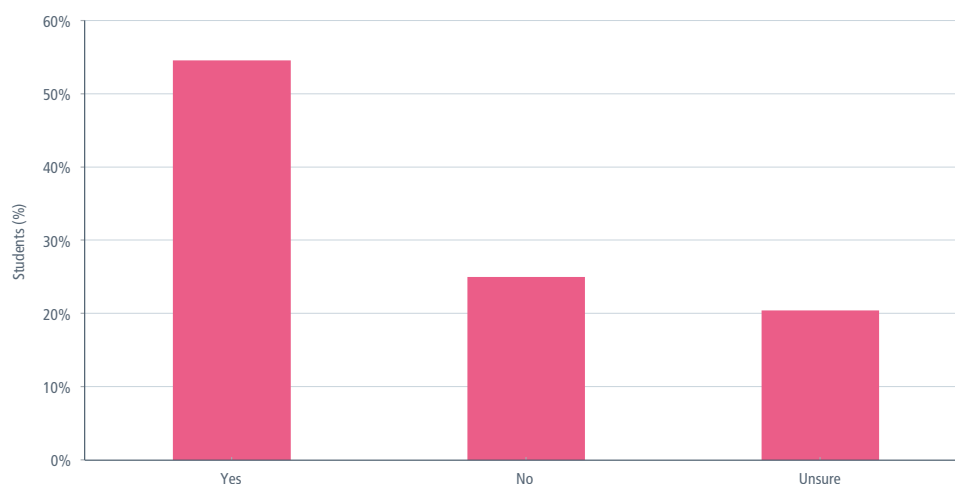
To determine students' overall level of satisfaction with Aurora in 2015, they were asked in the survey if they would again choose to attend if they could go back and start the year over. Figure 3.21 shows that overall, 55 per cent said they would choose to attend Aurora again, with 25 per cent saying they would not. The remaining 20 per cent were unsure.

In the focus groups, the primary reason students provided for opting not to go back if they could was related to the timetable clashes and the associated problems they caused. On balance, the positive aspects of being at Aurora College outweighed any negative ones and kept the students enrolled at the school.

Figure 3.21:

Students' views regarding choosing to re-attend Aurora College

Source: Aurora student survey, 2015, n=44



Student engagement at Aurora College

The TTFM survey, which includes items concerning student engagement, was undertaken across more than 300 NSW government secondary schools in 2015. A total of 70 Aurora students completed the survey at their home schools. A sample of 47 Aurora students completed the intellectual engagement and quality instruction items of TTFM as part of their survey at the residential camp, but this time from the perspective of their classes at Aurora. The following two comparisons were made using Wilcoxon rank-sum tests:

- Aurora students who answered about Aurora (n=47) compared to any Aurora students' survey responses for their home school (n=70)²⁰
- Aurora students who answered about Aurora (n=47) compared to all students in fully selective and partially selective secondary schools (except Aurora) who completed the TTFM survey (n=8,153)

²⁰ The pen and paper survey used at Aurora was anonymous and thus it was not possible to link individual students' responses at Aurora to responses at their home schools. Therefore comparisons were made using non-matched data.

Figure 3.22 shows that Aurora students rated the quality of instruction comparably to the quality of instruction at their home schools, and comparably to students across other selective and partially selective NSW government schools.

However, Aurora students rated their intellectual engagement in terms of 'skills challenge' and 'effort' significantly higher than students across other selective and partially selective schools. Aurora students rated their intellectual engagement at Aurora as comparable to their home schools, although it is important to note that the survey did not allow matching of individual students' responses across Aurora and their home schools. In future years, responses will be matched to allow comparison of Aurora students' intellectual engagement and perceptions of quality instruction between their classes at Aurora and their home schools.

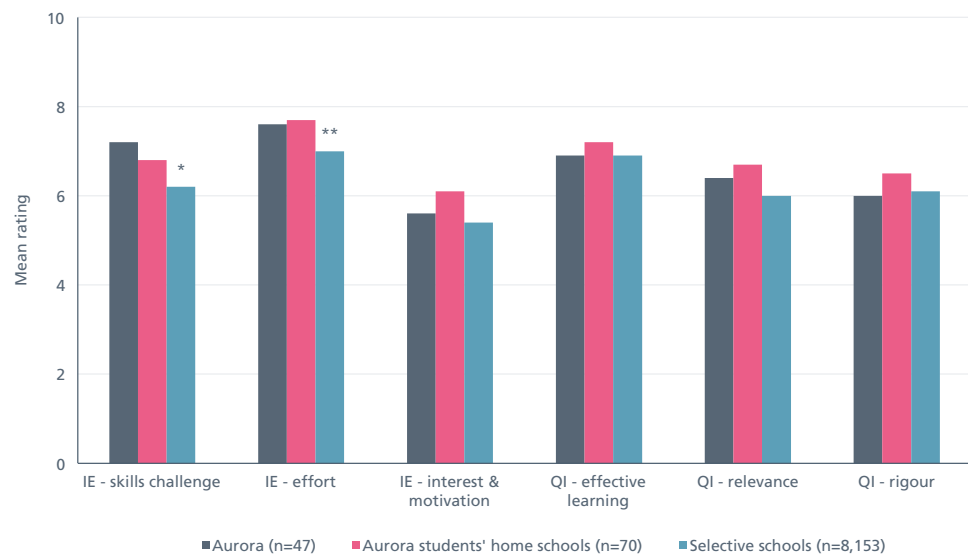
The results suggest that Aurora students find the lessons at Aurora more challenging than students at other selective schools and are trying harder. The reasons for these differences are unclear. This will be further investigated as the evaluation continues, including analysing selective test scores of Aurora students relative to students at other selective schools.

Overall, the results presented below show that the students are intellectually engaged at Aurora, providing evidence that the students are being provided with a high quality learning environment.

Figure 3.22:

Self-reported student engagement by school type

Source: Aurora student survey, 2015; TTFM survey results Term 1, 2015



Note: IE = Intellectual engagement; QI = Quality instruction. *Significantly different from Aurora, ($p < .05$). **Significantly different from Aurora and Aurora students home schools ($p < .001$).

Challenges to date

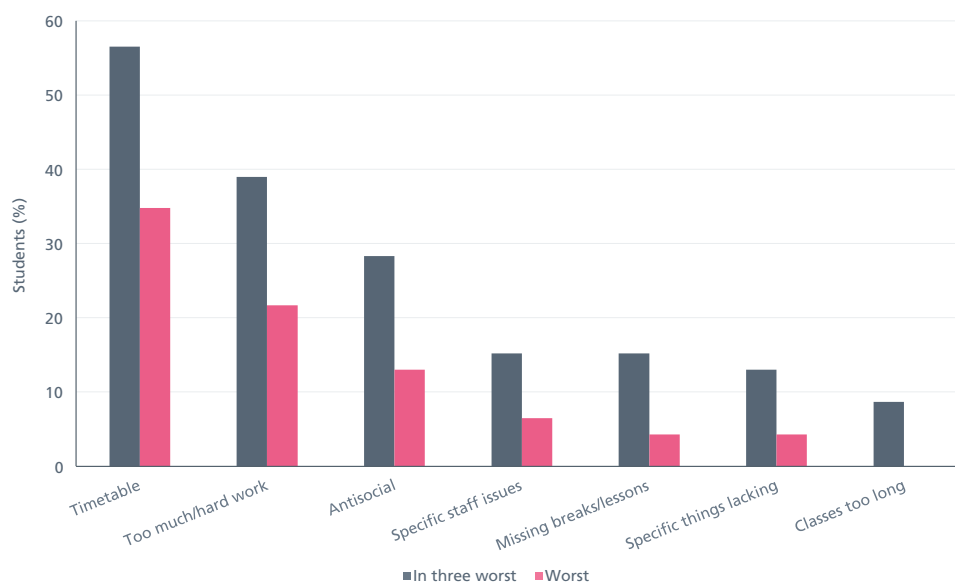
Timetabling

Overall, students, teachers and principals reported several positive aspects about Aurora; the one consistent negative aspect, however, related to timetabling. Student exit surveys conducted by the Aurora executive during 2015 reveal that by far the most common reason for students leaving Aurora (42%) was timetable conflicts with their home school. This was echoed by the focus groups as well as the survey of Aurora students at the 2015 residential camp, where almost 60 per cent of respondents rated timetabling among their three worst aspects of Aurora, and almost 35 per cent rated timetabling as the worst aspect (Figure 3.23).

Figure 3.23:

Students' perception of the worst aspects of Aurora College

Source: Aurora student survey, 2015, n=46



The vast majority of students surveyed reported missing class time at least one day per week from their home school (89.4%) and Aurora (87.2%) because of timetabling. Students in the focus groups also identified the timetable as their main concern. Some saw it as a 'deal breaker', in that if it stayed in its current form (for 2016) they would not continue with Aurora.

The students also discussed some of the specific dilemmas they experienced in terms of timetables. Some said it was simply not possible to maintain the minimum level of attendance at both Aurora and their home school because of timetable conflicts. The timetabling issues also caused a sense of isolation from their classmates at their home school. Some indicated that they frequently had to miss recess and lunch breaks to attend Aurora and consequently had less time to be with their friends. Some students also stated that they had a large number of spare periods because of the timetable conflicts, so they felt their school time was not necessarily utilised effectively.

Principals with one or more students at Aurora confirmed that timetabling was a major challenge. Although only 11 principals with students at Aurora responded to the 2016 principal survey, 10 of them identified timetabling as a major challenge for them in terms of having students attend Aurora. In interviews with Directors, Public Schools NSW during Term 1, 2016 they also commented that timetable clashes with Aurora were frequently raised by principals in 2015.

Teachers at Aurora commented that timetable clashes with their home schools made participating in Aurora challenging for them as well. This was echoed by surveyed principals with teachers also teaching at Aurora.

As a result of the timetabling issues identified during 2015, significant efforts were made to address the timetabling issues for the 2016 school year. In 2015, when it became apparent to the Aurora executive that timetabling issues were causing issues for some students and ultimately causing some to leave the school, a statewide steering committee was established. The committee's terms of reference included the future delivery of the curriculum, how to best meet the students' learning needs, the staffing model, timetable coordination, shared enrolments, communication with students, parents and partner schools, and the appropriateness of the target group of students. The committee was comprised of 17 participants, including representatives from the principals' associations, Directors, Public Schools NSW, Aurora executive, teachers and parents.

The steering committee worked with stakeholder groups to identify and alleviate issues, and directed the Aurora executive to work with a timetabling company across schools to align classes more closely. As a result of this work, it was expected that timetable problems would be significantly reduced for 2016.

It appears as though this has indeed been realised. Six of 10 principals who had students at Aurora in both 2015 and 2016 and responded to the 2016 principals' survey reported that the timetabling issues had been at least partially addressed. Only two principals reported that the same magnitude of issues still remained. Additionally, feedback from the Directors, Public Schools NSW indicated that the principals in their networks were not raising this as an issue with them as they had in 2015. Given that the attrition rate from Aurora College in 2016 relative to 2015 has more than halved suggests that there have been timetabling improvements given that timetabling was the major reason for attrition in 2015.

Teacher and home school coordinator workload

Aurora teachers who participated in the focus group in late 2015 felt that the workload required for Aurora was greater than the time allocated. It was suggested that this perception could have been, at least in part, due to the change over from the previous Xsel program²¹ where teachers received a larger allocation. The process for determining the allocations has remained the same for the 2016 school year.

Almost 60 per cent of home school coordinators surveyed in respect of the 2015 school year also felt that they had insufficient time allocated for the administrative work associated with their position. However, they expected that some of the initial difficulties with establishing a joint curriculum delivery with Aurora (such as organising computers and appropriate workspace) would be reduced after the first year of working together.

For 2016, funding from Aurora College is based on the number of students at the home school, with a minimum of two and a maximum of five 50-minute periods per fortnight. This funding model was designed to closely match the funding to the workload for the home schools.

It is expected that as teachers become more experienced with Aurora, and as the issues with teaching across schools (i.e., timetabling) continue to be addressed, workload issues will be minimised.

²¹ The Xsel program, a virtual selective school provision for western parts of NSW, was delivered between 2010 and 2014. It delivered a selective strand of English, mathematics and science for Years 7-10.

Rural and remote mentoring program

Action 7.3 of the Blueprint states that more options will be available to develop leadership skills of current and aspiring school leaders in rural and remote areas. This includes the establishment of a rural and remote mentoring program to link newly-appointed leaders with established school leaders and coaching and mentoring programs for principals.

Implementation

The Blueprint has indicated that around \$8 million would be allocated to provide specific support to school leaders in rural and remote NSW, including a rural and remote mentoring program. The first iteration of the mentoring program began with an expression of interest advertised in November 2014 for mentors and mentees to participate in the program during 2015. A total of 15 mentor and mentee pairs entered the program, with the 30 participants receiving \$13,500 each to support their participation (a total of \$405,000).

The mentor/mentee pairs were matched according to the desired areas of professional practice development identified by the mentees in their applications. In 10 of the pairs, the mentor was in a more senior role than the mentee. In the remaining five pairs, both were principals, although in each case the mentor was from a much larger school. Of the mentees, 12 were from provincial schools, two were from remote schools and one was from a very remote school. Of the mentors, nine were from metropolitan and six from provincial schools. The individuals in all pairs except one were from different principal networks.

The 2015 program began with a two-day orientation conference in March 2015. Over the year, the pairs engaged in varying levels of shadowing and mentoring, as well as a range of other activities such as visits to each other's school, and regular communication by telephone, email and video-conferencing. As one mentee mentioned, 'knowing my mentor was there was like having a crutch "just in case" it was needed'. The support provided by mentors appeared to focus on working through specific issues, professional development needs, working through the school plan and implementing new policies at mentees' schools. Mentees also engaged in a variety of other activities, including formal coaching programs, visits to additional schools and various types of professional learning, including conferences. In one instance, the mentee attended a leadership conference in Melbourne with aspiring leaders from their mentor's school.

Impacts of the program

Reflective feedback from mentors and mentees suggested that the program had benefits for both mentees and mentors. Mentees reported positive aspects of the program, particularly in relation to their leadership and management styles. Mentees and mentors worked together to identify areas where support was needed and mentees believed that working with the mentors helped them address those issues. Several mentees commented that their experiences of meeting school staff from other networks broadened their outlook and perspective on how different schools and networks operated and how the program encouraged networking in a general sense as well as with their partner. Importantly, six of the eight mentees who provided the evaluation team information in the feedback session have advanced their careers, either within their school or by moving to another school. This suggests that participation in the program, and broader mentoring of aspiring school leaders, supports leadership development and career progression.

Mentors commented that the process helped them identify how best to coach and mentor and how to bring that back to their own school as well. One commented that it helped them question their own leadership around learning and teaching and the way they coached others.

Mentors also used the learning experience to implement new approaches to mentoring at their own schools. Additionally, all participants who commented on their future plans with their mentoring partner indicated that they were continuing the mentor-mentee relationship, that they intended to do so in the future and that it was useful to both mentees and mentors.

Program evolution

In 2016, the program was expanded and redeveloped into the statewide Leadership Development Initiative (LDI), as part of the School Leadership Strategy²². The LDI pairs aspiring school leaders (including TP1 and TP2²³ principals, deputy principals, head teachers and assistant principals) with an experienced mentor for 12 months. The objective of the LDI is more focused than that of its preceding mentoring program described above, and participants must commit to working towards Lead Teacher accreditation.

Accreditation at these higher levels signals a high level of instructional leadership²⁴, supporting the continuum to leadership under the School Leadership Strategy. The AITSL Professional Standard for Principals and Leadership Profiles²⁵ outlines five professional practices, including leading teaching and learning. The aim of the LDI is to ensure that aspiring school leaders have the skills and capabilities to lead teaching and learning at a school, while the new School Leadership and Management Credential²⁶ ensures new school leaders have the skills and knowledge to manage the operational aspects of a school.

The need for the LDI is evident by the low number of accredited Lead Teachers in New South Wales. As at April 2016, there was 31 accredited Lead Teachers in NSW public schools, with only 11 located at non-metropolitan schools.

Calls for expressions of interest to participate in the LDI in 2016 were advertised early in 2016 and closed on 26 February. In total, 170 aspiring leaders were accepted from across New South Wales, 51 from rural and remote areas (42 provincial and nine remote or very remote). The mentors are deputy principals or principals, and the participants fulfil a range of school roles, including head teachers, instructional leaders, assistant and deputy principals and principals.

Participants were matched to 62 mentors, 17 of whom were from rural and remote schools, at a ratio of one mentor to three participants. Participants are required to work with their mentors to implement a component of their school plan which in turn will support their application to achieve Lead Teacher accreditation.

The new program also links specifically to the Department's strategy for school leadership and directly addresses the issue of low numbers of teachers accredited at higher levels. Replacing the 2015 model with the LDI also enabled a greater participant base for the same costs. As the LDI provides \$5,000 per participant and mentor, almost four times as many people can be supported as the earlier program. From the first tranche of participants, there will potentially be an additional 51 rural and remote teachers accredited at Lead level. As such, and in the context of one of the objectives of the Great Teaching, Inspired Learning reform²⁷, the evolution of the Rural and Remote Mentoring Program into the LDI seems appropriate.

NAPLAN and HSC marking

Action 8.2 in the Blueprint aims to increase the opportunities for rural and remote teachers to experience real or simulated NAPLAN and HSC marking. The intention is that participation in these activities will help teachers gain a better understanding of the requirements for high achievement, helping them plan their lessons better.

Implementation to date

In 2015, BOSTES held a series of HSC marking workshops. A total of 65 rural and remote teachers participated in onscreen HSC marking workshops in mathematics and biology and 78 in practical marking workshops in music composition, drama, textiles and design and visual arts.

In 2016, HSC practical marking workshops are again being offered but participation data was not available at the time of writing this report. BOSTES is considering the possibility of developing an online module for the onscreen marking workshops.

²² <http://www.dec.nsw.gov.au/about-us/news-at-det/news/school-leadership-strategy1>

²³ According to the new principal classification of the Department of Education, TP1 is a teaching principal 1, and TP2 is teaching principal 2. The terms AP1 refer to Associate Principal 1 and AP2 refer to Associate Principal 2, with equivalent salary outcomes as the corresponding TPs. Most previous PP6 and PP5 principals have been reclassified as TP1 or TP2 under the new structure. See <https://www.det.nsw.edu.au/media/downloads/about-us/our-reforms/teachers-awards/classification.pdf>

²⁴ <http://www.nswteachers.nsw.edu.au/current-teachers/apply-for-lead-teacher-accreditation/>

²⁵ <http://www.aitsl.edu.au/australian-professional-standard-for-principals>

²⁶ https://www.det.nsw.edu.au/media/downloads/about-us/news-at-det/announcements/19776_PrincipalsClassificationBrochure.pdf

²⁷ A key objective of the Great Teaching, Inspired Learning package of reforms is to ensure that teachers who aspire to be principals will have achieved the higher levels of teacher accreditation and undertaken professional learning to prepare them to be leaders of a school.

Regarding online NAPLAN training, a total of 17 provincial and two remote schools had had at least one teacher complete the module by 30 May, 2016 (26 teachers in total)²⁸. As the impacts of the training are likely to lag, the evaluation will identify the impacts of this training on NAPLAN performance at participating schools for the final report in 2018.

Rural teacher exchange program

A rural teacher exchange program was introduced under action 7.1 of the Blueprint. The program allows for a year-long exchange between teachers in rural and metropolitan areas, with a return to their substantive positions at the end of that period. Participation in the program is limited to permanent teachers with at least five years' experience with the Department. The intent is to ensure that the benefits of teaching in rural and remote NSW are promoted and to allow teachers to consider living in these areas as an option for them.

Implementation to date

In 2014, a total of 71 teachers submitted an expression of interest to participate in an exchange in 2015, although not all met the eligibility requirements. A total of 29 eligible teachers subsequently submitted a formal application. The selection process considered the locations, teaching positions, subjects and stages taught, principals' recommendations, qualifications and professional background of the applicants. Priority was given to applications for exchange to Far West NSW, South-West NSW, Central West NSW and North-West NSW.

This process resulted in only two exchanges. One was between a pair of teachers from primary schools and the other between a pair of secondary school teachers. In both cases a metropolitan teacher exchanged with a teacher from a provincial school.

Fourteen applications were received for exchanges in 2016. Nine applicants subsequently withdrew. The selection process resulted in one teacher from a metropolitan school being seconded to a provincial school where a vacancy was created by a staff member who was on leave and retiring. There was no reciprocal nomination. Given that the 2015 program resulted in only two exchanges and the 2016 program in a single secondment, there have clearly been challenges fulfilling the original intentions of the program.

Barriers to participation

Much of the attrition from the original 2015 application process was due to a mismatch in desired transfer locations. Most metropolitan applicants wanted to go to provincial schools that were either in larger towns or coastal locations. Most of the rural applicants however, did not want to go to Sydney or other metropolitan areas, but instead wanted to exchange to another provincial or remote area.

The survey of rural and remote principals in 2015 revealed that principals supported the idea of the program and saw it as a good professional development opportunity (93% agreed or strongly agreed). They also thought that their school would benefit from such an exchange (79.4%).

However, a number of principals commented that a 12-month exchange was prohibitive for many teachers, in particular those with families.

At the time of writing, the process for participation in 2017 was being reviewed, with consideration being given to more flexible arrangements, such as one-way secondments rather than reciprocal exchanges. However, as this will potentially leave one school a teacher short, appropriate support to cover any shortage would be necessary.

²⁸ School classification was determined using the MCEETYA codes for school location.

4. Impacts to date

The overarching aim of the Blueprint is to close the education gap between rural and remote and metropolitan students. This section presents a series of indicators that assess whether this gap has changed at the mid-point of the Blueprint's implementation.

The baseline year for assessing changes is 2013, the year immediately preceding the Blueprint's commencement. In addition to their reporting here, these indicators will continue to be monitored and analysed over the remainder of the evaluation period.

It should be noted that changes in many of these indicators will only occur over the medium to long term and are unlikely to change noticeably after a two-year period. For example, the ATAR that a student achieves is not simply a result of only those subjects studied in Stage 6, but can be seen as a culmination of all their education and educational choices up to that point. Thus, expecting to see an effect on ATARs after only two years of the Blueprint would be unrealistic.

Impact measures reported in this section include Best Start Kindergarten assessment, AEDC data, survey results from the CESE annual principal survey of 2016, school attendance, statewide surveys regarding the quality of teaching and student engagement, NAPLAN, retention to Year 12 and ATARs.

Readiness for Kindergarten

Best Start Kindergarten assessment

The Best Start Kindergarten assessment (Best Start) is designed to identify each student's literacy and numeracy skills at the beginning of Kindergarten. It was partially rolled out to NSW government schools in 2009 with a full roll-out to all schools in 2010. Best Start is not designed as a test; it is used for Kindergarten teachers to identify student skill levels so that they can differentiate their teaching according to individual students' needs. It is feasible that a higher proportion of students would score in Cluster 2 or above on this measure if they attended early childhood education in at least the year prior to school, and thus this could be viewed as an outcome measure of access to early childhood education.

Best Start data were analysed by location for the following aspects: reading texts, comprehension, aspects of writing, phonics and early arithmetic strategies. These aspects are consistent with reporting for Early Action for Success²⁹ with the exception of phonics. Figure 4.1 shows that since 2010, a lower percentage of Kindergarten students in remote and very remote schools have been assessed at Cluster 2 or above for literacy aspects, or perceptual or above³⁰ for early arithmetic strategies in almost every year compared to Kindergarten students in provincial and metropolitan schools.

Furthermore, from 2010, the percentages of remote and very remote Kindergarten students rated at Cluster 2 or above declined for reading texts, phonics and comprehension. However, since 2013 or 2014, all aspects reported have shown increases following variable periods of decline.

Since 2010, the gap between metropolitan and provincial students has been consistently small for all of the reported aspects, with clearly declining trends across both location categories for reading texts, and to a lesser extent for phonics, comprehension and early arithmetic strategies. Since the start of the Blueprint, the rate of change of these trends has been maintained.

²⁹ Early Action for Success is the Department's strategy for implementing the NSW Government's State Literacy and Numeracy plan.

³⁰ Assessment for early arithmetic strategies is grouped by named categories rather than numbered Clusters. Perceptual refers to the second lowest category in early arithmetic strategies.

Coupled with the recent increases in the percentage of students scored at the second cluster or above across remote and very remote Kindergarten children, the gap between metropolitan and provincial students and remote and very remote students has narrowed on the Best Start measure. However, this finding needs to be treated with caution given the recent year-on-year volatility for Best Start scores across remote and very remote Kindergarten students. Post-Blueprint trends will become clearer in 2017 and 2018 when additional data points can be determined.

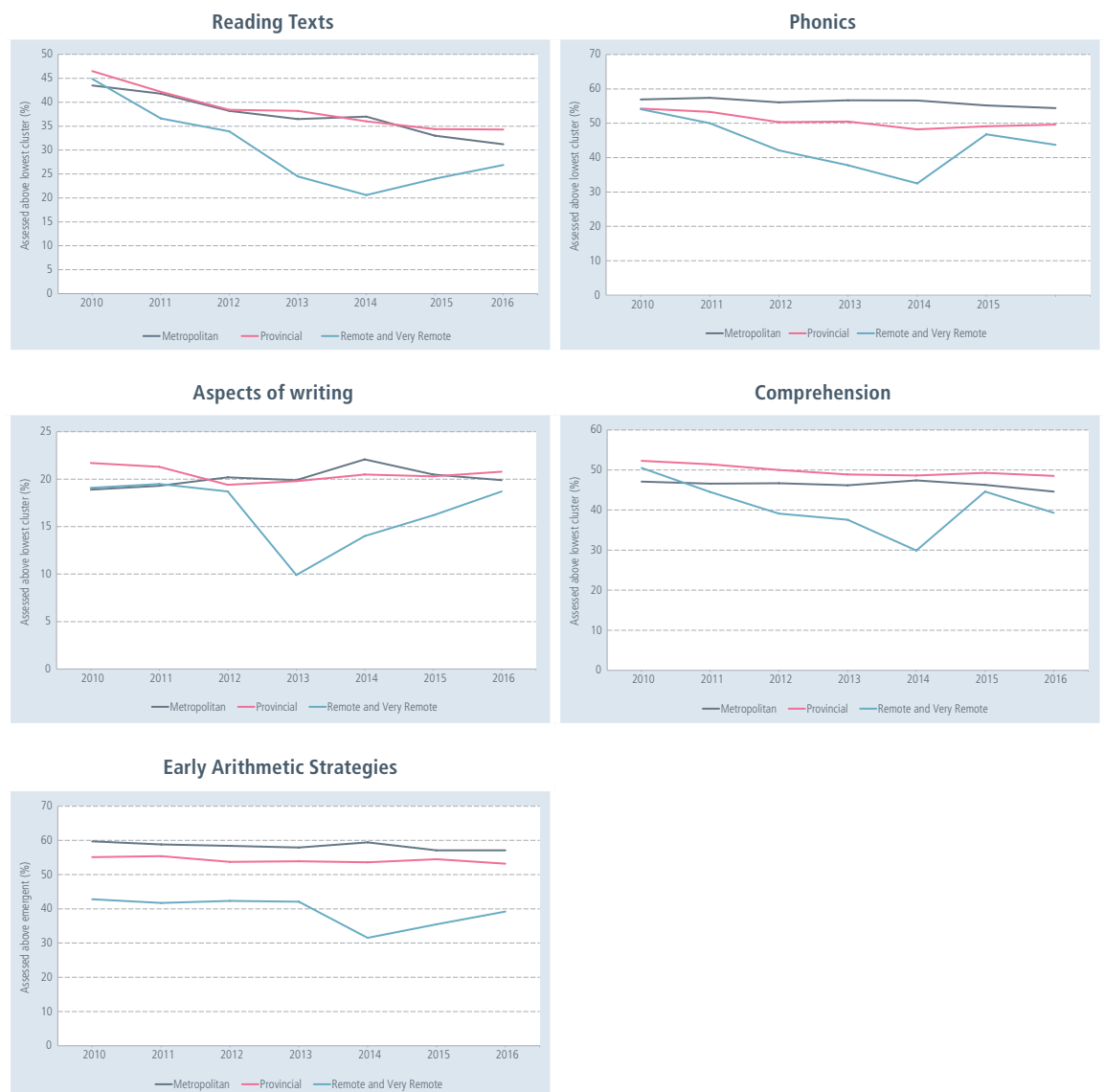
Furthermore, from 2010, the percentages of remote and very remote Kindergarten students rated at Cluster 2 or above declined for reading texts, phonics and comprehension. However, since 2013 or 2014, all aspects reported have shown increases following variable periods of decline.

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Figure 4.1:
Kindergarten students at Cluster 2 or above, Best Start, 2010-2016

Sources: CESE Best Start Data and Learning and Teaching Directorate



Note: Early arithmetic strategies have been graphed for those assessed as perceptual or above, the equivalent of the second cluster or above.

Australian Early Development Census

The Australian Early Development Census (AEDC) is a national measure of children's development as they enter Kindergarten. Starting in 2009, data for the AEDC has been collected every three years on a voluntary basis. It operates as a population-based measure, providing evidence to guide planning and service-provision to ensure children are supported through their early years, school years and beyond. Using similar reasoning as that for Best Start, it would be expected that proportionally fewer children would be identified as developmentally vulnerable or developmentally at risk if participation in early childhood education increases overall.

When the first AEDC was undertaken in 2009, a series of national benchmarks was established, providing a reference point with which later results could be compared. Children falling below the 10th percentile were considered 'developmentally vulnerable', children falling between the 10th and 25th percentile were considered 'developmentally at risk' and all other children were considered to be 'on track.'

Figure 4.2 shows that the percentage of NSW children in government schools recorded as developmentally vulnerable on one or more domains is lowest in metropolitan schools (averaging near 20 per cent), consistently about 5 per cent higher in provincial schools and higher yet for remote and very remote schools.

In 2009, the gap between remote/very remote and provincial children was 2.2 percentage points and between remote/very remote and metropolitan children 6.5 percentage points. However, in 2012 these gaps widened to 11.7 and 15.6 percentage points respectively, and were maintained in 2015.

Figure 4.2:

Children developmentally vulnerable on one or more domains by location, AEDC

Source: Statistics Unit, CESE



Note: Numbers are indicated within each bar. Data obtained from AEDC for NSW government school children. Percent calculated from number of children with valid scores.

The vulnerability of children in each of the five AEDC domains (language and cognitive skills, communication skills and general knowledge, physical health and wellbeing, emotional maturity and social competence) was also examined by location and year. As Figure 4.3 shows, for the most part, metropolitan areas had the lowest proportion of children who are vulnerable or at risk of being vulnerable across all domains, followed by provincial and finally remote and very remote areas. This could in part reflect a locational gradient in SES, with a strong correlation between SES and AEDC scores (Commonwealth Department of Education and Training, 2015).

Some increases in the differences between metropolitan and other students were observed between 2009 and 2012. For example, the gap between the percentage of students at risk in both the other locations and those in metropolitan areas in the domains of physical health and wellbeing, and of communication skills and general knowledge, increased.

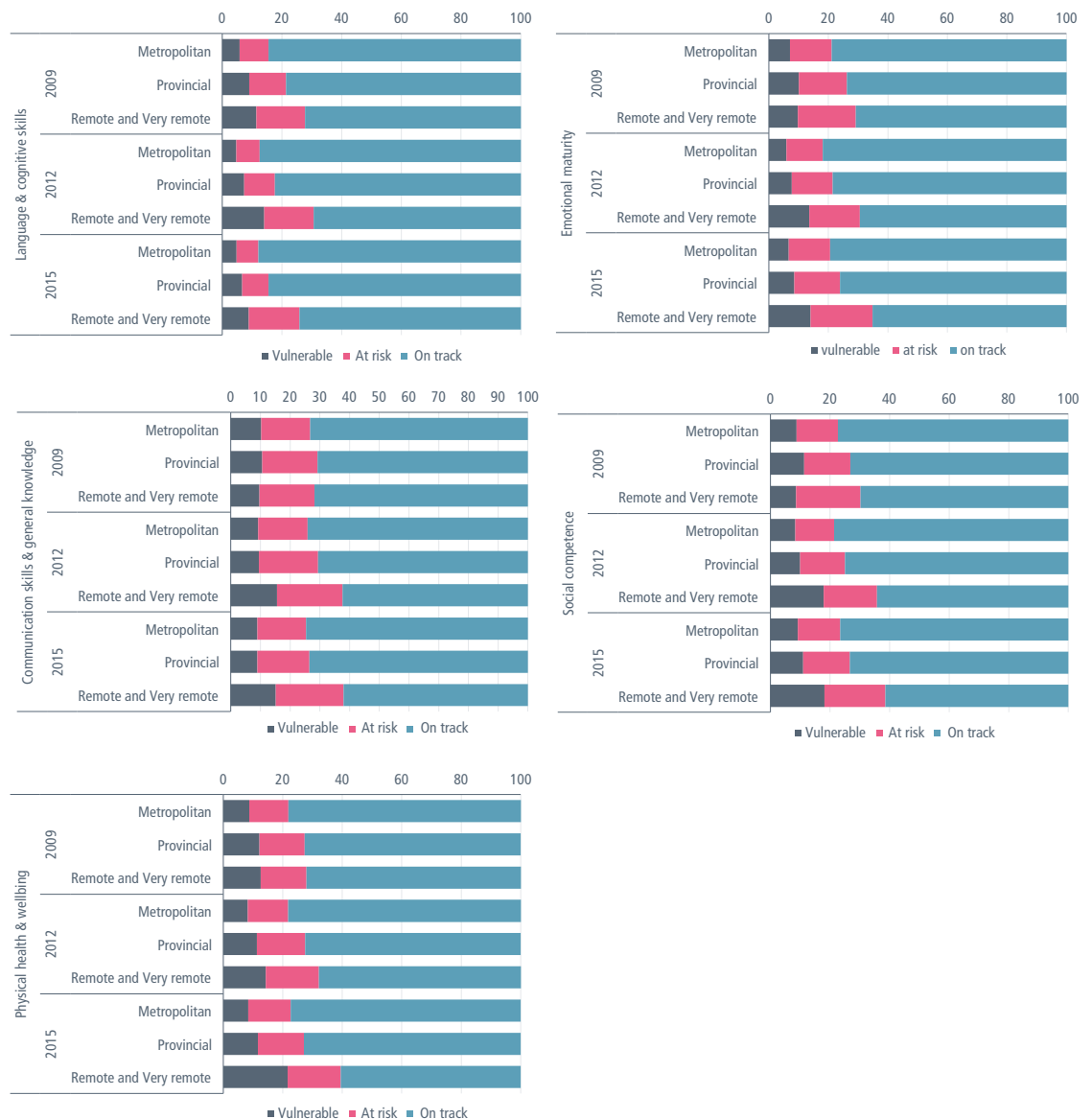
Similarly, the gap between the percentage of vulnerable students in provincial locations and those in metropolitan areas increased in the domain of social competence and the gap between the percentage of vulnerable students in remote and very remote locations and those in metropolitan areas increased in the domains of language and cognitive skills.

When the percentage of children who are at overall risk of being vulnerable in any domain was examined, there were four measures where the difference between the remote and very remote and metropolitan children grew from 2012 to 2015. These were on language and cognitive skills (an increased difference of 0.88 percentage points), social competence (an increased difference of 1.4 percentage points), communication skills and general knowledge (an increased difference of 1.1 percentage points) and emotional maturity (an increased difference of 2.2 percentage points). Overall however, from 2009 to 2015, there was no consistent trend in any changes of these measures by location relative to the metropolitan benchmark.

Figure 4.3:

Children in first year of school by development category and AEDC domain

Source: Statistics Unit, CESE



Note: Data obtained from AEDC for NSW government school children. Percentages were calculated from total children with valid scores.

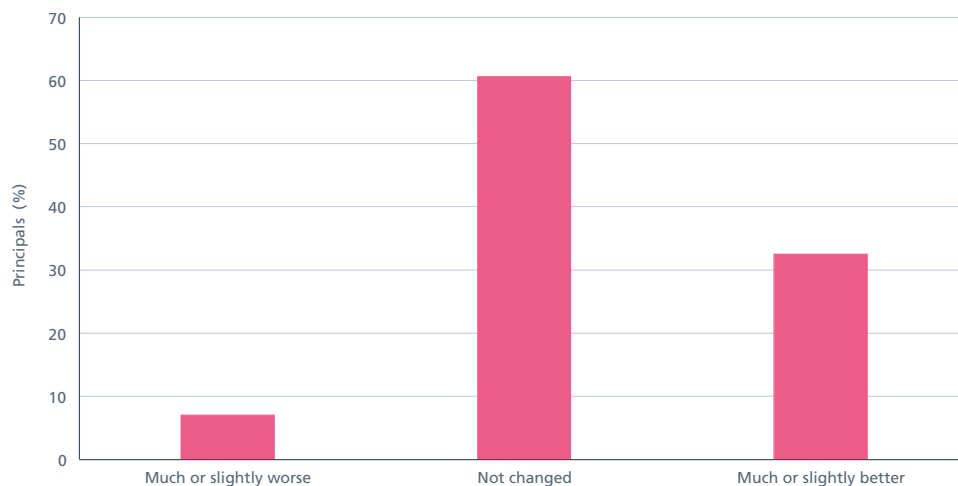
Taken together, the Best Start and AEDC data suggest that there has been no systematic improvement in the readiness of rural and remote children to benefit from Kindergarten since 2012. However, this could improve in the future if the impacts of the new preschool funding model are realised and more rural and remote children access preschool in the year before school.

To examine this further, principals in the 2016 survey were asked whether the readiness of children to learn when they entered Kindergarten had changed since the beginning of 2014. Figure 4.4 shows that although the majority (60.6%) believed that there had been no change, more than 30 per cent of principals felt that children's readiness for school had improved (slightly or much better) since the introduction of the Blueprint. Continued examination of the principals' views and data from Best Start may shed more light on any trends.

Figure 4.4:

Perceived changes in children's readiness to learn when entering Kindergarten, 2014-2016

Source: CESE annual principal survey, 2016, n=157



School attendance

Figure 4.5 shows that since 2009 attendance rates have been highest in metropolitan schools and lowest in remote and very remote schools. Across 2009 to 2015 there were no discernible attendance trends in primary or secondary schools in either metropolitan or provincial schools; the gap was maintained at approximately 1.4 percentage points (range 1.0-1.7 percentage points) for primary students and 3.1 percentage points (range 2.5-3.5 percentage points) for secondary students.

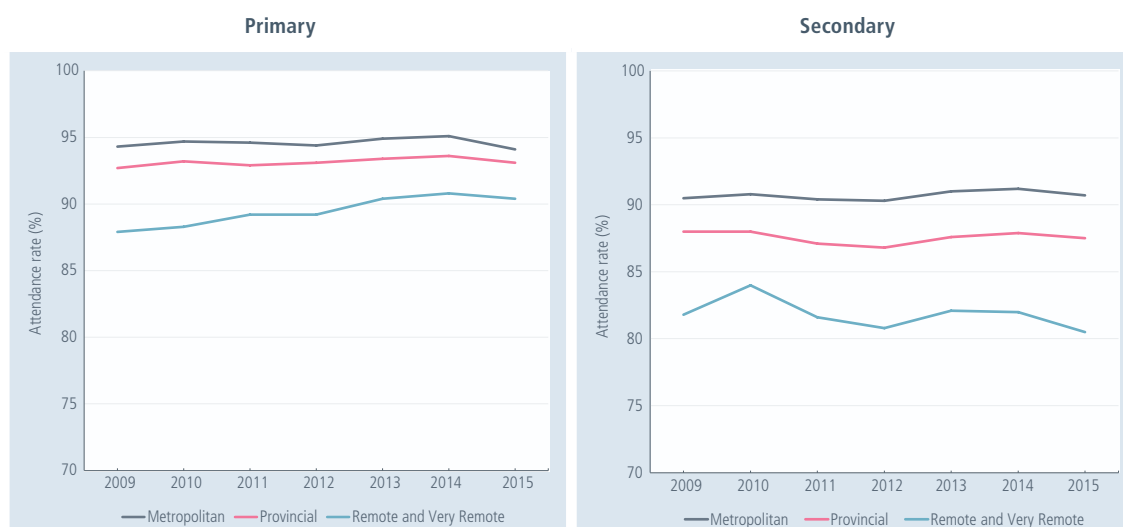
However, since 2009, primary school attendance increased by 2.5 percentage points across remote and very remote schools (reaching 90.4% in 2015) but decreased by 1.3 percentage points in secondary schools (80.5% in 2015). This resulted in the gap with metropolitan schools closing by 2.7 percentage points for remote and very remote primary schools but widening by 1.5 percentage points for remote and very remote secondary schools.

Since 2013, these gaps narrowed by 0.8 percentage points across primary schools and widened by 1.3 percentage points across secondary schools.

Figure 4.5:

School attendance rates by location, 2009-2015

Source: Statistics Unit, CESE. Data extracted from the Statistics Unit's attendance cube



Note: Attendance rates are sourced from the return of absences census conducted in the final week of Term 2 by the Statistics Unit, CESE. Kindergarten, Year 11 and Year 12 students have been excluded in attendance rates, consistent with national reporting standards. Distance education and Schools for Specific Purposes do not participate in the absences collection.

A range of factors aside from the Blueprint may affect attendance and looking at trends alone does not necessarily indicate its true impact. To determine the Blueprint's impact on school attendance more rigorously and sensitively, a 'fixed effects' panel analysis was undertaken to test whether attendance in rural and remote schools had increased relative to metropolitan schools since the start of the Blueprint (for method details, refer to Appendix E).

Departmental attendance data from 2006 to 2015 were used to estimate models for aggregate school attendance for primary and secondary students.

The model accounted for:

- location (i.e. metropolitan, provincial, remote or very remote)
- the number of FTE students at a school
- school-level SES³¹
- the proportion of male students among total students at a school
- the proportion of Aboriginal students among total students at a school
- whether a school was participating in the Connected Communities Strategy³²
- whether the school hosted a Clontarf Academy (secondary schools only)
- whether a school was part of the Commonwealth-funded Remote School Attendance Strategy³³.

The impact of the Blueprint was determined by the significance and size of an interaction term between a factor variable for location and a binary variable for post-implementation of the Blueprint (i.e. 2014 or 2015).

The fixed effects modelling shows that since the start of the Blueprint:

- Relative to metropolitan schools there have been small but significant increases in attendance by primary students in provincial schools (+0.29%) and remote and very remote schools (+0.68%). Taking 200 days as the normal number of enrolled days for a student in one year, the average increase in student attendance, relative to metropolitan schools, was 0.58 days for primary students across provincial schools and 1.36 days for primary students across remote and very remote schools.
- Relative to metropolitan schools there has been no significant change in attendance by secondary students at either provincial or remote and very remote schools, once all of the above factors are accounted for.

Taken together, the results of the trend analysis and fixed effects modelling suggest that since 2014 there has been a slight increase in primary school attendance but not in secondary school attendance.

³¹ School-level socio-economic status is determined using the Family Occupation and Education Index (FOEI), which is used as the basis for equity loading for socio-economic status in the Department's Resource Allocation Model. Technical details can be found in Centre for Education Statistics and Evaluation 2013b, Family Occupation and Education Index (FOEI) report prepared by K Rickard & L Lu. Available at <http://www.cese.nsw.gov.au/publications-filter/family-occupation-and-education-index-foei-2013>

³² For more information refer to: <http://www.dec.nsw.gov.au/about-the-department/our-reforms/connected-communities>

³³ The Commonwealth-funded Remote School Attendance Strategy targets select remote schools. Three NSW schools are participating: Boggabilla Central School, Walgett Community College and Wilcannia Central School. For more information refer to: <https://www.dpmmc.gov.au/indigenous-affairs/about/children-and-schooling-programme/remote-school-attendance-strategy>

The quality of teaching

A key focus of the Blueprint is to ensure that children and young people in rural and remote communities are taught by quality teachers and school leaders. Many of the actions to improve teacher and leadership quality are those being implemented under the Great Teaching, Inspired Learning (GTIL) blueprint and therefore will be reported in the GTIL evaluation reports.

The FoL and TTFM surveys have been administered across NSW public schools since 2014 and provide a source of information about the quality of instruction and student engagement.

Focus on learning

The FoL survey asks teachers to self-assess against items grouped into eight evidence-based drivers of student learning, while the TTFM survey asks students to self-report against a range of items, including the quality of instruction they receive and their school engagement (Hattie, 2009; 2003). More details about both these surveys can be found in the Method section of this report.

Figures 4.6 and 4.7 present the results of multilevel regression analyses of primary and secondary school teacher responses to the FoL survey in 2014 and 2015. The survey enabled teachers at central schools to be grouped as either primary, secondary or both. Teachers who indicated they taught both primary and secondary (a small number) were excluded from the sample. Note that data for 2016 was not available at the time of this report.

The data indicates that across metropolitan primary schools, teachers' ratings increased significantly ($p < .05$) from 2014 to 2015 across all eight drivers of student learning. Teachers in provincial schools rated the quality of leadership at their school and their collaboration with other teachers significantly higher in 2015 than in 2014. There were no significant differences in the ratings across remote and very remote primary school teachers from 2014 to 2015 but this could be due to the low precision of the estimates arising from the small sample sizes ($n(2014)=73$ or 74 , $n(2015)=50$).

Secondary school teachers across metropolitan and provincial secondary schools reported that the quality of school leadership at their schools improved from 2014 to 2015. Again, there were no significant differences in the ratings across remote and very remote secondary school teachers from 2014 to 2015, again presumably because of the small sample sizes ($n(2014)=72$, $n(2015)=98$ or 99).

Figure 4.6:

FoL: Primary school teachers' ratings of the eight drivers of student learning by location, 2014 and 2015

Source: FoL teachers survey, Term 3, 2014 and Term 3, 2015



Figure 4.7:

FoL: Secondary school teachers' ratings of eight drivers of student learning by location, 2014 and 2015

Source: FoL teachers survey, Term 3, 2014 and Term 3, 2015



Table 4.1 summarises Figures 4.6 and 4.7 from the perspective of whether the scores across rural and remote teachers are significantly different to those across metropolitan teachers in either 2014 or 2015. Primary school teachers across provincial schools reported significantly lower scores than metropolitan primary school teachers for collaborating with colleagues, the learning culture at their school, using data to inform their practice and using differential teaching strategies in 2015 but not in 2014. Primary school teachers across remote and very remote schools reported significantly lower scores than metropolitan primary school teachers on the learning culture of their school, their use of data to inform practice and their use of differential teaching strategies in 2014 and 2015.

Secondary school teachers across provincial secondary schools reported significantly lower ratings than metropolitan secondary school teachers on seven of the eight drivers of student learning in both 2014 and 2015. However, secondary school teachers across remote and very remote schools reported significantly lower ratings than metropolitan secondary school teachers for using data to inform practice, the use of differential teaching strategies and the learning culture at their school (2015 only).

Taken together, these findings suggest that the prevalence of a number of evidence-based drivers of student learning are significantly lower across rural and remote than metropolitan schools. This appears to be particularly the case for secondary schools and schools in provincial locations. However, as the samples of remote and very remote teachers are small, estimates of the prevalence of the eight drivers of student learning across their schools are very imprecise (as evidenced by the wide confidence intervals in Figures 4.6 and 4.7).

Table 4.1:

FoL: Differences in teachers' ratings for the eight drivers of student learning compared to metropolitan teachers' ratings, 2014 and 2015

Source: FoL teachers survey, Term 3, 2014 and Term 3, 2015

	Provincial			
	Primary		Secondary	
	2014	2015	2014	2015
Leadership	●	●	▼	▼
Collaboration	●	▼	▼	▼
Learning culture	●	▼	▼	▼
Data informs practice	●	▼	▼	▼
Teaching strategies	●	▼	▼	▼
Technology	●	●	▼	▼
Inclusive school	●	●	▼	●
Parent involvement	●	●	●	▼
	Remote/very remote			
	Primary		Secondary	
	2014	2015	2014	2015
Leadership	●	●	●	●
Collaboration	●	●	●	●
Learning culture	▼	●	●	▼
Data informs practice	▼	●	▼	▼
Teaching strategies	▼	●	▼	▼
Technology	●	●	●	●
Inclusive school	●	●	●	●
Parent involvement	●	●	●	●

● Mean scores are not statistically different from teachers in metropolitan schools

▼ Mean scores are significantly lower than for teachers in metropolitan schools ($p < .05$)

The data above suggest that the gap in the prevalence of the drivers of student learning between metropolitan and rural and remote schools widened in 2015 compared to 2014. However, the 2014 and 2015 samples differ in terms of the locational distribution of schools and the most likely the representativeness of teachers within schools. The representativeness of the sample is invisible to the evaluation, given the anonymous nature of the FoL teacher survey.

To assess whether the gap had closed, the changes in the average responses from teachers at schools that participated in the survey in both 2014 and 2015 were analysed using multilevel regression models. Appendix F shows the statistical model used in this analysis. The test of whether the gap had closed was the significance of an interaction term between calendar year (i.e. 2015) and location (i.e. provincial or remote and very remote).

Table 4.2 shows the regression coefficients for the interaction term between location and year. The coefficients for the remote and very remote teachers' ratings of 'learning culture', 'data informs practice', 'technology' and 'inclusive school' are all positive and significant, indicating that relative to metropolitan teachers in 2015, the remote and very remote teachers' ratings of these drivers had improved. The data suggests that the gap relative to metropolitan primary schools narrowed significantly across remote and very remote primary schools for learning culture, the use of data to inform practice, the use of technology to support learning and teaching, and school inclusivity. There is no evidence to suggest that the gap narrowed across rural and remote secondary schools for any of the measured drivers of student learning.

Table 4.2:

Coefficients from the multilevel regression analysis of relative changes in the locational prevalence of evidence-based drivers of student learning 2014-2015

Source: FoL teachers survey, Term 3, 2014 and Term 3, 2015

	Primary		Secondary	
	Provincial	Remote and very remote	Provincial	Remote and very remote
Leadership	-0.004	-0.017	0.062	-0.016
Collaboration	-0.020	0.051	0.000	0.075
Learning Culture	-0.004	0.088*	0.015	-0.002
Data informs practice	-0.012	0.078*	0.008	0.019
Teaching strategies	-0.016	0.070	0.016	0.025
Technology	-0.036	0.247*	0.043	0.068
Inclusive School	-0.028	0.071*	0.002	-0.007
Parent involvement	-0.053	0.081	-0.006	-0.061

Note: Metropolitan is the group that the other two locations are compared to, and year is coded as 0 for 2014 and 1 for 2015. *Indicates the parameter estimate is significantly different from zero at a 5% significance level.

The above results support the earlier findings that metropolitan teachers self-reported higher ratings than teachers at rural and remote schools, in particular in secondary schools, but that at least for remote and very remote primary schools the gap closed in 2015.

Tell Them From Me

The TTFM survey canvasses students' views of the quality of instruction they receive, providing another measure of the quality of teaching in schools. Quality of instruction is measured across three aspects: rigour, the effectiveness of learning time and the relevance of learning materials.

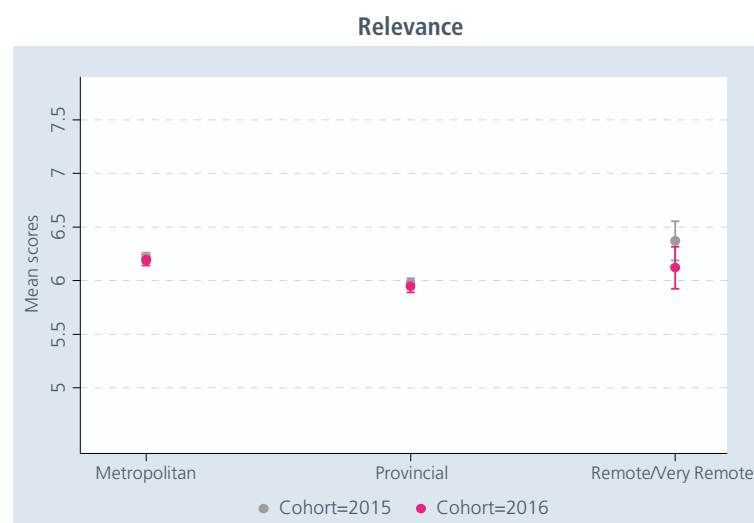
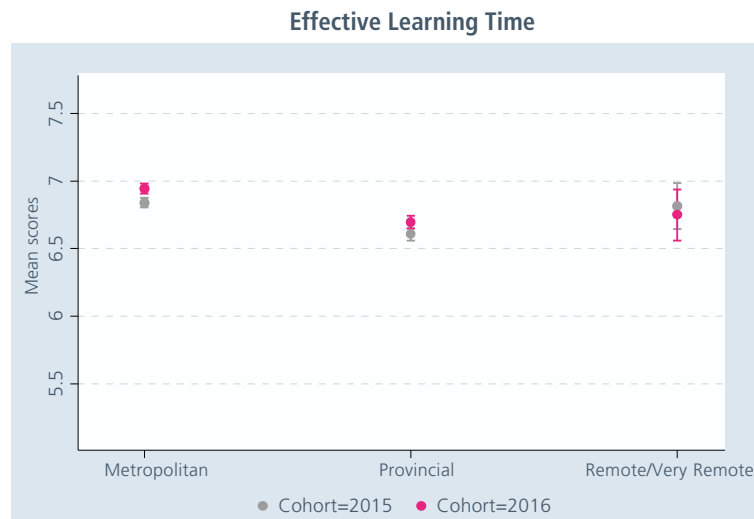
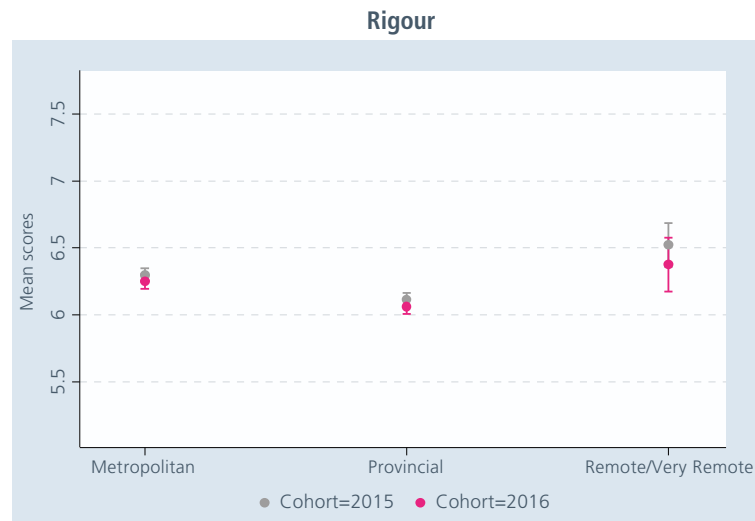
Figure 4.8 shows the outputs of multilevel regression analyses to determine whether secondary students' reported quality of instruction in the TTFM survey varied according to location (more details of the analysis can be found at Appendix G). Data were analysed for 2015 and 2016. The surveys were piloted in 2014 and 2015 but, as the samples were not representative, 2014 data has not been analysed for this report.

The 2015 and 2016 data shows that for all three measures of quality instruction, there were no significant differences in secondary students' mean ratings of the quality of instruction they received in 2016 compared to 2015 across metropolitan, provincial and remote and very remote schools. However, overall, students rated the quality of instruction positively in both years³⁴.

Figure 4.8:

TTFM: Secondary students' ratings of the quality of instruction by location, 2015 and 2016

Source: TTFM secondary students survey; Term 1, 2015 and Term 1, 2016



Note: N(2015) = 102,100 metropolitan, 32,566 provincial and 884 remote and very remote students. N(2016) = 108,766 metropolitan, 32,185 provincial and 1,052 remote and very students.

³⁴ The scaling system used by the developers of the TTFM survey considers a score of six and above positive.

Table 4.3:

TTFM: Differences in secondary students' ratings of the quality of instruction from metropolitan students' ratings, 2015 and 2016

Source: TTFM secondary students survey, Term 1, 2015 and Term 1, 2016

Table 4.3 shows that secondary students across provincial schools on average reported significantly lower scores than metropolitan secondary students in both 2015 and 2016 ($p < .05$); this was consistent with the self-reported ratings of teachers. Remote and very remote students did not rate the quality of instruction they received significantly differently to metropolitan students in either year.

	Provincial		Remote and very remote	
	2015	2016	2015	2016
Rigour	▼	▼	●	●
Effective learning time	▼	▼	●	●
Relevance	▼	▼	●	●

● Mean scores are not statistically different from the students in metropolitan schools

▼ Mean scores are significantly lower than for students in metropolitan schools ($p < .05$)

To assess whether secondary students' perceived quality of instruction had changed differentially across locations from 2015 to 2016, changes in the TTFM data from schools that participated in 2015 and 2016 were analysed using multilevel regression models. The test of whether there were differential locational changes in rural and remote schools is the significance of an interaction term between year (i.e. 2015) and location (i.e. provincial or remote and very remote). Table 4.4 confirms that the gap in secondary student perceived quality of instruction did not close between provincial and metropolitan students. Furthermore, from 2015 to 2016, the reported relevance and effectiveness of learning time decreased significantly more across remote and very remote secondary students compared to metropolitan students. However, this latter finding needs to be considered in the context that no significant gap exists between these two cohorts.

Table 4.4:

Coefficients from the multilevel regression analysis of relative locational changes in secondary student-reported quality of instruction from 2015 to 2016

Source: TTFM secondary students survey, Term 1, 2015 and Term 1, 2016

	Provincial	Remote and very remote
Relevance	-0.004	-0.230*
Effective Learning Time	-0.015	-0.170*
Rigour	-0.000	-0.096

The FoL and TTFM data together suggest that there is a gap in some aspects of the quality of teaching from the perspective of teachers and/or students in metropolitan and rural and remote schools. There is some evidence that the gap is closing for remote and very remote schools but not for provincial schools. However, it is important to note that only two time points are available for the FoL and TTFM data and that the representativeness of the samples for these surveys is unclear. These surveys will continue to be examined as the evaluation progresses to determine if a clearer pattern emerges.

Student engagement

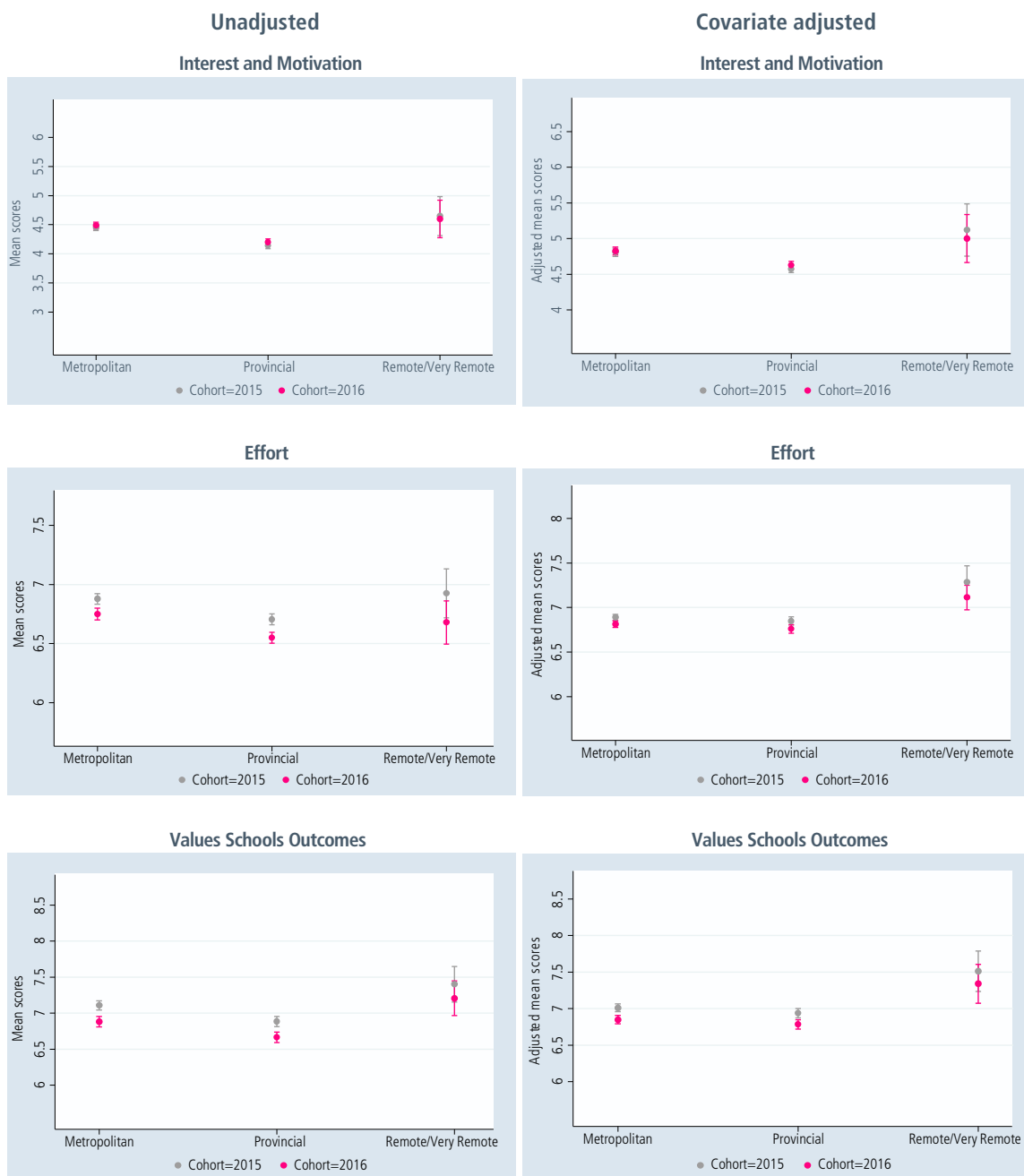
As an extension of the previous analysis on the quality of teaching across rural and remote schools, multilevel regression analysis was used to analyse student engagement measures captured in the TTFM survey. This analysis was undertaken to determine whether student engagement also varied by location. For this analysis models were run with and without covariates for Aboriginal status and student SES to determine whether observed differences were due to school location or to other factors that co-varied with location. Three measures of student engagement were analysed: interest and motivation (intellectual engagement), effort (intellectual engagement) and value for school outcomes (institutional engagement).

It was postulated that SES and Aboriginal status may influence measures of student engagement. As such, analyses were undertaken with and without adjustment for these variables. Figure 4.9 shows that without adjustment for SES and Aboriginal status, secondary student effort and value for school outcomes were significantly lower across both metropolitan and provincial schools in 2016 compared to 2015 ($p < .05$). The same pattern was evident across remote and very remote students but the difference was not significant. Interestingly, the year-on-year differences in interest and motivation were negligible across all locations. However, once student SES and Aboriginal status was accounted for, there were no significant year-on-year differences for effort across metropolitan or provincial schools but the significant differences in value for school outcomes, though smaller, remained.

While differences in the samples cannot be excluded and the representativeness at student level is unknown, the data does suggest that students across rural and remote as well as metropolitan schools are valuing school outcomes less in 2016 than in 2015.

Figure 4.9:
TTFM: Secondary students' ratings of school engagement by location, 2015 and 2016

Source: TTFM survey; Term 1, 2015 and Term 1, 2016



Note: N(2015) = 102,100 metropolitan, 32,566 provincial and 884 remote and very remote students . N(2016) = 108,766 metropolitan, 32,185 provincial and 1,052 remote and very students.

Table 4.5 shows that, after adjustment, interest and motivation (but not effort or value for school outcomes) were significantly lower among provincial secondary students relative to metropolitan students in both years. However, after the same adjustment, effort and value for school outcomes (but not interest and motivation) were significantly higher among remote and very remote secondary students relative to metropolitan students in both years.

Table 4.5:

TTFM: Differences in secondary students' ratings for school engagement between locations, 2015 and 2016

Source: TTFM secondary students survey, Term 1, 2015 and Term 1, 2016

Provincial				
	Unadjusted		Adjusted	
	2015	2016	2015	2016
Interest and motivation	▼	▼	▼	▼
Effort	▼	▼	●	●
Value school outcomes	▼	▼	●	●
Remote/very remote				
	Unadjusted		Adjusted	
	2015	2016	2015	2016
Interest and motivation	●	●	●	●
Effort	●	●	▲	▲
Value school outcomes	●	▲	▲	▲

- Mean scores are not statistically different from students in metropolitan schools
- ▼ Mean scores are significantly lower than for students in metropolitan schools ($p < .05$)
- ▲ Mean scores are significantly higher than for students in metropolitan schools ($p < .05$)

Multilevel regression analysis of changes in school engagement measures from schools that participated in TTFM in both 2015 and 2016 shows no evidence of any significant locational differences in the changes in student-reported engagement from 2015 to 2016. Where all the interactions between location and year were non-significant (data not shown), this remained the case, whether the data was adjusted for student SES and Aboriginal status or not.

Taken together, the findings above suggest that there was a gap in the interest and motivation between provincial (but not remote and very remote) secondary students and metropolitan students. There is also evidence of a 'reverse' gap for effort and value for school outcomes between rural and remote secondary students and metropolitan secondary students. The data also suggests that raw differences in effort and value for school outcomes between provincial and metropolitan students were being influenced by external factors, outside the control of both schools and possibly the Blueprint. It is unclear why these same factors had less influence on student engagement in remote and very remote schools. The data also suggests that the gap between the interest and motivation of secondary students across provincial schools compared to metropolitan schools did not close from 2015 to 2016. However, as with quality instruction measures, more conclusive assessment of the impact of the Blueprint on student intellectual engagement will become clearer in subsequent years.

Literacy and numeracy

The National Assessment Program – Literacy and Numeracy (NAPLAN) is an annual assessment of students' reading, writing, spelling and numeracy skills in Years 3, 5, 7 and 9. This section analyses results for the reading and numeracy components, by location and from 2009 to 2015. Three aspects of NAPLAN data are investigated: the percentage of students in the top two NAPLAN bands, NAPLAN mean scores and NAPLAN performance. They are presented in the following sections.

Percentage of students in the top two NAPLAN bands

Figures 4.10 and 4.11 show the percentage of students scoring within the top two bands for NAPLAN reading and numeracy decreases as their location becomes less metropolitan. Table 4.6 shows the latest figures on the percentages of rural and remote students achieving in the top two bands, current gaps relative to metropolitan students and changes in those gaps since 2013.

The proportion of Year 3 students in the top two bands for reading has increased by 3.4 percentage points across metropolitan students and 4.2 percentage points across remote and very remote students since 2013. Over the same period there has been no change across provincial schools, meaning that since 2013 the gap between provincial and metropolitan schools increased by 3.4 percentage points to its widest since 2009 (-13.4%). The gap between metropolitan and remote and very remote students marginally narrowed and was -24.4 percentage points in 2015.

For Year 5 reading, the percentage of students in the top two bands has not changed discernibly across all locations since 2013; in fact, there have been no discernible trends since as far back as 2010. As of 2015, the gap between metropolitan students and provincial students was -11.7 percentage points and between metropolitan students and remote and very remote students it was -22.0 percentage points. These changed only slightly from 2013.

The proportion of Year 7 students in the top two reading bands decreased by 1.3 percentage points across provincial students since 2013, continuing a prior downward trend. Across metropolitan and remote and very remote students the percentages have remained largely unchanged. As of 2015, the gap between metropolitan students and provincial students was -11.4 per cent and between metropolitan students and remote and very remote students it was -18.9 per cent. The provincial students' gap widened by 1.6 percentage points from 2013 but remote and very remote students' gap changed only slightly.

For Year 9 reading, the percentages of students in the top two bands increased by 1.3 percentage points across remote and very remote students, but decreased by 1.2 percentage points across provincial students, continuing a prior trend. Against a 1.0 percentage point increase across metropolitan students since 2013, the locational gap for provincial students increased by 2.2 percentage points to -10.5 percentage points. This gap has been getting progressively wider (from -4.8 percentage points in 2009). The gap between metropolitan students and remote and very remote students remained largely unchanged.

Figure 4.10:

Students in top two bands of NAPLAN reading by location, 2009-2015

Source: NAPLAN data extracted from the Statistic Unit's student-level NAPLAN dataset



Note: Per cent is calculated by determining the percentage of students in the top two bands as a percentage of assessed students (including those who were exempt on the day of the test).

Since 2013, the proportion of Year 3 students in the top two numeracy bands decreased by 1.1 percentage points across metropolitan students but increased by 2.2 percentage points across remote and very remote students, continuing a prior trend. The gap between rural and remote students and metropolitan students was -19.5 percentage points in 2015, having closed by 3.2 percentage points since 2013. There has been no clear decline across provincial students since 2013 and no clear change in the gap with metropolitan students (-13.0 percentage points in 2015).

For Year 5 numeracy, there were declines in the percentages of students in the top two bands across all locations since 2009. However, since 2013 these trends have reversed, with 1.7 and 2.2 percentage point increases across provincial and remote and very remote students respectively. Since 2013, the gap between metropolitan students and provincial students widened by 1.0 percentage points (-15.1 percentage points in 2015) and remained unchanged for remote and very remote students (-19.9 percentage points in 2015).

The proportion of Year 7 students in the top two numeracy bands also declined across all locations since 2013, continuing prior trends. From 2013 to 2015, the gap between metropolitan students and provincial and remote and very remote students widened by 1.3 and 2.2 percentage points respectively (-16.3 percentage points for provincial and -24.8 percentage points for remote and very remote in 2015).

For Year 9 reading, there were small decreases in the percentage of students in the top two bands across metropolitan (-0.9 percentage points) and provincial schools (-0.5 percentage points) since 2013. For provincial students, this continued a prior downward trend but reversed an upward trend across metropolitan students. In contrast, there was a 2.4 percentage point increase across remote and very remote students from 2013. The result of these trends are that from 2013 to 2015 the gap between metropolitan students and remote and very remote students closed by -3.3 percentage points (-21.3 percentage points in 2015) and between metropolitan students and provincial students remained largely unchanged (-15.7 percentage points in 2015).

Figure 4.11:

Students in top two bands of NAPLAN numeracy by location, 2009-2015

Source: NAPLAN data extracted from the Statistic Unit's student-level NAPLAN dataset



Note: Per cent is calculated by determining the percentage of students in the top two bands as a percentage of assessed students (including those who were exempt on the day of the test).

Table 4.6:

Gaps in the percentage of students in the top two NAPLAN bands for reading and numeracy relative to metropolitan students

	Provincial			Remote and very remote		
	Per cent in top two bands in 2015*	Gap in 2015 (percentage points)	Change in gap 2013-2015 (percentage points)	Percent in top two bands in 2015	Gap in 2015 (percentage points)	Change in gap 2013-2015 (percentage points)
Reading						
Year 3	35.3 (0)	-13.4	+3.4	24.4 (+4.2)	-24.3	-0.8
Year 5	25.0 (-0.2)	-11.7	+0.7	14.7 (+0.7)	-22.0	-0.2
Year 7	18.2 (-1.3)	-11.4	+1.6	10.6 (-0.3)	-18.9	+0.6
Year 9	13.3 (-1.2)	-10.5	+2.2	9.2 (+1.3)	-14.6	-0.2
Numeracy						
Year 3	24.8 (-0.5)	-13.0	-0.6	18.3 (+2.1)	-19.5	-3.2
Year 5	16.5 (+1.7)	-15.1	+1.0	11.8 (+2.7)	-19.9	0
Year 7	12.9 (-2.5)	-16.3	+1.3	16.3 (-3.4)	-24.8	+2.2
Year 9	12.6 (-0.6)	-15.7	-0.4	7.0 (+2.3)	-21.3	-3.3

Note: *Percentage point change from 2013 in brackets.

In summary, trends in the percentage of students in the top two NAPLAN bands for reading and numeracy were variable across assessments and locations. From 2013, the gaps between rural and remote students and their metropolitan counterparts closed for some assessments but not for others, including within scholastic years but between domains and between scholastic years.

NAPLAN scores

Figures 4.12 and 4.13 show that from 2009 to 2015 there was considerable volatility for mean reading and numeracy scores across scholastic years and rural and remote locations. The only consistent trend was a downward trend for Year 9 reading across provincial schools. Since 2013 this trend has continued, with mean Year 9 reading scores decreasing by a further six points. In addition, there have been two consecutive periods of decline since 2013 for Year 5 reading across all locations (-11 points across provincial schools and -10 points across rural and remote schools). However, since 2013 there have also been two consecutive increases for Year 7 reading across remote and very remote schools (+8 points), and for Year 9 numeracy across all locations (+10 points across provincial schools and +19 points across rural and remote schools).

Figure 4.12:

NAPLAN reading score
by location, 2009-2015

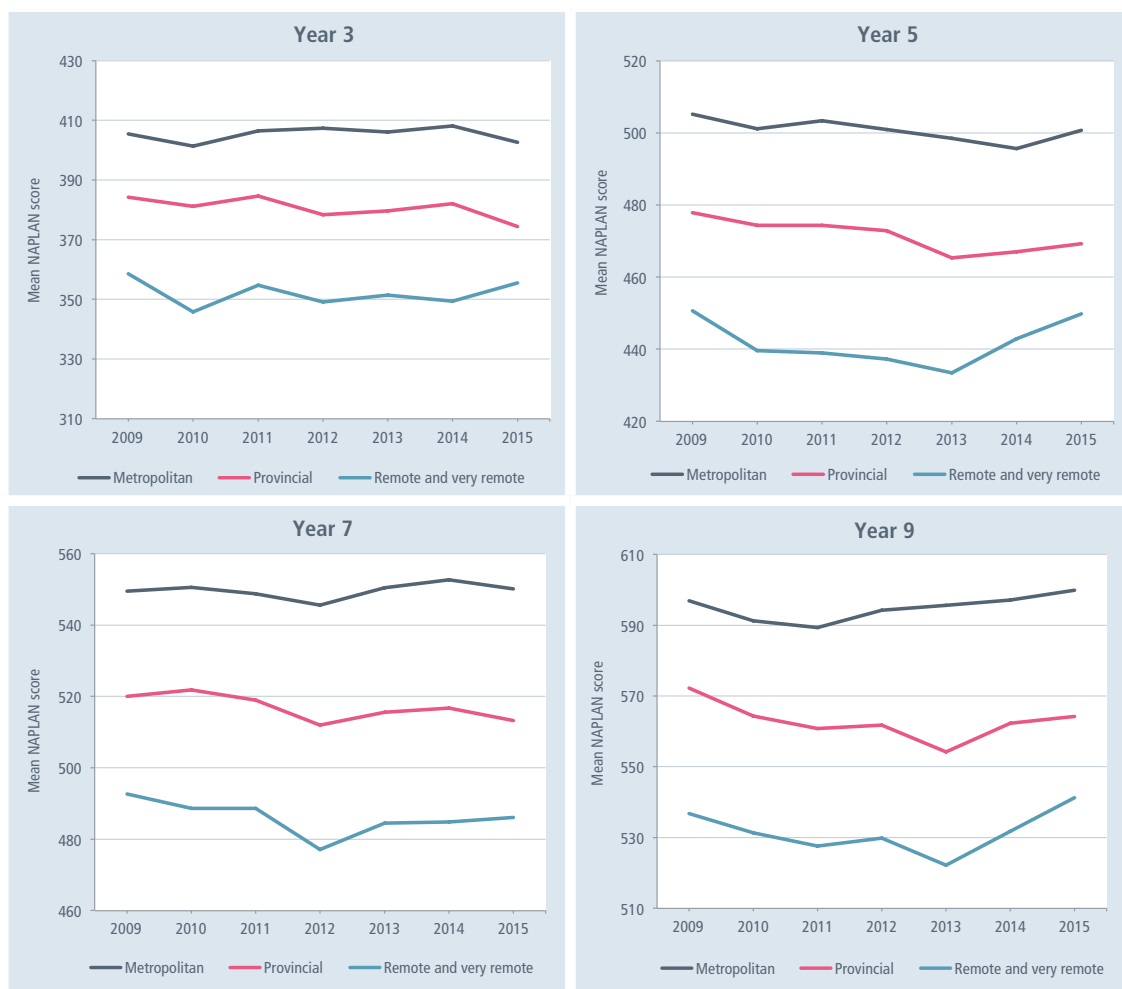
Source: Statistics Unit,
CESE



Figure 4.13:

NAPLAN numeracy score by location, 2009-2015

Source: Statistics Unit, CESE



The result of the fluctuations in NAPLAN mean scores is that the magnitude of the gaps between rural and remote schools and metropolitan schools have changed, as outlined in Table 4.7 below. As evident from the trend lines, the gaps in NAPLAN mean scores between metropolitan students for all reading and numeracy assessments are currently widest across remote and very remote students, followed by provincial students.

Since the start of 2014, the gaps for reading across remote and very remote schools have narrowed only for Years 7 (-2 points) and 9 (-2 points). The reading gaps have widened for all other cohorts, as shown. However, the numeracy gaps have closed for all year levels across remote and very remote schools and for Years 5 and 9 across provincial schools.

Table 4.7:

Absolute gaps in mean NAPLAN scores for reading and numeracy relative to metropolitan students

	Provincial		Remote and very remote	
	Change in gap 2013-2015 (points)	Gap in 2015 (points)	Change in gap 2013-2015 (points)	Gap in 2015 (points)
Reading				
Year 3	+8	-32	+6	-64
Year 5	+7	-27	+6	-57
Year 7	+2	-24	-2	-55
Year 9	+5	-24	-2	-52
Numeracy				
Year 3	+2	-28	-8	-47
Year 5	-2	-31	-14	-51
Year 7	+2	-37	-2	-64
Year 9	-6	-36	-15	-59

However, NAPLAN results are likely to be influenced by a number of factors, only one of which is the location of the student doing the test. Looking at trends in mean scores does not account for these factors, making it difficult to determine the cause of any changes.

To obtain an estimate of the effect of location on NAPLAN scores, multilevel regression models were generated to analyse Year 5 and Year 9 NAPLAN reading and numeracy. The models accounted for the following variables (which are known or hypothesised to have some effect on NAPLAN scores).

- Aboriginal status
- socio-economic status (SES)³⁵
- gender
- language background other than English (LBOTE).

Separate analyses were undertaken for each calendar year from 2011 to 2015 with coefficients plotted over time to assess trends. Further technical details on these models can be found in Appendix H.

Figures 4.14 to 4.17 plot the coefficients for location for Year 5 and Year 9 NAPLAN reading and numeracy scores. The coefficients for location are plotted for models that included variables for Aboriginal status, SES, gender and LBOTE, and models without (i.e. unadjusted). The data confirms that after accounting for the above factors, being in a provincial or remote and very remote school has a significant negative impact on Year 5 and Year 9 NAPLAN reading and numeracy scores. However, the data also confirms previous research that other factors not directly due to location per se, but that might co-vary with location, also have a significant negative effect (compare unadjusted to adjusted coefficients) (CESE 2013a).

Since 2013 for provincial Year 5 students, the location-dependent component of the gap has marginally widened for reading (+0.8 points) but closed for numeracy (-2.3 points). Over the same period the location-dependent gap for remote and very remote Year 5 students has widened for reading (+1.0 points) but closed for numeracy (-8.4 points).

Since 2013 for provincial Year 9 students the location-dependent gap has widened for reading (+3.4 points) but closed for numeracy (-5.0 points). For remote and very remote Year 9 students the location-dependent gap has also widened for reading (+13.6 points) but also closed for numeracy (-4.5 points).

³⁵ SES is based on parental education and occupation as provided on enrolment records.

Figure 4.14:

NAPLAN reading performance for Year 5 relative to metropolitan students, 2011-2015

Source: NAPLAN data extracted from the Statistic Unit's student-level NAPLAN dataset

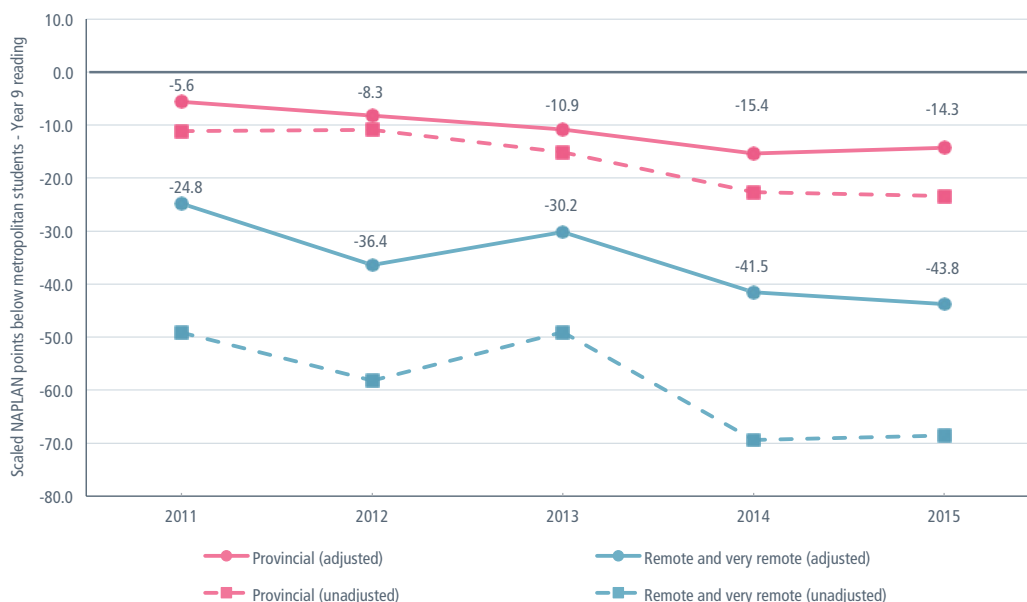


Note: All coefficients for provincial and remote and very remote locations are significantly below '0' (i.e. metropolitan) at the 95 per cent confidence level.

Figure 4.15:

NAPLAN reading performance for Year 9 relative to metropolitan students, 2011-2015

Source: NAPLAN data extracted from the Statistic Unit's student-level NAPLAN dataset

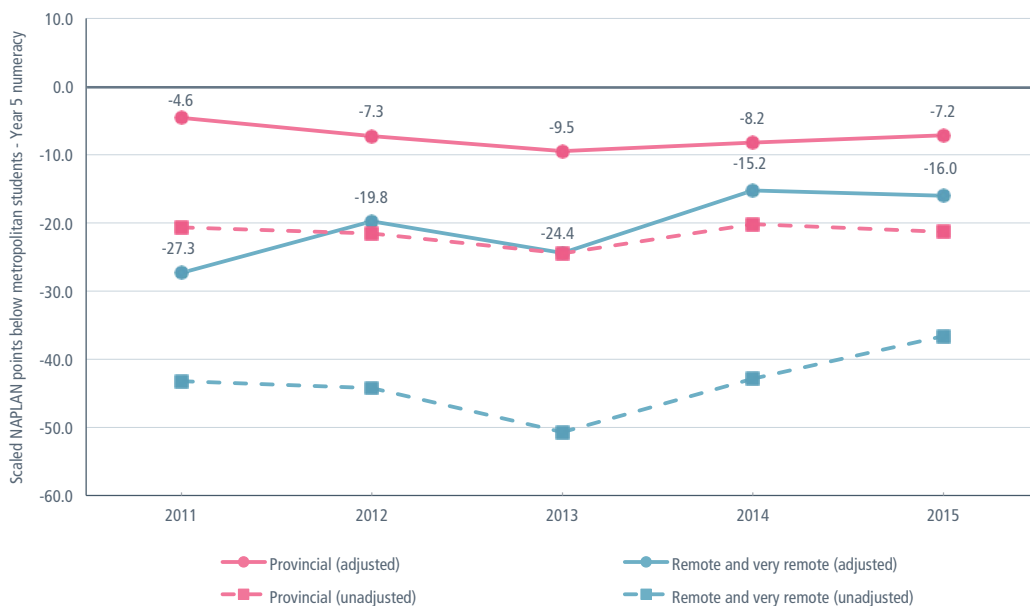


Note: All coefficients for provincial and remote and very remote locations are significantly below '0' (i.e. metropolitan) at the 95 per cent confidence level.

Figure 4.16:

NAPLAN numeracy performance for Year 5 relative to metropolitan students, 2011- 2015

Source: NAPLAN data extracted from the Statistic Unit's student-level NAPLAN dataset

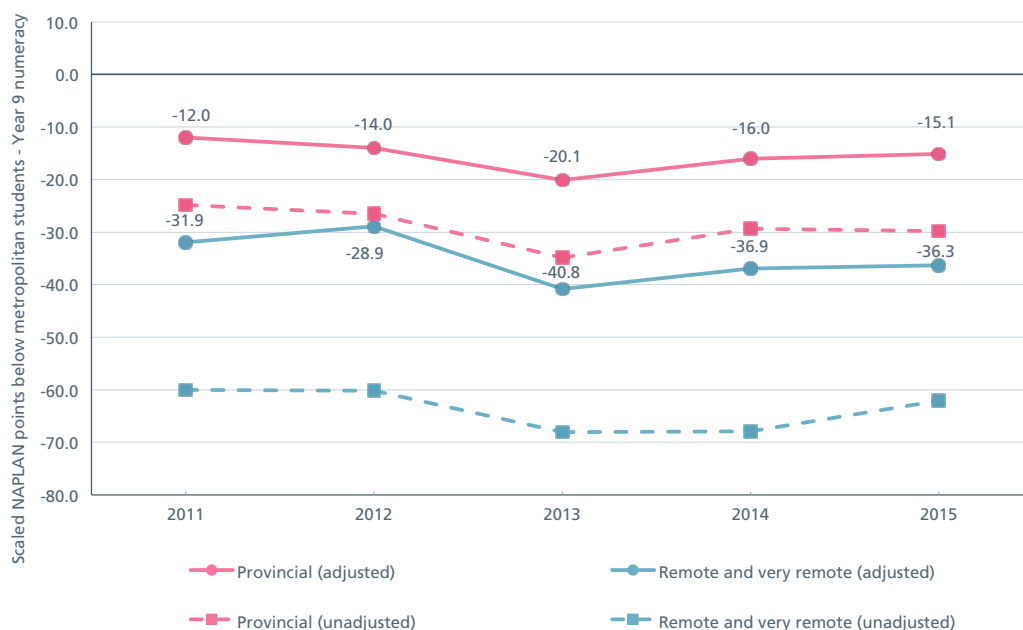


Note: All coefficients for provincial and remote and very remote locations are significantly below '0' (i.e. metropolitan) at the 95 per cent confidence level.

Figure 4.17:

NAPLAN numeracy performance for Year 9 relative to metropolitan students, 2011- 2015

Source: NAPLAN data extracted from the Statistic Unit's student-level NAPLAN dataset



Note: All coefficients for provincial and remote and very remote locations are significantly below '0' (i.e. metropolitan) at the 95 per cent confidence level.

Taken together, the trend analysis and multilevel regression show that once a range of factors known to impact NAPLAN performance are taken into account, location (i.e. remoteness) is still a significant negative predictor of NAPLAN performance, although not the only important factor. Furthermore, since the start of the Blueprint the location-dependent component of the NAPLAN gap has closed for primary and secondary school numeracy but not reading.

School retention and ATAR

Retention to Year 12

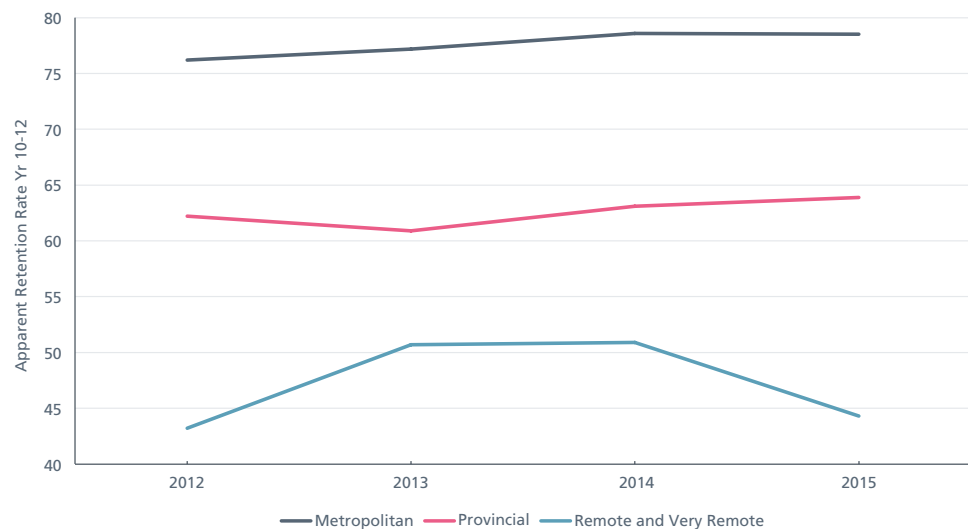
Apparent Retention Rates³⁶ (ARR) for Year 10-12 were examined by school location from 2012 to 2015. As the Year 12 cohort in 2012 was the first group of students required by law to complete Year 10 (as a result of raising the school leaving age in 2010), the Year 10-12 ARR is shown, rather than the Year 7-12 ARR, to minimise the impact of higher levels of student relocation associated with remote and very remote schools.

Figure 4.18 shows that the Year 10-12 ARR was lower across provincial, and lower still across remote and very remote schools, relative to metropolitan schools. From 2012, the Year 10-12 ARRs increased by 2.3 percentage points (78.5% in 2015) across metropolitan schools and 1.7 percentage points across provincial schools (63.9% in 2015). However, from 2013 the gap between metropolitan and provincial schools closed by 1.7 percentage points.

The Year 10-12 ARR across remote and very remote schools has been volatile since 2012 but decreased by 6.4 percentage points from 2013, entirely due to a decrease between 2014 and 2015. Although this resulted in the gap between metropolitan and remote and very remote schools widening by 7.7 percentage points from 2013, it is too early to determine if this represents the beginning of a downward trend or a correction to the 2012 level.

Figure 4.18:

Apparent retention rates
Years 10-12, by location,
2012-2015



Note: Enrolment data (including those used in the calculations of apparent retention rates) extracted from Statistics Unit's NSSC data cube, populated with National Schools Statistics Collection (NSSC) data. NSSC enrolments are collected as at the first Friday in August every year. All NSSC enrolments are full-time equivalent (FTE) figures.

³⁶ Retention rates are 'apparent' (ARR) as they do not track individual students through their final years of secondary schooling. ARR measures the ratio of the total FTE of students in a designated year (i.e. Year 12 in 2015) divided by the total FTE of students in a previous year (i.e. Year 10 in 2013). Care should be exercised in the interpretation of ARR, as the method of calculation does not account for a range of factors, including students repeating a year, movement of students between Australian states and territories and between school sectors, the impact of full-fee paying overseas students, and varying enrolment patterns where students complete secondary schooling at TAFE.

HSC awards and ATAR eligibility

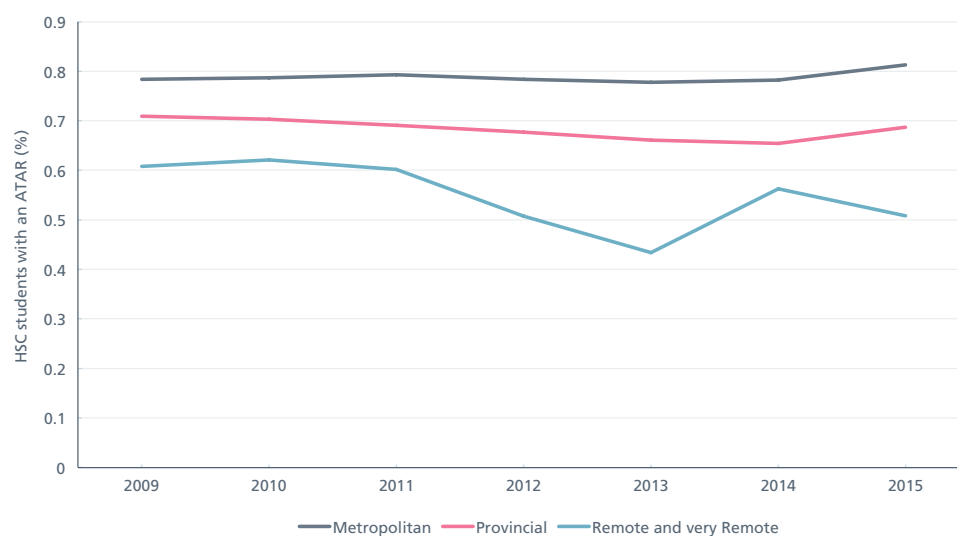
There are no discernible trends across metropolitan, provincial or remote and very remote schools in the number of HSCs awarded annually (data not shown). Furthermore, due to fluctuating enrolments in remote areas, comparing the numbers of HSCs obtained by students at remote and very remote schools across years is not meaningful. As the proportion of part-time Year 12 students also varies by location, with the highest rates in remote and very remote schools, ascertaining a rate of HSC awards is not possible³⁷. However, the rate of ATAR eligibility in relation to HSCs awarded can be derived.

Figure 4.19 shows that the percentage of students awarded an HSC who are eligible for an ATAR decreases with increasing remoteness. In 2015, the percentages were 81.3 per cent for metropolitan students, 68.7 per cent for provincial students and 50.8 per cent for remote and very remote students.

There are no clear trends across metropolitan and provincial students, owing to increases from 2014 to 2015. However, following a steep decline across remote and very remote students between 2010 and 2013, the percentage of students awarded an HSC who were eligible for an ATAR increased by 12.9 percentage points in 2014.

Although there was another decline across remote and very remote students in 2015, the score was still 7.4 percentage points above the 2013 level. The result of these fluctuations are that from 2013, the gap between metropolitan students and provincial students increased by 1.0 percentage point and between metropolitan students and remote and very remote students narrowed by 3.8 percentage points. However, as there is considerable volatility in the data for remote and very remote students, it is too early to determine if there is a downward trend in the gap.

Figure 4.19:
Percentage of students awarded an HSC that are eligible for an ATAR



Note: Data sourced from the Statistics Unit, Centre for Education Statistics and Evaluation (CESE) from HSC data derived from BOSTES and ATAR data derived from the University Admissions Centre. Only students with a status of "Active" are included in the figures. Does not include students with a main school recorded as TAFE. ATAR-eligible counts are student headcounts, not FTE. Number of ATAR-eligible students for metropolitan locations ranged from 21,553 to 24,577; for provincial from 5756 to 6431 and for remote and very remote from 60 to 82.

³⁷ The proportion of part-time Year 12 students for remote and very remote schools was 10.5% in 2015, 21.9% in 2014 and 5.8% in 2013. The corresponding proportions for metropolitan students were 3.0%, 3.3% and 2.8%.

Access to specialised or challenging subjects in HSC

Figure 4.20 shows that between 2011 and 2015 a lower proportion of rural and remote HSC students took English (Extension) and English (Advanced) than metropolitan HSC students. In 2015, the gap with metropolitan schools for English (Extension) was -3.0 percentage points for provincial students and -8.0 percentage points for remote and very remote schools. Since the baseline period of 2011-13 this gap was unchanged for provincial schools and had closed by 1.0 percentage points for remote and very remote schools. In 2015, the gaps for English (Advanced) were -9.0 percentage points for provincial students and -31.0 percentage points for remote and very remote students. Since the baseline period the gap for English (Advanced) was unchanged for remote and very remote students but had widened for provincial students (+2.0 percentage points).

Figure 4.20 also shows that between 2011 and 2015 lower proportions of rural and remote HSC students took Extension Maths and HSC Mathematics compared to metropolitan HSC students, with much higher proportions taking General Mathematics. In 2015 the gap with metropolitan schools for Extension Maths was -15.0 percentage points for provincial students and -23.0 percentage points for remote and very remote students. Since the baseline period of 2011-13 these gaps had narrowed for provincial students (-1.0 percentage points) but widened for remote and very remote students (+2.0 percentage points). For HSC Mathematics the gaps in 2015 were -10.0 percentage points for provincial students and -22.0 percentage points for remote and very remote students, having widened since the baseline period by 2.0 and 5.0 percentage points respectively.

For HSC students taking science subjects, both provincial and remote and very remote students have been consistently less likely to take Physics and Chemistry but are more likely to take Biology and Senior Science. In 2015 the gaps for Physics were -6.0 percentage points for provincial students and -19.0 percentage points for remote and very remote students. For Chemistry the gaps were -7.0 percentage points for provincial students and -24.0 percentage points for remote and very remote students. Since the baseline period of 2011-13 the gaps with metropolitan students for Physics and Chemistry have narrowed for provincial students (both by -1.0 percentage points) but widened for remote and very remote students (both by +7.0 percentage points).

Table 4.8 shows that there is no clear pattern in enrolments in HSC Creative Arts subjects across provincial and remote and very remote schools from 2011 to 2015.

Table 4.8:

Number of rural and remote HSC students taking Creative Arts subjects, 2011-2015

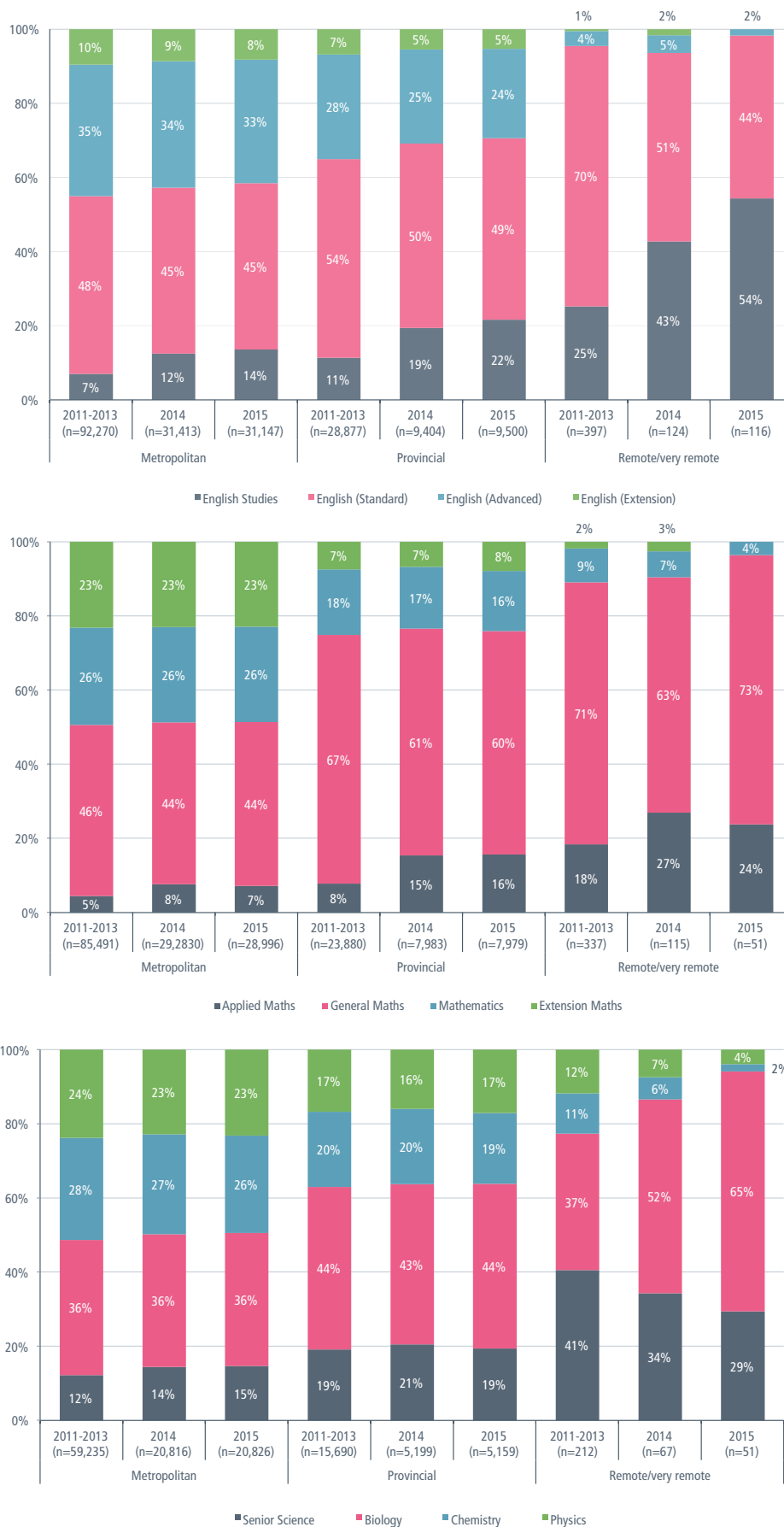
Location	2011	2012	2013	2014	2015
Provincial	4198	3845	3785	3760	3705
Remote / very remote	38	52	51	56	51

Taken together these results confirm that locational gaps in access by rural and remote HSC students to specialised or more challenging subjects persist. It is still too early to conclude with confidence if the gaps have closed since the start of the Blueprint. However, the gaps have widened for remote and very remote students for specialised or advanced Mathematics and Science subjects but not for English subjects. For provincial students the majority of gaps have remained largely unchanged, although have slightly closed for some subjects but slightly widened for others.

Figure 4.20:

Percentage of students taking specialist HSC English, Maths, and Science subjects, 2011-2015

Source: HSC data was obtained from BOSTES



Note: Subjects are arranged in increasing order of challenge. Some form of English is compulsory in HSC while maths is not.

5. Concluding comments

The implementation of the Blueprint has generally gone to plan and there is evidence that the objectives of a number of actions are beginning to be realised, or are likely to be in the future.

There is some evidence that the education gap between rural and remote schools and students and metropolitan students has closed since the start of the Blueprint (for primary and secondary numeracy NAPLAN scores but not for reading). It is important to treat any indications that the gap has closed with caution, as year-on-year volatility in some indicators is evident, particularly for remote and very remote schools, teachers and students.

As indicated in the introduction, the Rural and Remote Blueprint is not being implemented in isolation, and indeed several other large reforms, as well as numerous local initiatives, are occurring concurrently across the state. This evaluation did not consider the potential impact of other initiatives on student outcomes, and thus cannot comment on their relative contribution to any observed effects. Another point to emphasise is that although location was the variable of interest in the Blueprint and in this evaluation, there are many other features of students and schools that tend to co-vary with location. What is evident from prior evidence (CESE 2013a) and the analysis of NAPLAN performance in this report is that other factors, such as SES and Aboriginal status, are also significant predictors of educational outcomes at least up until Year 9 NAPLAN.

This report identifies a significant negative association of location (i.e. remoteness) on NAPLAN performance, indicators of quality teaching (in particular for secondary teachers) and curriculum access in senior secondary years. Locational differences in the quality of teaching may well be due to relative differences in teaching experience, a function of the challenges recruiting and retaining experienced teachers outside metropolitan areas, in particular to remote and very remote schools. The contribution of these gaps in the quality of teaching and curriculum access on the educational performance of rural and remote students warrants further investigation. At least for the quality of teaching this will be possible as more data from the Focus on Learning teacher survey becomes available. Assessing the impact of gaps in curriculum access is more complicated due to the absence of a standardised common assessment for all students beyond Year 9 NAPLAN and the complexities of ATAR scaling.

Based on the evidence, for the Blueprint, or any strategy targeting improved outcomes for rural and remote students, to be successful, it is important that factors outside of the control of schools or the education system are concurrently addressed. As such, the ultimate success of the Blueprint is intrinsically linked to a multi-agency response and the success of other initiatives targeting social disadvantage being implemented by other Departments. The Department can certainly play an important role in a multi-agency response and with initiatives such as the NSCs it is well placed to do so.

The Rural and Remote Blueprint will continue to be implemented over the next two years and actions within the scope of the evaluation will continue to be monitored and evaluated during that period. The outcomes examined here will also continue to be measured in relation to school location to identify if the education gap between metropolitan and other students in NSW narrows over time. A final report will present those findings after June 2018.

6. References

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- Table A1 summarises the actions identified in the Rural and Remote Education Blueprint. Actions that are shaded in blue are those that have been included in this evaluation report.

Appendix A: Actions in the Rural and Remote Blueprint

Table A1:

Rural and Remote
Blueprint actions

A case for action	
Implementation of the Rural and Remote Education Blueprint will be independently evaluated.	
A Rural and Remote Education Advisory Group will be established to bring key stakeholders together to guide implementation of the Blueprint.	
Quality Learning for every community (QL)	
1. Government funding will be allocated to community preschools and schools based on more equitable, transparent and needs-based funding models.	
QL 1.1	A more equitable, needs-based funding model will be implemented for community preschools to support the achievement of universal access.
QL 1.2	Increased funding will be allocated to rural and remote schools through a new, fairer Resource Allocation Model to reflect the different needs of their students and the nature and location of their school.
2. Rural and remote schools will be supported to collaborate in the development of an education strategy that best meets the needs of their school communities.	
QL 2.1	From 2014, Education Networks will be established in some rural and remote communities.
Quality Early Childhood Education (QECE)	
3. More children in rural and remote communities gain the benefits of quality early childhood education in at least the last year before school.	
QECE 3.1	Vulnerable and disadvantaged children will have access to high quality and more affordable early childhood education.
QECE 3.2	Department preschool services will better target areas of greatest need.
4. Early childhood education services are responsive to the needs of families in rural and remote communities.	
QECE 4.1	Specific strategies are in place to enable greater participation in early childhood education in rural and remote communities.
QECE 4.2	Scholarships will be provided to build the capabilities of early childhood teachers.
QECE 4.3	Support will be provided to encourage sustainable and flexible delivery of preschool services.
5. Children in rural and remote communities enter Kindergarten as confident learners.	
QECE 5.1	Transition to school statements will be introduced to strengthen information sharing between parents, early childhood educators and schools.
QECE 5.2	New initiatives will provide support for the Department's current distance education preschool.
Great teachers and School Leaders (GTSL)	
6. Great Teaching, Inspired Learning reforms build the capacity of teachers and leaders in rural and remote schools	
GTSL 6.1	Graduates from NSW teacher education programs will have the skills and personal attributes for teaching in rural and remote schools.
GTSL 6.2	Incentives will be targeted to attract more of the best and brightest into teaching in rural and remote schools.
GTSL 6.3	Beginning teachers will receive quality induction, reduced teaching loads and mentor support.
GTSL 6.4	Teachers will be better supported by strategies and processes that allow for professional collaboration about their teaching practice.
7. Rural and remote schools have greater capacity to attract and retain quality teachers and leaders.	
GTSL 7.1	The benefits of teaching in rural and remote locations will be actively promoted.

Table A1:

Rural and Remote
Blueprint actions

A case for action	
GTSL 7.2	A new range of incentives will be offered to attract and retain teachers and school leaders.
GTSL 7.3	More options will be available to develop the leadership skills of current and aspiring school leaders in rural and remote schools.
8. Distance and time are not a barrier to working and learning together	
GTSL 8.1	Teachers, school leaders and administrative and support staff in rural and remote schools will have access to quality professional learning, mentoring and coaching programs.
GTSL 8.2	Teachers will have increased opportunity to experience real or simulated NAPLAN and HSC marking.
GTSL 8.3	Virtual faculties for Learning and Support and ESL teachers, linking them to experienced head teachers, assistant principals and other expertise.
Curriculum Access for all (CA4A)	
9. Rural and remote students have improved access to a broad and quality curriculum.	
CA4A 9.1	A virtual secondary school will be established, delivering quality curriculum to rural and remote students across the state.
CA4A 9.2	Electronic curriculum documents and syllabus support materials will be developed to meet the needs of rural and remote teachers.
CA4A 9.3	Teachers, students and school leaders will be able to collaborate and share curriculum resources.
CA4A 9.4	Processes will be strengthened to ensure smooth curriculum transition from primary to secondary school.
10. Gifted and talented rural and remote students have the same curriculum opportunities as students in metropolitan areas.	
CA4A 10.1	New approaches will be developed to address the impact of isolation, distance and small peer groups on gifted and talented students.
CA4A 10.2	New programs will be developed to give students access to and engage them in science, mathematics and agriculture courses.
CA4A 10.3	More options will be provided for rural and remote students to participate in State arts and sports programs and other enrichment opportunities.
11. Rural and remote students have access to quality transition pathways from secondary school into further education, training or employment.	
CA4A 11.1	New partnerships will be developed between schools, TAFE NSW, universities, employers.
CA4A 11.2	Aboriginal students will be provided with additional support through personalised learning to achieve their aspirations as they move into further training and/or work.
Effective Partnerships and connections (EPC)	
12. Teachers and school leaders have access to professional learning and expert advice so they can meet the learning and support needs of every student.	
EPC 12.1	Professional learning will build the capabilities of school leaders and staff in creating and sustaining safe and supportive school communities.
EPC 12.2	Teachers will be supported with tools to assist them to personalise learning and support.
EPC 12.3	Student Support Officer traineeships will be offered to engage youth workers in schools.
13. Schools are able to access specialist assistance for students whose needs are challenging or complex.	
EPC 13.1	Specialist centres will be established to bring together expertise and specialist staff.
EPC 13.2	There will be more coordinated case management and planning for students with significant behavioural issues who are enrolled in distance education.
14. State borders do not prevent students from obtaining the support they need.	
EPC 14.1	The Department will simplify bureaucratic processes to make it easier for schools to work across state borders.
EPC 14.2	The Minister for Education will seek support from the Cross Border Commissioner and the Standing Council on School Education and Early Childhood (SCSEEC) for schools operating near borders to share education services.

Appendix B: Examination of representativeness of the principals' surveys

The extent to which the principal samples represented the sampling frames and underlying population was analysed. Table B1 shows that the distribution of survey respondents in the 2015 survey did not differ from that of the sampling frame from which it was drawn, either by location or by school type.

However, it did differ from the distribution of schools across location and by type. This is not unexpected, however, as the sampling frame did not draw equally from all locations (all remote and very remote schools and fewer than half of the provincial schools were invited) nor did it draw equally from all school types (with proportionally fewer primary schools invited).

The distribution of the location and school type for the 2016 provincial, remote and very remote sample showed no significant differences in comparison to either the invited sample or the population.

Table B1:

Extent to which principals' surveys responses represent the sampling frame and population

Year	Comparison	χ^2
2015	Survey responses to sampling frame by location (provincial and remote or very remote)	$\chi^2 = .41(df=1)$, n.s.
	Survey responses to population by location (provincial and remote or very remote)	$\chi^2 = 31.3(df=1)$, $p < .001$
	Survey responses to sampling frame by school type (primary, secondary, other)	$\chi^2 = 1.08(df=2)$, n.s.
	Survey responses to population by school type (primary, secondary, other)	$\chi^2 = 8.6(df=2)$, $p < .05$
2016	Survey responses to sampling frame by location (provincial and remote or very remote)	$\chi^2 = .05(df=1)$, n.s.
	Survey responses to population by location (provincial and remote or very remote)	$\chi^2 = 3.72(df=1)$, n.s.
	Survey responses to sampling frame by school type (primary, secondary, other)	$\chi^2 = .71(df=2)$, n.s.
	Survey responses to population by school type (primary, secondary, other)	$\chi^2 = 1.08(df=2)$, n.s.

Note: Although the 2016 survey included metropolitan schools, these were not included in the present analysis as rural and remote questions were primarily asked only of provincial, remote and very remote principals.

Appendix C: Education Network case studies

The Snow Gums Learning Alliance

The Snow Gums Learning Alliance (SGLA) in north-eastern NSW is led by teaching principals at five small public schools, Bald Blair, Ben Lomond, Black Mountain, Chandler and Ebor. In 2015, student numbers in these schools ranged from eight to 39, with a staff total of nine. From 2014, the SGLA received funding under the Rural and Remote Education Blueprint but historically, all five members have been part of the Highland Learning Network for several years prior. Before officially becoming the SGLA, the schools in the network had focused on shared sporting and cultural experiences. Since forming the SGLA, the collaboration has taken a more strategic approach to collaboration, as outlined below.

Aims

The overarching aim of the SGLA is to build the capacity of all staff to provide students at member schools with the best educational and socialisation opportunities.

To improve student learning outcomes, the teaching principals and all teaching and support staff focused on the following key strategies:

- deepening their understanding of the curriculum and best practice pedagogy
- using a distributed leadership model and structured collaboration so that staff now share responsibility for meeting the learning, support, and welfare needs of students at all five schools
- member schools have written a common strategic direction into their 2015-2017 school plans.

Central to this approach is a shared goal to create learning environments that embrace the four Cs of the principles of 21st century learning (collaboration, critical thinking, creativity and communication)³⁸.

Activities

Principals in the Education Network believe that the best way to achieve these aims is two-pronged: through the development of a combined learning and support team, and undertaking professional development in technology and literacy and numeracy. The learning and support team is shared across the five network schools using a custom-built website as a tool for storing information and with an emphasis on sharing resources (funds, expertise, physical resources etc.). The SGLA have also sought further grants to support its work³⁹.

Activities undertaken by the SGLA include combined staff development days and shared professional learning (including Targeted Early Numeracy (TEN) training, improved teaching of literacy and numeracy supported by an instructional leader attached to Ebor Public School under the Early Action for Success initiative, and individual professional development activities attended by one principal and shared with the other SGLA principals, such as the certificate in instructional leadership).

Professional development undertaken by SGLA staff also aligns with the group's aims to deliver 21st century learning opportunities to their schools. All five schools in the network have committed to undertaking eSmart training in 2016⁴⁰ (a behaviour change initiative to improve cyber safety and wellbeing in schools), which aligns with their commitment to giving students a 21st century learning experience. Furthermore, the SGLA received a \$15,000 grant from Google (who have partnered with the eSmart program) which will cover more than 75 per cent of the total cost of the eSmart training across the five schools for four years. Members have also undertaken Google apps and Microsoft 365 training to facilitate online collaboration.

38 For more details, refer to: Bruniges, 2012, 21st century skills for Australian students. Sydney: http://www.dec.nsw.gov.au/documents/15060385/15385042/21C_skills_for_Australian_students_141112.pdf

39 Since forming in 2013, they have received grants including \$12,000 Rural and Remote Education funding grant (2014), Google \$15,000 grant (2015), \$20,000 Rural and Remote Primary Curriculum leadership grant (2014) to support and develop leadership capabilities across the SGLA, \$6,000 Educational Services Grant to development their combined learning and support team (2015) and a \$2,500 Creative Arts Unit grant used for a creative arts camp.

40 For more information refer to <https://www.esmartschools.org.au/Pages/About.aspx>

The SGLA is also encouraging a collegiate and collaborative approach among students across the five schools in the network. Using video-conferencing and online resources (such as Edmodo, an online social learning network), they have created a virtual extended classroom enabling students to work collaboratively with peers across the five schools.

Benefits

Principals in SGLA believe that involvement in the network gives their students access to a broader range of teacher expertise. One principal taught a student from Kindergarten to Year 3; that student now receives tuition from multiple teachers with a range of skills. Students take direction from whoever is teaching, both online and in person, for sporting and cultural activities, and are familiar with the staff across the network. Use of video-conferencing and shared learning platforms such as Edmodo in year-based classes has provided extra learning opportunities for the students on subjects that were previously not feasible to deliver at individual schools. For example, students are learning coding in year groups as a result of teacher training through the network. Furthermore, the technology enables students to collaborate as a broader peer group without teacher assistance.

The SGLA is overcoming challenges associated with analysing data from schools with small student populations. On some occasions, individual schools have as few as one student taking NAPLAN. The SGLA combine various data sources (e.g. NAPLAN and year-based mathematics assessments) by grouping data across the network and enabling students' performance to be measured against other students in the network. The SGLA is also developing online joint assessments for Years 5 and 6 mathematics students, linked to the scope and sequence of the subject. Students will be tested at three points in the year to enable teachers to develop early intervention strategies for those falling behind. Baseline spelling and reading data will also be collected before the end of 2015 from the South Australian Spelling Test and the Waddington Diagnostic Standard and Advanced Reading and Spelling Tests.

The SGLA has enhanced the system leadership skills of some of its teachers since the formation of the network. In collaboration with Ebor Public School's instructional leader, staff from across the alliance have developed tools to support the writing and implementation of units of work for K-6 students. Teachers of Early Stage 1 and Stage 1 classes at Ben Venue Public School (a school outside of the network) have adopted some of these units of work. Other smaller schools are also recognising the effectiveness of SGLA, and have begun enquiring into how they might be able to achieve similar success and teachers from schools outside the network are attending SGLA professional development days.

Sustainability

As the Education Network has invested in professional learning and strengthening structured collaboration, the sustainability of the network rests on a continued commitment to the goals outlined in the school plans of schools in the Education Network. A high level of student and parent awareness of network activities, as well as interest from other schools outside the network, should help to safeguard its continuation. Finally, the use of technology (albeit reliant on members acquiring the skills to use this technology) helps to overcome the geographical distance between schools.

The Orange Cowra Ascending Education Network

The Orange Cowra Ascending Education Network (OCA) was formed in 2014 between select schools in the Orange Principal Network, later expanding to include schools in the Lachlan Principal Network⁴¹. Participating schools are all located in provincial areas and it is approximately one hour's drive from the most distant schools in the group. Members include small primary schools with teaching principals with some exceptions, and include a School for Specific Purposes (SSP) for students K-12 with moderate to severe intellectual disability with a non-teaching principal, and a large primary school in Orange.

Student numbers across the schools for 2015 range from four to 115 (with the exception of the primary school in Orange with about 650 students). Numbers of teaching staff at each school vary according to school enrolments; from a fractional position up to three full-time teachers, with a lower student/teacher ratio at the SSP.

The Directors, Public Schools NSW from Orange and Lachlan, as well as a local Principal, School Leadership, routinely attend and participate in OCA activities. Although just under 20 schools currently participate in the network, the group has a core set of five or six schools that are more heavily involved in the group's activities.

Origins and aims

The OCA originated from a meeting of the Director, Public Schools NSW in the Orange Principals Network and principals of half a dozen small primary schools in 2014. As a group they discussed the issues they faced. One common issue was the difference between the career paths of teaching principals from small schools and those of executive staff from larger schools who did not teach concurrently. The concerns were that teaching principals would have less managerial and supervisory experience than executive staff in larger schools. At these small schools, with perhaps one or two other employees, principals did not have the opportunity to demonstrate leadership of larger groups. Addressing leadership in terms of opportunity and experience became the primary aim of this Education Network.

Activities

The OCA runs regular meetings each term as well as targeted activities at other times, with participants attending activities that best suit their needs. These activities include shadowing and mentoring opportunities for principals and creating stronger links with Sydney schools.

Mentoring within the local area was seen as potentially problematic as it might raise local concerns about retention of the school's senior staff. At the same time, being mentored at schools in another location within NSW was seen as enabling learning within a different environment and providing a wider range of experiences than at a local school. Being mentored in a larger metropolitan school thus provided opportunities for the principals to see first-hand how large schools operate, without creating undue concern within the school community. Shadowing and mentoring opportunities for principals have been developed through ties with schools from Sydney's Northern Beaches where schools are typically larger.

Strengthening links with Sydney schools has also provided opportunities to broaden the curriculum for students. One school developed a relationship with a Sydney school that included the school's students participating in a lunchtime Maths Olympiad led by a teacher from Sydney. The close relationship that formed across these two schools culminated in a four-day city-bush student exchange at the end of 2015. In anticipation of the event involving both urban and rural students, the principal said 'the learning experience of these students, learning about how students in other parts of NSW live will be invaluable'.

Meetings

The structure and schedule of the OCA's regular face-to-face meetings has changed over time. During the first year, day-long meetings were held each term as well as less frequent evening meetings over dinner. In 2015 the group focused on the once-per-term meetings held at schools. These school meetings were typically organised and hosted on a rotating schedule by participating schools.

Each meeting included a tour of the host school, where the principal would discuss programs currently being implemented. The meetings hosted guest speakers (including a local Principal, School Leadership) with topics nominated by one or more of the principals prior to the meeting, covering various aspects of leadership.

⁴¹ The schools in the network as at Term 4, 2015 include: Bedgerebong, Canobolas, Caragabal, Carcoar, Cargo, Cudal, Cumnock, Euchareena, Eugowra, Holman Place School, Holmwood, Koorawatha, Lyndhurst, Manildra, Mandurama, (Orange Public School), Spring Hill, Spring Terrace and Woodstock Public Schools.

For example, the meeting in Term 3, 2015 had two guest speakers: a local health worker who spoke about managing stress and dealing with change in the workplace, and an assistant principal from a local primary school who reported on some components of a leadership training program she attended. The session also included a video conference with the Sydney primary school working on the co-development of the city to bush exchange. Another meeting also invited the School Administration Managers and included a session (on school finances) specifically designed to assist them.

Network funding covers relief for teaching principals attending the formal meetings. However, participating schools without a teaching principal, or with an administration day away from teaching, are not eligible for the funding.

Attendance at the meetings varies as competing demands mean that not all principals are able to attend all meetings. As one teaching principal articulated, 'a day out of the school is a day out of the classroom'; teaching principals were particularly mindful that days out of the classroom would impact on continuity for their students. Materials from the meetings were circulated to all members of the group through Office 365, irrespective of attendance.

Challenges

For those who combined roles as teachers and principals, there were challenges in participating in OCA activities. Although accessing casual teacher relief for a day did not appear to be a significant issue for participating schools, the loss of class time for teaching principals to participate in the Education Network's activities, in addition to other commitments where they are required to be out of the school, was perceived as problematic. This resulted in principals sometimes needing to consider carefully whether or not to participate in each non-school-based day (from all programs and initiatives) to minimise their time away from their students.

Benefits

Principals felt that the face-to-face meetings enhanced the leadership and managerial knowledge of participating principals. The group also provides participating principals with managerial experience developing, managing and chairing cross-school meetings.

In addition to the professional development components of the OCA, participants felt that the incidental learning and the cross-fertilisation of ideas through informal discussions with peers enhanced their professional networks. Attending the meetings has built professional connections between group members, such that participants connect out of session to discuss professional issues. These collegial links now extend across two principal networks.

The mentoring/shadowing component of the network has also led to an opportunity for exchange between schools. One principal has relieved in a large primary school, and another relieved for several weeks over the end of Term 3 and into Term 4 of 2015. The additional experience in management and exposure to other school practices is seen of benefit both to the visiting principals and to their school communities.

More generally, the exchange of ideas, both formally and informally, has led to schools hearing about other principals' experiences, enabling them to learn from their peers and implement new programs grounded in professional recommendations. Principals valued opportunities provided by the network to see how other schools operate and to learn about various programs and activities undertaken by schools and how they have been implemented. This exchange was seen as a good source of ideas for principals to take back to their own schools to support students' learning outcomes.

The future

A factor contributing to the sustainability of this group appears to be the transfer of responsibility and management of the group from the Director, Public Schools, to the principals who, over the course of 2014-2015, took over the development and organisation of the network. This transfer in leadership to a core group of principals who took on lead roles has enabled this group to enhance the group leadership skills of these principals in practice. Participants more heavily involved in the OCA felt strongly that it would continue well beyond 2015. After starting in one principal network, the group has expanded to include members from an adjacent principals' network. Ultimately, however, members felt that the effectiveness of the Education Network relied on participation from members themselves and that 'you get out what you put into it'.

Northern Central Groups 1 and 2

These two Education Networks originally each included five central schools and were located across the Barwon, Tamworth and Northern Tablelands principal networks. All schools are classified as provincial, except one, which is remote.

The aims of both networks are the same:

- to work collaboratively to broaden their curriculum
- to share their professional capital to increase the quality of teaching and learning, and
- to collaborate in professional learning.

Participating central schools now take part in selected activities and projects across both networks. The networks are organic and flexible, changing according to the groups' needs. As such, the two effectively operate as a single larger network with subgroups participating in various activities. Since the two networks began in 2014, the group has expanded to include three central schools. In total, there are now 13 central schools across the two groups, with enrolments ranging from about 30 to more than 300 students, located across the Tamworth, Barwon, Northern Tablelands and Western Plains Principals Networks⁴².

This case study focuses on two major projects of the combined groups: the development of a virtual science faculty and leadership skill development in current and aspiring school leaders. Seven schools participate in the virtual science faculty, eight participate in the leadership development project and two schools participate in both projects.

The virtual science faculty

Seven schools – primarily smaller (the average enrolment was just under 100) and more remote (four provincial, two remote and one very remote) – are participating in the virtual science faculty. The aim of the initiative is to overcome the challenges of fewer staff teaching science at the secondary level and of staff teaching science outside their specialisation. All participating schools deliver science as part of their secondary curriculum but some of these schools have only one science teacher.

The group aims to address issues unique to central schools with small student numbers and few, and often relatively new, teachers. The absence of science faculties at member schools and the benefits from working collegially, particularly for staff new to teaching, have been key motivators for science teachers to work together.

The virtual faculty has enabled science teachers from across the seven schools to effectively work as a team, with the benefits of having colleagues to discuss discipline-related teaching practice and lessons, and share workload, for example by sharing lesson plans and resources. Teachers hold faculty meetings at least twice per term by video conference.

A major project has been to develop an internet-based file sharing system where teachers upload lesson plans and curriculum resources. Each teacher was assigned a small number of curriculum areas according to their specialisation. This enabled all schools to access lesson materials prepared by teachers who specialise in the area. The group agreed that material on the website could be modified to contextualise lessons locally. Uploading began during the 2015 school year, and some teachers expect to rely more heavily on the resources in 2016. As one teacher said 'this has easily saved me 50 hours' work'.

Another project that the group co-developed in 2015 was the 'virtual lab room' to help teachers catalogue and manage their laboratory equipment. Teachers upload photographs of their laboratory items onto a shared website where virtual faculty colleagues can discuss the utility and application of these items. This has been important to support teachers, particularly those teaching outside of their specialisation, to plan student practicals.

Given the small student numbers in many of these schools, the teachers are also keen to deliver joint lessons. The faculty have developed a two-year scope and sequence for science for staged classes. The plan in 2016 is to enable students from different schools to come together at least once a year in a virtual 'class' or for a combined school excursion.

⁴² Participating schools include Ashford, Barraba, Bingara, Bundarra, Boggabilla, Collarenebri, Emmaville, Goodooga, Guyra, Manilla, Mungindi, Uralla and Walcha Central Schools.

Benefits for students

The virtual science faculty has enabled science teachers from different schools to share teaching and learning materials for their students. Students also benefit from lessons prepared by a variety of teachers, particularly from those developed by teachers working in areas of expertise.

Leadership development

Another major initiative undertaken by these two networks is leadership skills development for current and aspiring school leaders. One key initiative has been the development of a professional learning community of school principals, which started with three schools and increased to seven by the end of 2015. This was initiated after one of the participating principals who had attended training in Canada about professional learning communities saw the benefit of using the approach locally. The principals in this group meet face to face once per term, at a different school for each meeting. The meetings follow a similar format: each of the principals updates the group about events in their school since the previous meeting, they discuss emergent or ongoing issues, organise and plan professional learning activities, discuss future joint initiatives and receive a tour of the host school.

Several new projects have been developed by this professional learning community. One of the principals developed an aspiring leaders and succession program, and following discussion with the others in the group, extended invitations to staff from other schools. This resulted in 16 aspiring leaders participating in the program in 2015. Other activities include a joint staff development day in Term 3, 2015 and a beginning teachers' conference. The group is also looking at the feasibility of introducing additional shared curriculum models akin to the virtual science faculty.

Benefits

While principals from central schools in the Education Network had worked together in the past, the program introduced more informal collaboration across schools. Principals built stronger connections with colleagues (with contact by phone and email), enabling them to discuss issues with peers where they may not have done so previously. Interactions across schools have also led to greater knowledge about approaches taken by other schools to teaching and learning, for example, the types of programs running in key learning areas and the success of these programs, student wellbeing initiatives, and issues regarding system reforms. Tours of schools enabled visiting principals to observe programs in action and invited discussions about the merits of these programs. The view of participants in the network's leadership component was that schools are beginning to see the benefits of greater collaboration.

Challenges

The first two years of the leadership component of the Education Network was seen as establishing the groundwork for the group. However, as one principal stated, it will be important for the group to collaborate on more specific issues across the schools rather than continuing with the same approach used to date. One suggestion was that the group could start to look at how schools are responding to aspects of major system reforms and work together to address challenges common to schools in the networks.

The future

Central schools face unique challenges. The distance between schools and the relatively small numbers of senior students means that they need to develop unique, local solutions to address these challenges. Those interviewed for this case study agreed that the flexibility and breadth of this network had helped to overcome some of the challenges unique to central schools. Schools in these two networks have flexibly pooled resources, notably through the virtual science faculty which has developed, and shared resources for current and future science teachers at central schools.

The BIJOU Education Network

The BIJOU Education Network (BEN) officially formed in 2014. Most of the schools in the network had some contact previously, mostly through combined sporting teams for regional school competitions, for school excursions, and some shared professional learning. The formalised network consists of seven schools, six primary and one central⁴³. The most northern schools are located roughly a one-and-a-half-hour drive from the most southern. Student numbers across the schools for 2015 ranged from 16 to 138, with the number of teaching staff (excluding the principal) ranging from none to seven.

Aims

The primary aim of BEN is to build the capacity of staff to meet student needs better. Principals from the three lead schools noticed that over time, specialist support services, notably literacy consultants, creative and performing arts consultants, and maths and various other consultants - had either retired and not been replaced, moved to a bigger regional office, or funding was not renewed for these positions. The principals decided to combine financial and human resources to provide professional development for school staff in the network.

In 2014, the then Director, Public Schools from the Riverina encouraged the network to engage in professional development activities to increase the awareness and use of technology as a teaching tool. After attending an IWBNet conference (Bring Your Own Device) in Melbourne in 2013 and the SchoolTechOz Conference in 2014, with the then Director, Public Schools in the Riverina, principals agreed that better use of technology was one way to overcome the challenges associated with the loss of specialist literacy, numeracy and various other education consultants in supporting all student learning.

Activities

Members in BEN have participated in various capacity-building activities, including combined staff development days, shared professional learning including, learning forums, staff mentoring and interstate instructional site-visits, policy writing; inquiry-based learning and leadership workshops. In 2015, for example, the principals from the three lead schools in BEN travelled with their entire teaching and administration staff to a Melbourne school, Manor Lakes P-12 College, for a staff development day. The topics ranged from maximising the use of mobile devices and using technology to teach students with different learning styles to enquiry-based learning and developmental play. The training sought to develop practical knowledge of how to get mobile devices (iPads) into schools and how to use them to ensure the students derive the maximum benefit. The lead principals subsequently decided that to ensure that no student be disadvantaged, each school would purchase iPads to be used by all students.

The three lead principals in BEN schools also connected with an iLearn session presenter (a Digital Leader, an Apple Distinguished Educator and a technology expert in the Victorian education system) and developed a plan for the educator to visit each school separately to evaluate need and assist in implementing the technology. Education sessions for the staff and parents were held at each school to gain staff and parental support – something that the principals all agreed would be critical to the success of the program.

The BEN students participated in joint cultural activities such as 'Aboriginal for a day' for NAIDOC celebrations, and joint student-centred activities like combined school excursions and sports carnivals as a result of the network. There have been other activities where each school in BEN selected students to participate in the Schools Spectacular, ASPIRE Me, and other drama, art, and young leaders' camps. These camps are supervised by staff and are a social occasion for students. Participation in some or all of these events would be difficult without network support, as schools might not be able to afford transport and staff costs. Instead, schools in the network have been able to pool resources to make participation economically viable for all schools in BEN.

Benefits

Participants have intimated that the increase in collaboration between principals, teachers and other staff since the introduction of BEN has contributed to integrated school planning, stronger professional networks and knowledge-sharing (particularly around the use of technology in teaching), and connections between students from schools in the network.

⁴³ The network comprises Berrigan, Jerilderie and Urana Public Schools, with intermittent involvement from Savernake, Barooga and Tocumwal Public Schools and Oaklands Central School.

Principals have adopted an integrated school planning approach, drawing on a shared vision for the schools' strategic directions. Targets for staff development days are set in advance and the lead principals work together to develop their school plans. The schools have also undertaken integrated school curriculum planning as a result of being in BEN. In 2015, for example, two teachers at different schools co-planned a unit of work for two Year 3 subjects in advance of a joint interstate excursion planned for the network.

Participation in BEN activities has enhanced professional networks between principals, teachers and administration staff at different schools. Principals believe that the cultivation of strong professional relationships underpin the achievements of the network, including sharing strategies (e.g. strengthening approaches to parental and community engagement) and problem-solving on challenges out of session by phone and email. It has also extended to teaching staff, who report that they are more likely to initiate contact with other teachers in BEN and believe that their teaching strategies have broadened since participating in network activities. Teachers suggested that they now belonged to a 'bigger staff' that extended beyond the size and location of their own school.

Teachers' system leadership skills have also been enhanced; those who received technology training have provided teachers from schools outside BEN with knowledge acquired from this training. Recently two Student Learning Support Officers from Berrigan Public School shared their knowledge about use of technology in the classroom with teachers in Deniliquin.

Teachers in BEN also suggested that student engagement has improved as a result of the technology training they received. One teacher explained:

"Students are certainly more engaged and are using the apps more independently. They are working in collaborative teams or partnerships, which is making them more aware of teamwork skills and are able to discuss these skills."

Other teachers suggested that primary students had been able to extend their friendship circles beyond their immediate school, which will assist in their transition to secondary school. A group of Year 6 students in one of the schools in BEN said that they have made new friends and now feel less intimidated about the transition to high school.

Challenges

Participants noted the challenges typically associated with small rural schools, namely travel across large geographical distances and the affordability and feasibility of people attending professional development events. Teachers at schools in BEN usually have to travel for professional development courses as it is not financially viable for training providers to come to the school. The network has overcome some of these challenges by sourcing high quality professional learning, encouraging higher numbers of participants and making events a viable learning and networking opportunity.

The future

The lead principals agreed that the network has numerous strategic advantages, including driving integrated school planning and collaborative professional development, and they wanted their network to be viewed as a 'beacon of best practice'. While strong leadership by the Director, Public Schools from the Riverina played a role in the initial success of BEN, participants acknowledged that schools in the network needed to continue to build and maintain professional connections.

The lead principals in BEN agreed that sustainability requires participation, and that one way to achieve this is by expanding the network. To that end, the lead schools have recently submitted a funding proposal with a larger public school in the area built around mentoring and the 'bigger staff' concept. Principals have previously had to look at their own school budgets to see where they can allocate funding for network-related activities and a lack of these funds might be an impediment to continuing the network into the future.

Appendix D: Retention analysis for teachers with new incentive measures

To investigate the impact of new incentives on teacher retention, the number of days teachers remained at a school following the introduction of the incentives was calculated and compared to the retention times of teachers at the same schools before the new incentives were introduced.

If the new incentives were having an impact on teacher retention, teachers would remain at four, six and eight-point schools longer after the introduction of the Blueprint compared to before. This was assessed using a 'multilevel multistate competing risks discrete time survival model' to account for the complexity that a teacher could move to a different school.

Data

Teachers' appointment records were extracted from the Department's teacher workforce database, specifically for rural and remote schools. Permanent teacher appointment records were extracted covering the period January 2008- March 2016 and included the start date of that appointment if it was before 1 January 2008. Temporary teacher appointments spanned January 2001-March 2016 to account for teachers who may have been on multiple prior temporary contracts at the same school as they were at in 2008. Only records pertaining to appointments at four, six and eight-point incentive schools (based on classification at 1 January 2014) were used. Where multiple appointments at the same school existed for a teacher, the records were combined, such that the start and end dates represented the beginning of the first appointment and the end of the latest appointment, respectively.

The final sample contained a total of 7,145 appointment records for 4,631 teachers. It should be noted that one teacher can have multiple appointment records as teachers may move to another school for a new appointment or they may be employed across more than one school at one time. Each record represents the duration of appointment at a single school for a teacher and includes (1) the start and end date of the appointment, (2) whether the appointment is permanent or temporary, (3) the school code, (4) whether the school is in provincial or remote or very remote area, (5) the employee number, (6) the position number, (7) the type of incentive (50%, 6-point or 8-transfer point incentive) that the school offers and (8) whether the teacher moves to another rural and remote school or is lost to the rural and remote teacher workforce after leaving a school.

Method

To estimate the effect of the new incentives on the retention of teachers, the time to termination of appointment at rural and remote schools was analysed using Stata version 14 to estimate a competing risks regression model. In the presence of competing risks, the Kaplan-Meier method of estimating the survivor function for the event of interest is biased because of the violation of the key assumption that teachers whose survival time is censored will experience the event of interest if the follow-up period is long enough. This does not hold if competing risks are present, as the occurrence of the event of interest is precluded by the competing risks events. In this study, a teacher's termination of appointment at a rural or remote school (event of interest) can be obstructed by that teacher's movement to another rural or remote school (competing event). As a remedy, the cumulative incidence function (CIF) of the event of interest, which is defined as the marginal failure probability function of termination of appointment at a rural or remote school, is widely used in competing risks analysis.

To directly estimate the effect of a covariate on the CIF, Fine and Gray (1999) proposed the proportional sub-distribution hazards model which aims at modelling the cumulative incidence for the event of interest (i.e. termination of appointment at rural and remote schools)⁴⁴. Denoting the time to the first event of any type occurs in a teacher by T , the sub-distribution hazard of the event of terminating the appointment at rural or remote schools is defined as the instantaneous risk of experiencing the event of interest given that the teacher has not experienced the event of interest and is specified as:

$$h_1(t) = \lim_{\Delta t \rightarrow 0} \left\{ \frac{P(t < T \leq t + \Delta t \text{ and event of interest} \mid T > t \text{ or } (T \leq t \text{ and not event of interest}))}{\Delta t} \right\}$$

The advantage of modelling the sub-distribution hazard is that one can readily calculate the CIF for the event of interest from it. The CIF is defined as:

$$CIF_1(t) = 1 - \exp\{-H_1(t)\} \quad \text{where} \quad H_1(t) = \int_0^t h_1(t) dt \quad \text{is the cumulative sub-distribution hazard.}$$

The CIF is related to the sub-distribution hazard through the following formula:

$$h_1(t) = \frac{d\{CIF(t)\}}{dt * \{1 - CIF(t)\}} \quad (\text{Equation 1})$$

which can be interpreted as the change in CIF relative to 1 minus CIF. A proportional hazards assumption is imposed on the sub-distribution hazard such that:

$$h_1(t) = h_{1,0}(t) \exp(b_1 x_{1,1} + b_2 x_{1,2} + b_3 x_2 + b_4 x_{1,1} x_2 + b_5 x_{1,2} x_2 + b_6 x_{3,1} + b_7 x_{3,1} x_2 + b_8 x_4)$$

where

- $h_{1,0}(t)$ is an unspecified baseline sub-distribution hazard function;
- $x_{1,1}$ represents whether the school offers six-point incentive;
- $x_{1,2}$ represents whether the school offers eight-point incentive;
- x_2 indicates whether the appointment record is after 1 January 2014;
- $x_{3,1}$ represents whether the school is in remote or very remote location;
- x_4 represents whether the appointment is permanent or temporary; and
- b 's are the regression coefficients.

Similar to the Cox regression model, the model is semiparametric because the baseline sub-distribution hazard function is left unspecified. The coefficients are obtained by maximising the log-pseudo-likelihood function based on the modified risk sets where teachers are retained even after they experienced the competing event. The cluster-robust standard errors are reported to account for the correlation between the multiple appointment records for a teacher.

For model interpretation, the exponentiated coefficient, $\exp(b)$, gives the sub-distribution hazard ratio. Since the proportional sub-distribution hazards model models differences in the CIF as effects of covariates, the sub-distribution hazard ratio compared the estimated CIF between two groups of teachers by means of the ratio of their relative changes at any time point. For a categorical variable, a sub-distribution hazard ratio of "x" means that at any time point, the sub-distribution hazard estimated for one group is "x" fold the sub-distribution hazard estimated for the reference group. A sub-distribution hazard ratio significantly greater one indicates that one group of teachers has a significantly higher risk of terminating the appointment at rural or remote schools than the reference group.

⁴⁴ Fine, F and Gray, R 1999, 'A Proportional Hazards Model for the Subdistribution of a Competing Risk', *Journal of the American Statistical Association*, vol. 94, no. 446, pp. 496-509.

Results

The proportional sub-distribution hazard model analyses the time to the termination of appointment at rural or remote schools while controls for the fact that teachers may move schools before the event of interest occurs. To ensure every teacher is followed up for a sufficient period of time, we excluded any teachers with the first appointment record starting on or after 1 January 2013 such that the follow-up time is at least three years for all teachers. The selection of the three year follow-up period is based on the median time to termination of appointment at rural or remote schools which is 1.9 years for the 7,145 teachers in the sample. It is important to recognise that this creates two potential sources of bias:

1. The cut off excludes short-term tenures that began and ended between 1 January 2013 and 31 December 2014, potentially increasing the pre-Blueprint sub-distribution hazard and biasing against the null.
2. The cut off excludes teachers that began tenure at a school between 1 January 2013 and 31 December 2014, and are either still at the same school or terminated before March 2016. This could potentially lower the post-Blueprint sub-distribution hazard and bias towards the null.

In subsequent years, as there is more time for follow up post introduction of the Blueprint, the cut off will be able to be moved to 1 January 2014. As such, the results of the present analysis are preliminary and should be treated with some caution.

We also excluded teachers who had their first appointment record starting before 1 January 2008; this was to avoid capturing any effect from other intervention measures that could have an impact on the risk of termination of an appointment. The final data used for the analysis contained 2,909 appointment records from 2,027 teachers. The data was fitted to the proportional sub-distribution hazard model with the results presented in Table D1 below.

Table D1:

Estimates of subdistribution hazard ratios from the subdistribution hazard model

Variable	Parameter	Sub-distribution hazard ratio (SHR)	Standard error	p-value
6 point incentive vs 50% subsidy	exp (b ₁)	1.053	0.087	0.529
8 point incentive vs 50% subsidy	exp (b ₂)	1.113	0.143	0.405
50% subsidy x post-period	exp (b ₃)	0.520*	0.157	0.031
6 point incentive x post-period	exp (b ₄)	1.267	0.523	0.566
8 point incentive x post-period	exp (b ₅)	1.006	0.593	0.992
Remote/very remote	exp (b ₆)	1.217*	0.110	0.030
Remote/very remote x post-period	exp (b ₇)	1.361	0.519	0.419
Temporary appointment	exp (b ₈)	1.334*	0.090	<0.001

Note: * Represents that the sub-distribution hazard ratio is significant at 5% significance level.

The results in the table indicate that before the introduction of the new incentives under the Blueprint, there was no difference in the risk of leaving a school between 50 per cent rental subsidy schools (i.e. four-point incentive) and either six-point or eight-point schools and the 50 per cent rental incentive school. After the introduction of the new incentives under the Blueprint (i.e. at 1 January 2014), schools eligible for the 50 per cent rental subsidy had a significantly lower risk of teachers terminating their appointment than previously ($\exp(b_3)=0.52$, $p=0.031$). In other words, the risk after the introduction of the 50 per cent rental subsidy was about half of the risk before its introduction for eligible schools. For the 6-point and 8-point incentive schools, the sub-distribution hazard ratios were $\exp(b_3)+b_4=0.659$ ($p=0.125$) and $\exp(b_3)+b_5=0.523$ ($p=0.195$) respectively. This suggests that the new incentives for those schools have not had a significant impact on teacher retention.

Appendix E: Fixed effects models for attendance

Attendance data

School-level attendance rates were sourced from the return of absences census conducted in the final week of Term 2 over the period 2006-2015. The data has a panel data format and contains cross-sectional time series of yearly observations for each school. Data was separately extracted for primary students (Years 1-6 and primary support class students) and secondary students (Years 7-10 and secondary support students).

Analysis

Method

A fixed effects model of the following form is estimated:

$$\ln\left(\frac{p_{it}}{1-p_{it}}\right) = b_0 + b_1x_{1it} + b_2x_{2it} + b_3x_{3it} + b_4x_{4it} + b_5x_{5it} + b_6x_{6it} + b_7x_{7it} + b_8x_{8i} * b_9x_{9t} + u_i + e_{it}$$

where

- p_{it} is the attendance rate for school i in year t ;
- x_{1it} represents number of FTE students enrolled at a school at school i in year t ;
- x_{2it} represents the FOEI value for school i in year t ⁴⁵;
- x_{3it} represents the proportion of male students among total students at school i in year t ;
- x_{4it} represents the proportion of Aboriginal students among total students at school i in year t ;
- x_{5it} represents whether school i has participated in the Connected Communities Strategy in year t ;
- x_{6it} represents whether school i has hosted a Clontarf Academy in year t ;
- x_{7it} represents whether school i has participated in the Remote School Attendance Strategy in year t ;
- x_{8i} represents whether school i is in a metropolitan, provincial or remote/very remote location;
- x_{9it} represents whether the Blueprint has been implemented in year t ;
- u_i represents the fixed school effect which is constant over years;
- e_{it} represents the school-specific residual error term and $e_{it} \sim N(0, \sigma^2)$

Since the attendance rates are percentages that are bounded by 0 and 1, they need to be logit transformed to map the original values to the real line before fitting the fixed effect panel data model.

The dependent variable in the model is the logit of the school attendance rate. The time-varying independent variables include dummy variables indicating whether the school has participated in the Connected Communities Strategy, hosted a Clontarf Academy or participated in the Remote School Attendance Strategy, (2) the proportions of Aboriginal and male students among all students, (3) the number of students enrolled as an indicator of school size, and (4) school FOEI values as an indicator of school SES. The models also include an interaction term between a time-invariant factor variable for school location (i.e., metropolitan, provincial or remote/very remote) and a time-varying variable for the post-implementation time period of the Blueprint (i.e., 2014 onwards). In addition, the model contains a fixed effect, which accounts for any unobserved school effect that is time-invariant and is correlated with the independent variables, and a residual error term, which is assumed to be normally distributed with constant variance.

⁴⁵ FOEI values are only available from 2012 onwards. Prior to 2012, the 2012 FOEI value was used.

A robust estimator is used in calculating the standard errors for the parameter estimates to account for any within-school serial correlation or heteroscedasticity in the residual errors. The presence of first-order cross-sectional dependence was tested and subsequently accounted for using a within estimator based on Cochrane-Orcutt transformation of each panel.

The test of whether the Blueprint has had an impact on school attendance is the significance of the interaction term between school location and exposure to the Blueprint. A regression coefficient for this interaction of greater than one implies that the introduction of the Blueprint has had a positive impact on the attendance rate in provincial or remote/very remote schools.

Interpretation

For model interpretation, the change in school attendance rate at provincial or remote/very remote schools after the introduction of the Blueprint, relative to the change in metropolitan schools, is obtained by calculating the change for each school over time and averaging across all schools. This can be computed using the following formula:

$$\frac{b_1}{N} \sum_i \left[\frac{\sum_t p_{it}(1 - p_{it})}{T_i} \right]$$

where N represents the total number of schools in the analysis and T_i represents the number of time periods with an observed attendance rate for school i.

Estimation

Stata 14 was used to perform the analysis. The estimates and whether they were significant at a five per cent level of significance are reported in Table E1 below.

Results

Variables		Primary attendance	Secondary attendance
Blueprint	Provincial	0.045*	0.004
	Remote/very remote	0.107*	-0.002
FOEI		-0.0012*	-0.001
School size		-0.0002*	0.00004
% of male students		0.023	-0.154
% of Aboriginal students		-0.207*	-1.289*
Connected Communities		0.145*	-0.001
Clontarf		N/A	0.0587
Remote School Attendance Strategy		0.025	-0.154

Note: * Indicates the parameter estimate is significantly different from zero at a 5% significance level.

Table E1:

Results of fixed effects panel data models

Appendix F: Technical specifications of multilevel regression analysis of the FoL teacher survey

Analysis was performed on the 2014 and 2015 FoL teacher surveys to understand the relationship between teachers' attitudes towards the 'drivers of student learning' from different locations (metropolitan, provincial and remote and very remote).

As it was expected that each teacher's opinions on the 'drivers of student learning' may have been influenced by their experiences at their respective schools, the responses of individual teachers within a school could be correlated. To ensure that the model accounted for school-level clustering, we implemented a multilevel model that allowed the intercept (β_{0j}) term to vary across schools. Furthermore, we wanted to test whether changes in teachers' attitudes in remote and very remote schools from 2014 to 2015, relative to teachers' attitudes in metropolitan schools in 2014 and 2015, were significantly different (in other words, had the gap between remote and very remote teachers attitudes of the drivers of student learning improved relative to metropolitan teachers attitudes between 2014 and 2015?).

STATA software version 14 was used to perform a multilevel regression analysis. To ensure against heteroscedasticity, Vce (robust) estimation for standard errors was chosen and all results were based on normally distributed residuals. Variance Inflation Factor (VIF) tests were undertaken to check for multicollinearity.

Specifically, the model was as follows:

Multilevel regression:

Level 1 (teacher)

$$Y_{ij} = \beta_{0j} + \beta_1 x_{ij} + \beta_2 x_{ij} w_{1j} + \beta_3 x_{ij} w_{2j} + \varepsilon_{ij}$$

Level 2 (school)

$$\beta_{0j} = \gamma_{00} + \gamma_{01} w_{1j} + \gamma_{02} w_{2j} + \mu_j$$

In reduced form:

$$Y_{ij} = (\gamma_{00} + \gamma_{10} x_{ij} + \gamma_{20} x_{ij} w_{1j} + \gamma_{30} x_{ij} w_{2j} + \gamma_{01} w_{1j} + \gamma_{02} w_{2j}) + (\varepsilon_{ij} + \mu_j)$$

where:

- Y_{ij} = score for each aspect of student engagement for student i at school j (e.g., interest and motivation, relevance, rigour etc.);
- w_{1j} = Location coded 1 for Provincial and 0 otherwise;
- w_{2j} = Location coded 1 for Remote and very remote and 0 otherwise;
- w_{3j} = $L_{X_{ij}}$ Cohort status coded 1 when teacher i in school j was from 2015 and 0 otherwise;
- $\gamma_{00}, \dots, \gamma_{02}$ are the regression coefficients to be estimated;
- μ_{fi} = school-level random residual error term that captures the between-school variation left in the β_{0j} coefficients after prediction with the school-level variables;
- ε_{ij} = teacher-level random residual error term that captures the teacher-specific deviations from the predicted values.

Appendix G: Technical specifications of multilevel regression analysis of the TTFM student survey

Analysis was performed on the 2015 and 2016 TTFM student surveys to understand the relationship between students' attitudes on aspects of school engagement from different locations (metropolitan, provincial, and remote and very remote).

As each student's opinion on each aspect may have been influenced by the characteristics of their respective school, the responses of individual students within a school could be correlated. To ensure that the model accounted for school-level clustering, we implemented a multilevel model that allowed the intercept (β_0) term to vary across schools. Additionally, student-level predictors of Aboriginal status and SES were included in the model as these factors could have a bearing on student attitudes towards student engagement. Furthermore, we wanted to test whether changes in students' attitudes in remote and very remote schools from 2015 to 2016, relative to students' attitudes in metropolitan schools in 2015 and 2016, were significantly different (in other words, had the gap between remote and very remote student attitudes of student engagement improved relative to metropolitan student attitudes between 2015 and 2016?).

STATA software version 14 was used to perform the multilevel regression analysis. To correct for general heteroscedasticity, robust standard errors were used and the level 1 and 2 residuals were assumed to be normally distributed. VIF tests were undertaken to check for multicollinearity. The model used in the current study can be formally expressed as:

Multilevel regression:

Level 1 (student):

$$Y_{ij} = \beta_{0j} + \beta_1 x_{ij} + \beta_2 z_{ij} + \beta_3 a1_{ij} + \beta_4 a2_{ij} + \beta_5 x_{ij} w1_j + \beta_6 x_{ij} w2_j + \varepsilon_{ij}$$

Level 2 (school):

$$\beta_{0j} = \gamma_{00} + \gamma_{01} w1_j + \gamma_{02} w2_j + \mu_j$$

In reduced form:

$$Y_{ij} = (\gamma_{00} + \gamma_{10} x_{ij} + \gamma_{20} z_{ij} + \gamma_{30} a1_{ij} + \gamma_{40} a2_{ij} + \gamma_{50} x_{ij} w1_j + \gamma_{60} x_{ij} w2_j + \gamma_{01} w1_j + \gamma_{02} w2_j) + (\varepsilon_{ij} + \mu_{0j})$$

Where:

- Y_{ij} = score for each aspect of student engagement for student i at school j (e.g., interest and motivation, relevance, rigour etc.);
- $w1_j$ = School location coded 1 for Provincial and 0 otherwise;
- $w2_j$ = School location coded 1 for Remote and very remote and 0 otherwise;
- x_{ij} = Cohort status coded 1 when student i in school j was from 2016 and 0 otherwise;
- z_{ij} = Aboriginal status coded 1 when student i in school j had Aboriginal status and 0 otherwise;
- $a1_{ij}$ = SES status coded 1 when student i in school j was from a medium socio-economic background and 0 otherwise;
- $a2_{ij}$ = SES status coded 1 when student i in school j was from a high socio-economic background and 0 otherwise;
- $\gamma_{00}, \dots, \gamma_{02}$ are the regression coefficients to be estimated;
- μ_{0j} = School-level random residual error term that captures the between-school variation left in the μ_{0j} coefficients after prediction with the school-level variables;
- ε_{ij} = Student-level random residual error term that captures the student-specific deviations from the predicted values.

Appendix H: Technical specifications of multilevel regression analysis of NAPLAN performance for Year 5 and 9 students between 2011 and 2015

Student level NAPLAN reading and Numeracy performance scores for Years 5 and 9 for years 2011 to 2015 to determine whether remote and very remote and provincial students differed significantly to metropolitan students with regards to NAPLAN performance.

As it is expected that students NAPLAN performance scores may be influenced by their own experiences at their respective schools, the scores of individual students within a school may be correlated. To ensure that our model accounts for school level clustering, we implemented a multilevel model that allows the intercept - β_{0j} to vary across schools.

For Years 5 and 9, four student-level predictors were accounted for (English as a first language [LBOTE], Aboriginal status, SEA, and gender). Location was the main school-level predictor variable of interest in the model.

STATA software version 14 was used to perform a multilevel regression analysis. To ensure against heteroscedasticity, Vce (robust) estimation for standard errors was chosen and all results are based on normally distributed residuals. Variance Inflation Factor tests were undertaken to check for multicollinearity.

Multilevel regression:

Level 1 (student):

$$Y_{ij} = \beta_{0j} + \beta_1 l_{ij} + \beta_2 a_{ij} + \beta_3 s_{ij} + \beta_4 g_{ij} + \varepsilon_{ij}$$

Level 2 (school)

$$\beta_{0j} = \gamma_{00} + \gamma_{01} w_{1j} + \gamma_{02} w_{2j} + u_{0j}$$

In reduced form:


$$Y_{ij} = (\gamma_{00} + \gamma_{10} l_{ij} + \gamma_{20} a_{ij} + \gamma_{30} s_{ij} + \gamma_{40} g_{ij} + \gamma_{01} w_{1j} + \gamma_{02} w_{2j}) + (\varepsilon_{ij} + u_{0j})$$

Where:

- Y_{ij} = NAPLAN performance score for student i at school j
- l_{ij} = LBOTE status coded 1 when student i in school j had a language background other than English and 0 otherwise;
- a_{ij} = Aboriginal status coded 1 when student i in school j was from an Aboriginal or Torres Strait Islander and 0 otherwise;
- s_{ij} = SES status is a continuous predictor whereby a lower score represents a higher level of socioeconomic disadvantage;
- g_{ij} = Gender status coded 1 when student i in school j was male and 0 otherwise;
- w_{1j} = Location coded 1 for Provincial and 0 otherwise;
- w_{2j} = Location coded 1 for Remote and very remote and 0 otherwise;
- $\gamma_{-00}, \dots, \gamma_{-02}$ are the regression coefficients to be estimated
- γ_{00} = average predicted NAPLAN performance score for a student with a prior NAPLAN score of 0,
- u_{0j} = school-level random residual error term that captures the school-level variation left in the β_{0j} coefficients after prediction with the school-level variables;
- ε_{ij} = student i -level random residual error term that captures the student-specific deviations from the predicted values.



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