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DEPARTMENT OF EDUCATION

Evaluation of the Rural and Remote Education Blueprint – Final report

Centre for Education Statistics and Evaluation

Centre for Education Statistics and Evaluation

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Executive summary

Research shows that students in rural and remote (non-metropolitan) areas of NSW tend to underperform on major educational indicators when compared to students in metropolitan locations. To address this disparity, the NSW Minister for Education released Rural and Remote Education: A Blueprint for Action ("the Blueprint") in November 2013. The Blueprint committed $80 million over four years to implement a broad set of actions in four focus areas:

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

This final evaluation report examines the implementation and impact of actions contained in the Blueprint. It also examines important education performance indicators to assess any changes in the magnitude of the gaps between rural and remote students and metropolitan students since the launch of the Blueprint.

Data sources in this report

For this final report, we collected and analysed data from the following sources to determine the overall impact of the Blueprint:

- interviews with department executives responsible for the implementation of the Blueprint
- interviews with all Networked Specialist Centre (NSC) facilitators attending to schools in rural and remote areas
- interviews with principals from six Education Networks ("Networks") from rural and remote areas
- a group interview with the Aurora College executive
- responses from:
  - the *Tell Them From Me* (TTFM) student survey
  - the *Focus on Learning* (FoL) teacher survey
  - the annual CESE principal survey
  - a survey of Aurora College students
  - surveys of recipients of the 50 per cent rental subsidy, and the teach.*Rural* scholarship
- student data on school attendance, NAPLAN, student retention to Year 12 and HSC awards.

While we examined changes in outcomes over time, in some cases we were unable to attribute these changes directly to the Blueprint. This is because the Blueprint was implemented at the same time as many other policy initiatives including Great Teaching, Inspired Learning; Local Schools, Local Decisions; and Early Action for Success.

Evaluation findings

Table 1 provides a summary response to the evaluation questions, "What elements of the reforms are working well?", and "What aspects can be improved in the future?". Table 2 provides a summary response to the evaluation question, "Are the reforms achieving the desired outcomes for rural and remote students?". These evaluation questions were not necessarily asked about each individual action, but instead were used to investigate the impact of the Blueprint as a whole.

Table 1:

Summary of what worked and what could be improved by Blueprint action examined in evaluation

Action	Section in report	What worked?	What issues have emerged and what could be improved?
7.2 Actions to attract and retain teachers and school leaders to rural and remote schools	**Section 3: Teacher incentives**	• Recipients of the rental subsidy felt it positively affected their decision to take up a position in a rural and remote area. More than half of the recipients in 2017 had taken up the subsidy to move to a more rural and remote area. • The survey of teachers suggested that the set of available incentives was a motivating factor for a minority of teachers who "would consider" moving to a more rural and remote location.	• The set of available incentives to move to a more rural and remote location was more attractive to less experienced teachers. • Between 2016 and 2017, there was no increase in the proportion of recipients who had taken up the subsidy to move to a more rural and remote area. • A small number of incentive recipients had moved to a "more urban" area in 2017 to take up the subsidy. • The 50 per cent rental subsidy at four-point schools had no meaningful impact on teacher retention. • Filling vacant positions with quality teachers remains a critical issue for principals in rural and remote schools. • Financial incentives should be administered fairly, transparently and with as little "red tape" as possible. • There should be greater availability of high quality Teacher Housing Authority (THA) housing for teachers. • Financial factors are one of many considerations for people thinking about moving to rural and remote areas, along with lifestyle factors related to local amenities, as well as proximity to major centres and transport, entertainment and recreational opportunities.
6.2 teach.*Rural* scholarships	**Section 3: Teacher incentives**	• The number of applicants and recipients of teach.*Rural* scholarships increased from 2014 to 2017. • The growing interest in and take-up of teach.*Rural* scholarships suggests there is a demand for this type of scholarship and that it could provide an incentive for some people to teach in rural and remote areas. • Many recipients reported that the scholarship may have influenced their decision to teach in rural and remote NSW.	• A high proportion of recipients surveyed in 2018 had planned to study education whether or not they received the scholarship. • Recipients reported that the main downside of the scholarship was the uncertainty associated with being unable to choose where they were assigned to teach.
9.1 Aurora College (virtual secondary school)	**Section 4: Aurora College**	• Enrolments in Aurora College have grown over time. • Students at Aurora College reported that they appreciate the opportunity to interact with like-minded peers.	• Principals still considered timetabling issues to be a "major challenge".
2.1 Education Networks	**Section 5: Education Networks**	• The Networks provided principals and schools with an opportunity to collaborate more effectively. • The ability of schools to tailor these Networks to their needs was seen as a key strength.	• While schools have largely used the Networks to share resources, they have not been used in the more substantial ways originally envisaged in the Blueprint.

Action	Section in report	What worked?	What issues have emerged and what could be improved?
13.1 Networked Specialist Centres (NSCs)	**Section 6: Networked Specialist Centres**	• NSC facilitators reported working effectively with schools and other services to coordinate support for students with complex needs.	• Some facilitators were unsure of their overall effectiveness in the absence of robust outcome measures. • Some facilitators expressed confusion about the scope of the role and how they could be most effective in it. • Awareness of NSCs among rural and remote principals remains low. • More could be done to promote the benefits of collaboration to staff.
1.1 and 3.1 Preschool Funding Model	**Section 7: Preschool funding and enrolments**	• Between 2013 and 2017, the number of Aboriginal 4 and 5 year olds enrolled in community preschools in rural and remote areas increased.	• Between 2013 and 2017, the number of non-Aboriginal 4 and 5 year old children from low income families enrolled only increased very slightly in rural and remote areas.
4.1 Capital works funding for rural and remote preschools	**Section 7: Preschool funding and enrolments**	• The projects funded as part of the program were anticipated to provide 662 preschool places in the relevant services. As at 28 March 2018, the current maximum capacity was 668 for those services funded under the program. • There has also been an increase in enrolments in those services over time.	• Areas for improvement were not investigated for this action.
7.3 Rural and remote mentoring program	**Appendix 4: [Teacher incentives]**	• A CESE evaluation found that the Leadership Development Initiative was a valuable program that was working well for many participants and mentors, and enhancing their leadership capacity.	• Areas for improvement were not investigated for this action.
8.2 Real or simulated NAPLAN and HSC marking	**Appendix 4: [Teacher incentives]**	• The New South Wales Education Standards Authority (NESA) has continued to provide training in NAPLAN and HSC marking to rural and remote teachers. • The number of teachers from rural and remote schools appointed for actual HSC marking increased between 2015 and 2017.	• Areas for improvement were not investigated for this action.
7.1 Rural Teacher Exchange program	**Appendix 4: [Teacher incentives]**	• N/A	• The take-up of the exchange program was too small to determine effectiveness.

Table 2:

Impact of the Blueprint by performance indicators

Education performance indicators	Is the desired outcome being achieved?
Best Start Kindergarten Assessment	• The gaps between remote students and metropolitan students have narrowed on each of the Best Start measures since the introduction of the Blueprint. However, the gaps between provincial students and metropolitan students have not reduced.
Attendance	• The gaps in school attendance between rural and remote students and metropolitan students have not reduced since the introduction of the Blueprint.
Retention to Year 12	• The gap in retention between remote students and metropolitan students has narrowed since the introduction of the Blueprint. However, the gap between provincial students and metropolitan students has not reduced.
NAPLAN	• The gaps in NAPLAN scores between rural and remote students and metropolitan students have not reduced since the introduction of the Blueprint.
Australian Tertiary Admissions Rank (ATAR)	• The gaps in the proportion of students awarded a HSC who were ATAR eligible between rural and remote students and metropolitan students have not reduced since the introduction of the Blueprint.
Access to specialised or advanced HSC curriculum	• The gaps in the study of advanced subjects in English and mathematics between rural and remote students and metropolitan students have not reduced since the introduction of the Blueprint. • The experience of Aurora College shows promise as a new way of providing a relevant and varied curriculum for rural and remote students.
The quality of teaching	• Teachers' self-assessment suggests that the quality of teaching may have improved on some measures in provincial schools. • There is uncertainty surrounding changes in the quality of teaching in remote schools due to the low number of remote teachers.

The 50 per cent rental subsidy had little impact on teacher retention

As part of the Blueprint, the department introduced a 50 per cent rental subsidy at some four-point schools[1] with the aim of attracting and retaining teachers. Overall, our analysis found that this subsidy had no meaningful impact on teacher retention. Any change in the risk of teachers leaving those schools where the subsidy was introduced was probably very small to small, and may have been either positive or negative.

Aurora College provides an important opportunity for gifted and talented students in rural and remote areas

Overall, Aurora College has provided greater opportunities to gifted and talented students from rural and remote areas to study specialist subjects. Enrolments in Aurora College have grown from 2015. Previously identified issues related to timetabling are being addressed, and the proportion of students who reported missing a class at their home school due to timetabling issues dropped from around 89 per cent (95% CI [76, 97]) in 2015 to around 67 per cent (95% CI [59, 74]) in 2017. However, we estimated that in 2017 around 78 per cent of principals (95% CI [58, 91]) who had students at Aurora College still considered timetabling issues to be a "major challenge", compared to 81 per cent (95% CI [42, 97]) in 2016. Students at Aurora College reported that they appreciate the opportunity to interact with like-minded peers. If given the choice, around 64 per cent (95% CI [56, 72]) of students would choose to go to Aurora College again, if they were to start the school year over.

Education Networks and Networked Specialist Centres have had little impact

Education Networks provided principals and schools with an opportunity to collaborate more effectively. The ability of schools to tailor these Networks to their needs was seen as a key strength. However, while schools have largely used the Networks to share resources, they have not been used in the more substantial ways originally envisaged in the Blueprint, for example to increase community engagement or share budgets.

Networked Specialist Centre (NSC) facilitators reported working effectively with schools and other services to coordinate support for students with complex needs. However, some facilitators were unsure of their overall effectiveness in the absence of robust outcome measures, and some facilitators expressed confusion about the scope of the role and how they could be most effective in it. Furthermore, the awareness of NSCs among rural and remote principals remains low, with around one third of principals in 2017 reporting having an NSC available to them. A revised operating model for NSC facilitators was developed with the School Services Directorate and delivered in May 2018. The new model seeks to provide more clarity for facilitators and schools on facilitators' role and function. This model was outside of the scope of the evaluation. The effectiveness of the new model could be evaluated in the future.

Enrolments of 4 and 5 year old Aboriginal children in community preschools in rural and remote areas have increased

The Blueprint introduced a new funding model for community preschools in 2014. This preschool funding model targeted 4 and 5 year olds. Between 2013 and 2017, the number of Aboriginal 4 and 5 year olds enrolled in community preschools in rural and remote areas increased by 45 per cent. The number of non-Aboriginal 4 and 5 year old children from low income families enrolled increased by 8 per cent. These increases occurred despite an overall decline in the total population in these areas over time.

1 The department uses a points system to attract teachers to schools in rural and remote locations. Service in eight, six and four-point incentive schools allows a transfer to a preferred location after a minimum period of service has been completed.

The gaps between rural and remote and metropolitan students have generally not reduced on key indicators related to student achievement

Our analysis shows that the gaps in **NAPLAN scores** and **school attendance** between rural and remote students and metropolitan students have not reduced since the introduction of the Blueprint. The gap in **retention** between remote students and metropolitan students has narrowed since the introduction of the Blueprint. However, the gap in retention between provincial students and metropolitan students has not reduced. The gaps between remote students and metropolitan students have narrowed on each of the measures of the **Best Start Kindergarten Assessment** (Best Start) since the introduction of the Blueprint. However, the gaps between provincial students and metropolitan students have not reduced.

On **NAPLAN scores**, we estimated that the mean NAPLAN Reading and Numeracy scores for students in remote schools in 2017 were close to those for students in remote schools in 2013. Our results also showed that the changes in the gaps between remote and metropolitan locations from 2013 to 2017 were probably all very small.

Following the introduction of the Blueprint, the change in the **attendance rate** for remote schools (primary and secondary combined) was 0.01 percentage points (95% CI [-0.13, 0.11]) less than the change seen in metropolitan schools. This represents a negligible difference; the gap in school attendance between remote students and metropolitan students did not meaningfully change.

Limitations

A number of limitations affect our ability to attribute changes in outcomes to the Blueprint. Many other policy initiatives were also implemented during the same period as the Blueprint, and may also have been responsible for driving changes.

The size of the "gap" between metropolitan and rural and remote students is dependent on factors within both of those groups, rather than only being affected by a policy such as the Blueprint that directly attempts to reduce this gap. For example, a widening of the gap may be the result of specific initiatives targeting metropolitan students rather than an indication that non-metropolitan student outcomes have declined, or that the Blueprint has not been effective.

It should also be noted that results from remote schools often need to be interpreted with caution given the small sample sizes and the resulting high degree of statistical uncertainty.

The department has implemented a range of policy reforms focused on rural and remote schools following the implementation of the Blueprint in 2014 that may also have affected outcomes for rural and remote students. Notably, the Start Strong preschool funding model was implemented in 2017, and the Rural and Remote Education Human Resources Strategy was implemented in 2018[2]. In 2019, an additional range of incentives and benefits were introduced for teachers and executives in rural and remote NSW public schools[3].

Discussion

The negative relationship between location and outcomes has persisted for decades, with a long standing gap between metropolitan and rural and remote students on a range of assessments (Halsey 2018). It is likely that reducing this gap will require a long term, sustained effort, of which the Blueprint represents a first step. Our evaluation shows that the Blueprint achieved limited success against its aims of reducing the gaps between metropolitan and rural and remote students.

The persistence of the gaps suggests that the department should maintain a focus on the education of rural and remote students. The findings from this evaluation offer some insights into how future efforts may be better targeted for greater impact.

2 Under this strategy, the department: enhanced incentives for teachers who accept permanent or temporary placements to rural and remote schools; increased the number of teach.*Rural* scholarships and combined them with a more generous support package; and adjusted the Rural Teacher Experience program to give more flexible opportunities for experienced teachers interested in rural and remote education. https://teach.nsw.edu.au/__data/assets/pdf_file/0018/550062/Rural-and-Remote-HR-Strategy_v5.pdf

3 https://www.teach.nsw.edu.au/find-teaching-jobs/choose-rural/benefits-and-incentives

A refreshed strategy

A new strategy for rural and remote education should be evidence-informed and maintain a cohesive focus on improving student outcomes. A program logic methodology should be applied to a future plan to ensure that there is a clear definition of success; that there is coherence across activities; that there are adequate and robust measures available; and there is strong, central coordination, enabling continual monitoring and adjustment of initiatives as required to ensure success. The new strategy should incorporate revised remoteness classifications to allow funding to be more accurately targeted to rural and remote areas.

Addressing quality of teaching remains fundamental

The Blueprint focused heavily on attracting and retaining quality staff in rural and remote locations. This focus should be maintained.

The ability of rural and remote schools to attract and retain staff remains critical. Financial incentives appear to attract teachers to rural and remote locations, but do not appear to have had an impact on retention.

Filling vacant positions with quality teachers remains a critical issue for principals in rural and remote schools. This view was expressed to us repeatedly by interview participants, and is also one of the key findings of the recent Independent Review in Rural and Remote Education (Halsey 2018).

From the findings of this evaluation, there are clear actions that could be taken to maximise the effectiveness of financial incentives. They should be administered fairly, transparently and with as little "red tape" as possible to ensure that the benefits clearly outweigh the costs of accessing them.

In addition, the effectiveness of rental subsidies is dependent on the availability of high quality Teacher Housing Authority (THA) housing for teachers. Where there is an absence of such housing, rental subsidies become much less attractive for teachers and their effectiveness is diluted.

Financial factors, lifestyle factors related to local amenities, and proximity to major centres or transport, entertainment and recreational opportunities are all considerations for people thinking about moving to a rural and remote location. They also cite access to professional learning; curriculum planning support; and personal support as important.

However, in addition to renewed efforts to attract and retain new staff to rural locations, a refreshed strategy should provide greater focus on the professional development of teachers currently in these areas.

Improving access to relevant, high quality professional learning for teachers in these areas may offer a much quicker route to improved student outcomes. The department should consider flexible delivery models that overcome barriers associated with distance by, for example, making use of technology, on-site training or decentralised learning opportunities.

Providing a varied curriculum in rural and remote areas will require innovative approaches

Halsey (2018) has highlighted the need for the curriculum for rural and remote students to be relevant, flexible and engaging to encourage them to remain at school and maximise their chances of success. Smaller rural and remote schools may also have the added challenge of being able to deliver a broad enough range of curriculum options for students. Our evaluation found that the gaps in the study of advanced subjects in English and mathematics between rural and remote students and metropolitan students have not reduced since the introduction of the Blueprint.

Technology presents one potential solution to these challenges. Aurora College, which has been established specifically for gifted and talented students, has demonstrated that delivering specialist subjects remotely using interactive technology is possible. This new way of delivering lessons and interacting with students presents both challenges and important opportunities, with the experience of Aurora College showing promise as a new way of providing a relevant and varied curriculum for rural and remote students. Aurora College students' HSC results have not been examined in this evaluation, noting that from Aurora only 27 students in 2016 and 15 students in 2017 sat HSC courses (16 students sat HSC courses in 2018, but the evaluation does not set out to cover data from late in 2018).

Networking and collaboration need support to effect improvement

The Blueprint included some actions aimed at increasing the collaboration between rural and remote schools, in particular the Education Networks. Some school staff felt that, while potentially valuable, greater collaboration could sometimes result in a greater workload and that this may represent a barrier to ongoing or greater collaboration. However, feedback from school staff indicates that where they are able to see the value of collaboration and, importantly, where they have meaningful input into the purpose of that collaboration, it is likely to be a sustainable and beneficial activity.

A refreshed strategy should make a clear case about the relationship between collaboration and networking with improved student outcomes. Guidance and examples of effective practices that are successful at improving student outcomes should be provided, along with measures of success.

1. Introduction

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

Research shows that students in rural and remote areas exhibit lower levels of academic achievement, 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 (CESE, 2013; Green and Novak, 2008).

In November 2013, the NSW Minister for Education announced Rural and Remote Education: A Blueprint for Action ("the Blueprint") to address the discrepancy in educational outcomes between metropolitan and rural and remote students.

The Blueprint committed $80 million over four years (2014–2018) to implement a broad set of reforms and actions aligned with four focus areas:

1. quality early childhood education
2. great teachers and school leaders
3. curriculum access for all
4. effective partnerships and connections.

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

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

The overall goal of the Blueprint was to reduce the gap in educational outcomes between rural and remote students, and metropolitan students.

Policy context

The Blueprint was part of a larger educational reform agenda in NSW. Other policy initiatives that were implemented concurrently included 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.

This broader policy context provided challenges for the evaluation. Firstly, with schools being subject to concurrent reforms it is difficult to attribute any changes in outcomes directly to the Blueprint itself. For the purposes of this report we acknowledge that other factors might have influenced any changes in outcomes, although their contribution is not assessed here.

Secondly, determining whether the gap between metropolitan and rural and remote student outcomes has increased or decreased is dependent on what happened within both of those groups: that is, a reduction in the gap between metropolitan and rural and remote students may be caused by an improvement in the rural and remote group, or by a decline in the metropolitan group. Similarly, an increase in this gap may be caused by an increase in the scores of the metropolitan group, rather than a decrease in the rural and remote group.

In writing this final report, we also acknowledge the policy reforms focused on rural and remote schools that have been introduced since the Blueprint commenced in 2014. Most notably, many of the original teacher incentive actions in the Blueprint have been replaced by the Rural and Remote Education Human Resources Strategy announced in November 2017 by the NSW Minister for Education: a $59.4 million investment over five years to address and improve teacher availability and experience in rural and remote NSW public schools.

Similarly, the Preschool Funding Model that was the key action in the first focus area of the Blueprint (quality early childhood education) was superseded by a new model, Start Strong, in 2017. Start Strong built upon the previous model and aimed to encourage 4 and 5 year olds into preschool education.

2. Evaluation of the Blueprint

This is the final evaluation report for the Blueprint. An interim evaluation report was published in 2016. This final evaluation assesses the implementation and effectiveness of a number of key actions in the Blueprint. It also assesses the extent to which these actions have attained their individual objectives and, together, the Blueprint's overall goal.

Evaluation Reference Group

An Evaluation Reference Group, established at the start of the evaluation, was a means to ensure collaboration and a shared understanding of the context and implementation of both the Rural and Remote Education Blueprint and the evaluation.

Evaluation questions

The evaluation attempted to answer the following evaluation questions:

- To what extent have the reforms under the Rural and Remote Education Blueprint been introduced, including those actions not clearly defined at the start of implementation?
- What elements of the reforms are working well?
- What aspects can be improved in the future?
- Are the reforms achieving the desired outcomes for rural and remote students?

This final report focuses on the impact of the Blueprint on outcomes for students in rural and remote locations.

Definition of rural and remote schools

The Blueprint used the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) Remoteness Classification to classify school remoteness. The MCEETYA classification includes metropolitan, provincial, remote, and very remote categories. This report refers to schools in these last three categories, all non-metropolitan, as "rural and remote".

When discussing some specific results we also refer to "provincial" and "remote" categories individually, as per the MCEEDYA[4] classification. Due to very low numbers of very remote schools and students, the term "remote" incorporates both remote and very remote categories.

Evaluation methods and data sources

We collected a range of qualitative and quantitative data sources to evaluate the Blueprint. Data was collected throughout the evaluation period, with the last data collections occurring in March 2018. Data sources are described in Table 3.

4 Ministerial Council for Education, Early Childhood Development and Youth Affairs. The name was changed after a realignment of the existing Ministerial councils.

Interviews and focus groups

We conducted semi-structured interviews with the groups and individuals described in Table 3. We interviewed staff who were involved with individual actions and the Blueprint as a whole.

Table 3:

Interviews undertaken for the evaluation

Focus	Groups/individuals interviewed	Number of interviews undertaken
Overall Blueprint	Directors, Public Schools NSW	10
	Executive Directors, Public Schools	2
	NSW Primary Principals Association	1
Networked Specialist Centres	NSC Facilitators	13
	Directors, Educational Services	1
Education Networks	Principals from 6 Networks 1) Tweed 5 (Tweed Heads) 2) Project Based Learning (Griffith) 3) Bijou Learning Community 4) Snow Gums Learning Alliance (SGLA) 5) Northern Central 6) Orange Cowra Ascending	6
Aurora College	Principal and staff	1 group interview

Survey of students: *Tell Them From Me*

Tell Them From Me is a survey of NSW students conducted during Term 1 in each year, with an optional follow-up wave during Term 3. The survey was developed by The Learning Bar. It includes a range of measures relating to student engagement, and student perceptions of teacher quality. These are:

- **Interest and motivation:** Students are interested and motivated in their learning.
- **Values school outcomes:** Students believe that schooling is useful in their everyday life and will have a strong bearing on their future.
- **Effort:** Students try hard to succeed in their learning.
- **Rigour**: The rigour of classroom instruction in three subject areas.
- **Effective learning time:** Important concepts are taught well, class time is used efficiently, and homework and evaluations support class objectives.
- **Relevance:** Students find classroom instruction relevant to their everyday lives.

We analysed data from 2015 and 2017 to determine changes over time. The number of respondents to TTFM who provided data for each measure of engagement is provided in Table 4.

Table 4:

Number of respondents for each measure of student engagement in TTFM, 2015 and 2017

Source: *Tell Them From Me* student survey 2015, 2017

	2015			2017		
Aspects	Metropolitan	Provincial	Remote	Metropolitan	Provincial	Remote
Interest and Motivation	100,662	31,898	858	113,709	34,635	917
Effort	101,026	32,062	859	112,309	34,230	901
Values schools outcomes	101,641	32,064	870	113,871	34,654	920
Rigour	101,513	32,223	867	113,772	34,682	915
Effective learning time	100,204	31,736	856	112,065	34,144	900
Relevance	100,555	31,911	857	113,254	34,500	908

Survey of teachers: *Focus on Learning*

The FoL survey of teachers is another component of The Learning Bar's survey package designed to complement TTFM. It asks teachers questions related to evidence-based drivers of student learning. These drivers are:

- **Inclusive school:** The effort that teachers go to engage with students who have special learning needs.
- **Leadership:** Teachers report that school leaders have had a positive impact.
- **Parent involvement:** The level of engagement between teachers and parents.
- **Collaboration:** The extent to which teachers collaborate with each other.
- **Learning culture:** Teachers report developing a strong culture of learning.
- **Data informs practice:** Teachers report using data to inform their teaching.
- **Teaching strategies:** Teachers use and reflect on effective strategies in the classroom.
- **Technology:** Teachers and students have the opportunity to use relevant technology.

Participation in FoL is anonymous and voluntary. However, schools are encouraged to have as many staff as possible complete the survey. Because the process that schools use to select teachers to complete the survey is determined within the school, the representativeness of the survey results within schools varies. The number of teachers who provided responses to each measure is provided in Table 5.

Table 5:

Number of respondents for each measure of teacher quality in FoL (primary and secondary teachers), 2014 and 2017

Source: *Focus on Learning* surveys 2014, 2017

	2014			2017		
Aspects	Metropolitan	Provincial	Remote	Metropolitan	Provincial	Remote
Inclusive school	10,616	3,934	145	16,536	4,295	188
Leadership	10,615	3,932	145	16,556	4,296	190
Parent involvement	10,601	3,924	145	16,477	4,269	187
Collaboration	10,618	3,935	146	16,551	4,295	190
Learning culture	10,614	3,933	146	16,546	4,295	187
Data informs practice	10,607	3,924	145	16,494	4,280	186
Teaching strategies	10,609	3,932	145	16,524	4,288	187
Technology	10,602	3,924	145	16,471	4,277	187

Survey of principals

CESE conducts an annual principal survey online, which occurred in Term 1 from 2015 to 2017. The principal survey is an omnibus survey that measures principals' attitudes towards the issues and policy initiatives relevant to their schools. Principals from rural and remote schools completed an additional set of questions relating to the actions in the Blueprint relevant to their schools. We have provided sample sizes and response rates in Table 6.

Survey of Aurora College students

We administered a paper survey to Aurora College students to assess their views and experiences of their first year at the College. This survey was administered twice: first in October 2015, and again in October 2017 while students attended one of Aurora College's two annual residential camps. We have provided sample sizes and response rates in Table 6.

Survey of 50 per cent rental subsidy recipients and teach.*Rural* scholarship recipients

We surveyed teachers who had received the 50 per cent rental subsidy about their experiences in the scheme and the influence it had on their behaviour. These surveys were administered three times: in 2015, 2016 and 2017. We also surveyed teaching students who had received a teach.*Rural* scholarship about their background and the impact the scholarship had on their decision to study teaching. These surveys were administered in 2015 and 2018. We have provided sample sizes and response rates in Table 6.

Table 6:

Surveys administered for the evaluation

Survey	When survey administered	Number of respondents	Response rate
CESE annual principal survey	Term 1, 2015	184	51.4%
	Term 1, 2016	237 rural and remote (overall n=624)	49.2%
	Term 1, 2017	283 rural and remote (overall n=882)	
Recipients of 50 per cent rental subsidy	Term 1, 2015	119	53.6%
	Term 1, 2016	181	66.8%
	Term 1, 2018	174	53.9%
teach.*Rural* scholarship recipients	April-May 2015 (2014 cohort)	13	86.7%
	November 2015 (2014 cohort)	9	60.0%
	November 2015 (2015 cohort)	31	81.6%
	January 2018 (2016/2017 cohorts)	54	65.8%
Aurora College students	October 2015	47	60.3%
	October 2017	138	89.0%
Aurora College home school coordinators	November-December 2015	36	83.7%

This evaluation only assessed the impact of the 50 per cent rental subsidy on teacher retention and the teach.*Rural* scholarship. Throughout this report, statements about the effectiveness of financial incentives on teacher attraction and retention only relate to those specific measures. Other incentives, including the recently introduced incentives mentioned above, are outside the scope of this evaluation.

Administrative data

The administrative data analysed for this evaluation is identified in Table 7. The analyses estimate the changes in student- and teacher-level outcomes that occurred after the Blueprint was introduced.

Table 7:

Administrative data analysed for the evaluation

Administrative data type	Year range
NAPLAN	2013–2017
Best Start Kindergarten Assessment	2010–2017
School attendance	2010–2017
Student retention - Year 10 to Year 12	2012–2018
ATAR eligibility	2009–2017

Methodology

We have described our statistical approaches in each findings section and in greater detail in the Appendices.

Significance testing vs estimation

When assessing the effects of a policy or intervention, the true effects of that policy or intervention are impossible to know with absolute certainty. While it is often possible to estimate the true effects with some degree of precision, uncertainty necessarily arises when a finite number of observations (for example, a particular group of students) are sampled from a larger population (for example, all possible students). To account for this inherent bias – commonly known as sampling error – researchers use various statistical techniques.

One way of accounting for sampling error involves null hypothesis significance testing (NHST). This process calculates the probability of a range of results based on an assumption that no true effect exists in the population. When this probability is small, researchers reject the null hypothesis (for example, the intervention did not have an effect) and instead conclude that there is a true effect in the population (for example, the intervention did have an effect).

While NHST has been the preeminent approach to statistical inference, there is mounting evidence that the results from NHST are commonly misinterpreted. Critics argue that NHST promotes dichotomous thinking that simply focuses on whether an observed result is statistically significant or not (Cumming 2014). This thinking can result in statistical significance being incorrectly equated with importance or practical significance on a policy level.

In recent years, some researchers have begun to move away from NHST and towards the notion of estimation. In contrast to NHST, which relies on the calculation of p values, estimation relies on the calculation of point and interval estimates, emphasising the magnitude of the estimated effect and the precision with which it has been estimated. Advocates of this approach claim that a focus on estimation promotes a greater appreciation of the practical significance of research findings, rather than just a narrow focus on whether or not findings are statistically significant.

The distinction between practical significance and statistical significance is particularly important for the type of work at CESE. Working with large datasets can allow us to estimate certain effects with a high degree of precision. Under NHST, these effects are almost always statistically significant, even when they have little or no practical significance. Conversely, there are times when our estimates contain a large amount of uncertainty, yet we still need to provide clear guidance about the effectiveness of a policy or intervention.

We contend that, for the purposes of our work, NHST does not best support evidence-based decision-making. For this report we have used estimation thinking rather than NHST when making inferences. To this end, **we interpret the results of our analyses using point estimates and 95 per cent confidence intervals (CI).** While we consider a point estimate to be the best estimate of the true value under investigation, we consider any value within an interval as a plausible value for the true effect, with the upper limit representing the best case scenario and the lower limit representing the worst case. We consider any value outside the interval as relatively implausible, although not impossible.

The report

This report presents updated findings from our interim evaluation report on the implementation of a selection of the Blueprint's key actions and analyses of key educational indicators to determine the impact of the Blueprint. The actions that were included in the interim report and this final report were selected in consultation with the Evaluation Reference Group. They were determined to be the most central and clearly defined of the various policies and programs under the Rural and Remote Blueprint umbrella.

The remainder of the report is structured as follows:

- **Chapter 3:** Teacher incentives
- **Chapter 4:** Aurora College
- **Chapter 5:** Education Networks
- **Chapter 6:** Networked Specialist Centres
- **Chapter 7:** Preschool funding and enrolments
- **Chapter 8:** Impacts of the Blueprint.

The appendices are:

- **Appendix 1:** Technical details of NAPLAN analysis
- **Appendix 2:** Technical specifications of regression analysis of the *Tell Them From Me* student survey
- **Appendix 3:** Technical details on teacher retention analysis
- **Appendix 4:** Other Blueprint actions
- **Appendix 5:** Best Start Kindergarten Assessment
- **Appendix 6:** Attendance rates
- **Appendix 7:** *Focus on Learning* survey
- **Appendix 8:** *Tell Them From Me* student survey

3. Findings: Teacher incentives

The second focus area of the Blueprint was "great teachers and school leaders". In this chapter we report on the following actions that fall under that focus area[5]:

- incentives to attract teachers to rural and remote areas, including a new 50 per cent rental subsidy at some rural and remote schools (Action 7.2)
- teach.*Rural* scholarships (Action 6.2).

We present our findings on the impact of these actions below.

The 50 per cent rental subsidy did not increase the retention of teachers

A range of schemes have been in place for some time to encourage teachers to live and work in rural and remote parts of NSW[6], including 70 per cent and 90 per cent rental subsidies for teachers in six and eight-point rural incentive schools. The Blueprint introduced a new 50 per cent rental subsidy at some four-point schools[7], with the aim of attracting and retaining teachers. In January 2018, a more generous and flexible set of incentives were introduced as part of the Rural and Remote Human Resources Strategy[8]. In 2019, an additional range of incentives and benefits were introduced for teachers and executives in rural and remote NSW public schools. These latter measures are not within the scope of this evaluation.

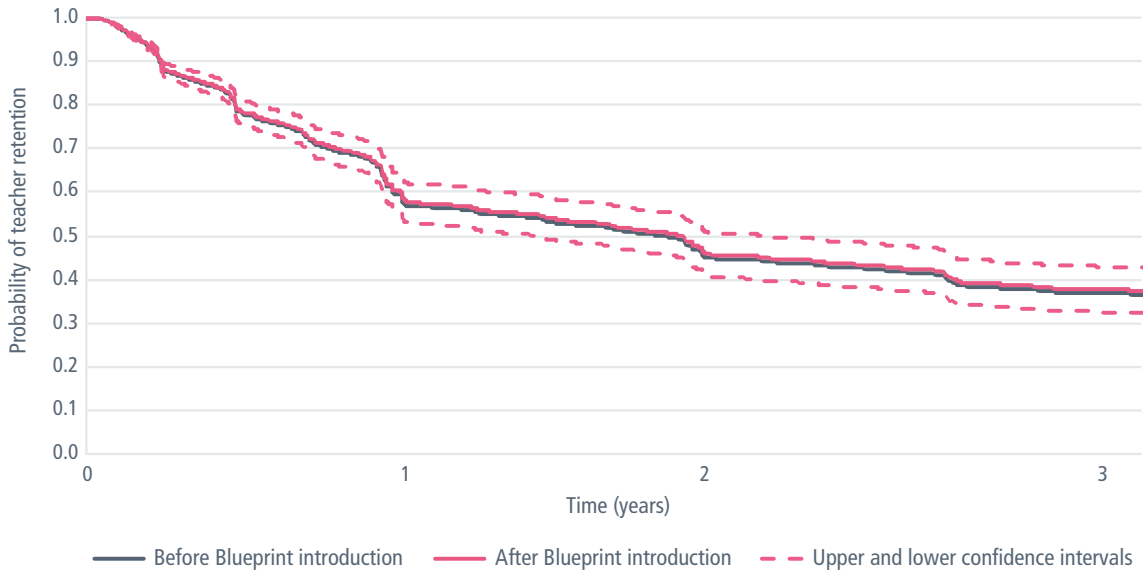
To assess the impact of the 50 per cent rental subsidy we analysed department human resources data using a proportional hazard model in survival analysis[9] to determine whether teachers appointed at the relevant four-point schools stayed longer in their positions than teachers stayed before the introduction of the subsidy.

Overall, our analysis showed that there was no meaningful impact of the 50 per cent rental subsidy on teacher retention. Figure 1 compares the probability of teacher retention at a school before and after the introduction of the 50 per cent rental subsidy. It shows that before the introduction of the Blueprint, the probability of a teacher staying at a school in year one was 57.3 per cent, compared to 36.7 per cent in year four. After the Blueprint's introduction, the estimated probability of a teacher staying at a school in year one was 58.0 per cent, compared to 37.5 per cent in year four. Overall, the results of the model indicated that, compared to the period prior to the 50 per cent rental subsidy being introduced, the risk of a teacher leaving in the post-subsidy period was at best reduced by 14.1 per cent, and at worst increased by 11.2 per cent. The point estimate for the analysis (hazard ratio) was 97.7 per cent; in other words, compared with a teacher in the pre-subsidy period, the risk of a teacher leaving is 0.023 times lower in the post-subsidy period. These results indicate that where the 50 per cent subsidy was introduced, any change in the risk of teachers leaving those schools was probably very small to small, and may have been either positive or negative.

5 Another action that was originally part of the Rural and Remote Blueprint was the Rural and Remote Mentoring Program. However, following the publication of our interim evaluation report, this was replaced by the Leadership Development Initiative. This later initiative was evaluated separately as part of the School Leadership Strategy.
6 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. Service in eight, six and four-point incentive schools attracts transfer to a preferred location after a minimum period of service has been completed.
7 The department uses a points system to attract teachers to schools in rural and remote locations. Service in eight, six and four-point incentive schools allows a transfer to a preferred location after a minimum period of service has been completed.
8 https://education.nsw.gov.au/teaching-and-learning/curriculum/rural-and-distance-education/rural-and-remote-education
9 For details on the methods used, please refer to Appendix 3.

Figure 1:

Survival curve comparing the proportion of teacher retention after the introduction of the 50 per cent rental subsidy, relative to before the Blueprint's introduction



Recipients of the rental subsidy felt that it positively impacted their decision to take up a position in a rural and remote area

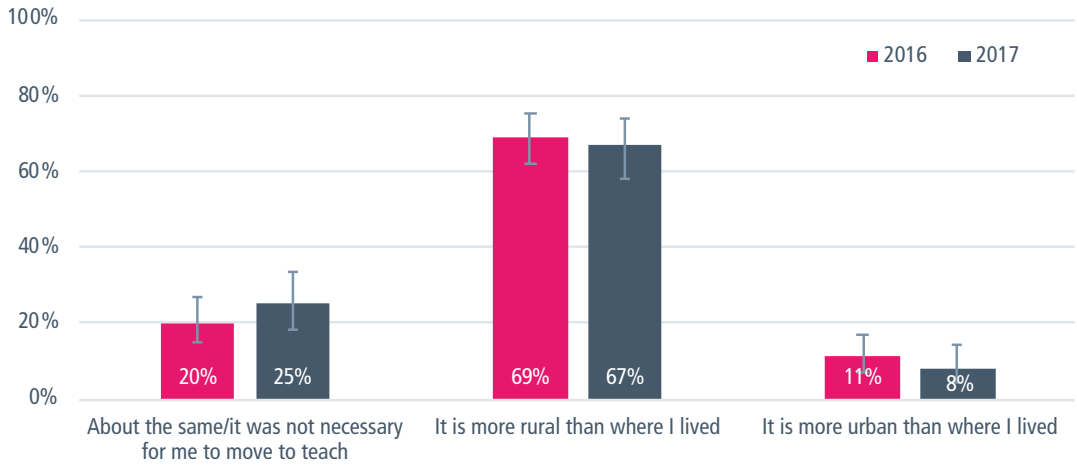
We asked recipients of the rental subsidy in 2017 about the importance of the subsidy in their decision making. The results of the survey suggested that recipients felt the subsidy had a positive impact on their decision. We estimated that around 80 per cent of subsidy recipients (95% CI [72, 86]) felt that the subsidy was a "somewhat" or "very" important factor in their decision to accept a position at their rural and remote school.

We also estimated that around 67 per cent (95% CI [58, 74]) of recipients in 2017 had taken up the subsidy to move to a more rural and remote area (Figure 2). This proportion did not change from 2016. A small number (around 8 per cent) of incentive recipients had moved to a "more urban" area in 2017 to take up the subsidy. This indicates that the incentive is targeting the desired population.

Figure 2:

Estimated proportions (and 95 per cent confidence intervals) of rental subsidy participants who moved to a school in a more rural and remote location

Survey of subsidy recipients, 2016 and 2017



The survey of rental subsidy recipients also highlighted the costs associated with living in rural and remote areas. Although rental costs may often be lower than those in metropolitan areas, the isolation of many rural and remote communities imposes increased costs in other areas, most notably transport. The 50 per cent rental subsidy helped to offset some of these other costs.

> "The subsidy allows me to be able to afford a 330km round trip to the larger rural community to do major shopping more often as fuel costs are astronomical here." (Rental subsidy recipient)

> "The subsidy counters the cost of rural living: higher fuel, electricity and shopping costs, as well as the cost of car maintenance and other general living expenses with few facilities available. The subsidies mean I am not financially disadvantaged for teaching in a rural school and community." (Rental subsidy recipient)

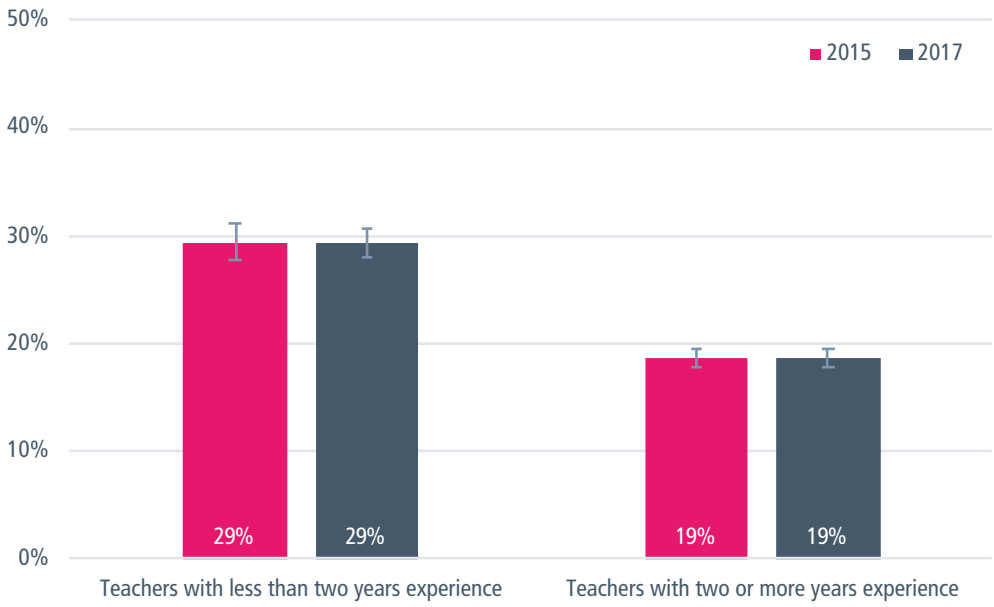
Incentives are more attractive for less experienced teachers

Findings from the FoL survey of teachers also suggested that the set of incentives available at the time of data collection was a motivating factor for a minority of teachers who were thinking about moving, and was more of a factor for less experienced teachers. We estimated that in 2017, 19 per cent of teachers (95% CI [18,19]) with at least two years' experience said they would consider moving to a more rural and remote location given the range of incentives available at the time. Less experienced teachers (those with less than two years' experience) would be more likely to move; we estimated that 29 per cent (95% CI [28, 31]) of such teachers would consider a move given the range of incentives available at the time. These results were similar to those in previous waves of the FoL survey (Figure 3).

Figure 3:

Estimated proportions (and 95 per cent confidence intervals) of teachers who would consider teaching in a more rural and remote part of NSW because of the financial incentives available, according to experience level

Source: *Focus on Learning* teacher survey. This question was not asked in the 2014 survey. Estimates are based on all teachers who responded to the survey, not just those living in a metropolitan area.



Implementation challenges have reduced the impact of the rental subsidy

The survey of rental subsidy recipients highlighted some reasons why the subsidy may not have had the desired effect on increasing teacher retention. Although costs are an important factor in a teacher's decision to move to a rural and remote area, other factors may be equally important, such as the quality of housing available.

> "The two [Teacher Housing Authority (THA)] houses that I have lived in could have been in a better condition. If the houses/units were more modern/no problems that needed fixing, it would seem a more attractive idea." (Rental subsidy recipient)

Teachers also identified problems with the way the subsidy was administered and calculated. The subsidy was designed to apply to THA properties, and teachers were required to first attempt to access housing through the THA. If no properties were available, a private rental subsidy was available. Some teachers felt the requirement to "jump through the hoops" by attempting to access THA housing was an overly onerous process. THA housing is not available in all locations, making the rental subsidy a much less powerful incentive than it could be.

"The system is significantly flawed for those who take a contract when there is no Teacher Housing available. The effort and paperwork with real estates, the THA and EdConnect[10] to pay four times what others pay and get a miniscule amount back was a waste of time and effort." (Rental subsidy recipient)

"The 50 per cent rental subsidy has been a good attraction for teachers accepting positions in four-point schools, however there is a shortage of quality teaching housing and the market value equivalent you can receive if teacher housing is full is not enough to rent a quality private rental. You are also told you have to move out of the private rental if Teacher Housing becomes available. People do not want to have to move all the time." (Rental subsidy recipient)

A related issue was that the rate of the subsidy was based on THA rent rather than private rent, meaning that those in private rental who were unable to secure THA housing also faced a financial penalty on top of the extra effort involved in obtaining private rental accommodation.

"It was great, but I think it needs to match what one would be paying instead of matching it to teacher housing rental prices. I paid $440 and my 50 per cent subsidy was $125." (Rental subsidy recipient)

"Great for those in THA. However the 50 per cent rebate allowance for those who are unable to get THA is substantially less than current 50 per cent of [private] rental market [rates]." (Rental subsidy recipient)

Extending the subsidy to mortgage repayments was another suggestion made by subsidy recipients. While subsidy recipients were appreciative of the subsidy, being able to claim a subsidy for mortgage repayments would encourage teachers to purchase housing in their communities, acting as a further incentive to stay.

"I decided to commit to my school and my town by buying my own house. I also don't like renting because I couldn't put paintings up, or have my pets inside etc. I am now struggling financially, and am considering leaving to a more affordable place. The subsidy would make a massive difference to my life!" (Rental subsidy recipient)

Teach.*Rural* scholarships attracted mostly rural and remote students

Teach.*Rural* scholarships (Action 6.2) were another incentive for prospective teachers implemented under the Blueprint. Teach.*Rural* scholarships were aimed at students in their final year of secondary school who were intending to undertake tertiary study, and were designed to encourage them to study a teaching degree. The scholarship provided a $6,000 annual training allowance and guaranteed permanent employment in an agreed rural and remote location, as well as an additional $5,000 towards relocation costs. As part of the terms, applicants had to agree to accept an appointment as a full-time teacher in a rural and remote location in a NSW government school for a minimum three year period after graduation.

In 2018, teach.*Rural* scholarships were updated as part of the Rural and Remote Human Resources Strategy. This updated package included enhanced and more flexible incentives, including for those on temporary placements, and more actions to fast-track teacher and principal appointments. This package was not in scope for the evaluation; however the impact of the revised strategy could be assessed at a later date.

Table 8 presents data on the number of applicants and recipients of teach.*Rural* scholarships, and shows that these have increased steadily since 2014. The growing interest in and take-up of teach.*Rural* scholarships suggests there is a demand for this type of scholarship and that it could provide an incentive for some people to teach in rural and remote areas.

Table 8:

teach.*Rural* scholarships awarded, 2014–2017

	2014	2015	2016	2017
No. of scholarships available	20	50	50	50
No. of applicants	122	140	206	215
No. of recipients[11]	15	39	40	42

Source: Human Resources Directorate, Department of Education

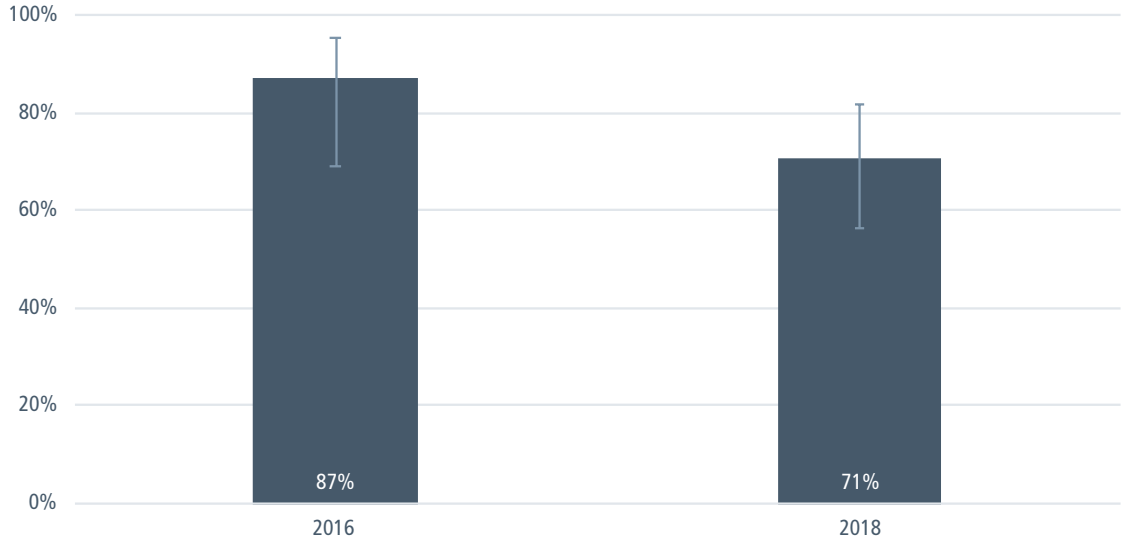
10 Department of Education EDConnect provides support, information and advice to NSW government schools and corporate staff for the following services: Business Services; Finance; Human Resources IT; Procurement; and Student Management and Wellbeing.
11 Recipients are defined as those applicants who formally accepted the scholarship.

The results from the survey of recipients suggest that the scholarship is attracting those already from rural and remote areas, and allowing them to remain in those areas. We estimated that in 2018, 71 per cent (95% CI [56, 82]) of teach.*Rural* recipients had lived outside of a metropolitan area for more than five years, compared to around 87 per cent (95% CI [69, 95]) in 2016 (Figure 4).

Figure 4:

Estimated proportions (and 95 per cent confidence intervals) of scholarship recipients who had lived in a rural and remote area for more than 5 years previously

Source: Survey of scholarship recipients, 2016 and 2018



In addition, we estimated that around 92 per cent (95% CI [80, 97]) of recipients surveyed in 2018 had planned to study education whether or not they received the scholarship. However, many recipients reported that the scholarship may have influenced their decision to teach in rural and remote NSW; 48 per cent (95% CI [34, 62]) agreed that the scholarship had influenced their decision, and around 38 per cent (95% CI [25, 53]) were not sure.

Some recipients in 2018 reported that the main downside of the scholarship was the uncertainty associated with being unable to choose where they were assigned to teach.

> "So far it has been a good program, although the fact that I ultimately won't be able to choose where I work scares me a little bit." (teach.*Rural* scholarship recipient)

> "I really appreciate the financial assistance and guaranteed teaching position this scholarship offers, however, I would value additional information about where I could potentially be placed to assist with other significant choices that are arising at this point in my life." (teach.*Rural* scholarship recipient)

Summary

Financial incentives such as the rental subsidy and scholarship that were introduced as part of the Blueprint are a commonly-used policy lever to attract teachers (or would-be teachers) to rural and remote locations. Our results suggest that the new 50 per cent rental subsidy incentive was not effective in keeping teachers in their positions for any longer than they had previously stayed. However, for those recipients surveyed as part of the evaluation, both the rental subsidy and the teach.*Rural* scholarships were important factors in their decisions to teach and study in rural and remote locations.

Interview participants also highlighted that financial incentives may not be sufficient alone to attract teachers to rural and remote areas, particularly when there are gaps between private rental costs and THA costs, and when the subsidy cannot be used for mortgage support. Other factors, such as the amenities that are available in the location, proximity to regional or metropolitan centres and transport, entertainment and recreational opportunities are also important factors. Future incentive packages should also incorporate professional learning, curriculum planning support and personal support, including measures to support mental health and wellbeing and promote a sense of belonging. To ensure that financial incentives have as big an impact as possible, the department can ensure they are well-publicised, fair and equitable, flexible and tailored to individual need. The department's new incentives package targeting six- and eight-point schools attempts to address some of these issues by offering greater flexibility and increased funding.

4. Findings: Aurora College

Aurora College is a virtual selective high school aimed at gifted and talented students from rural and remote areas. It was established in 2015 through Action 9.1 of the Blueprint. Students enrolled at Aurora College study English, mathematics and science at extension level using a virtual learning environment to interact with teachers and classmates, while studying the rest of their subjects at their home school. In addition to the regular, real-time virtual classroom lessons, students meet face-to-face during two four-day residential schools in each year.

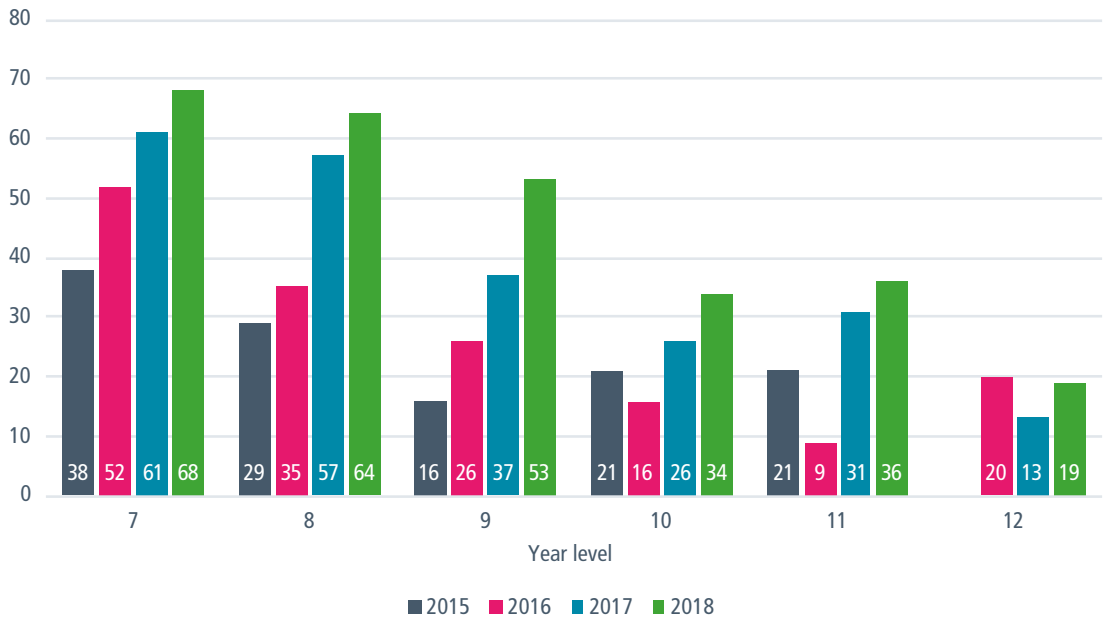
We present student enrolments at Aurora College in Figure 5 below. Since 2015, there has been growth in student enrolments in all year levels, with a total of 274 students enrolled in 2018.

Enrolments in Aurora College in Years 11 and 12 are comparatively lower than in Years 7 to 10 (Figure 5). One of the reasons for this is that shared enrolments (that is, between students' home schools and Aurora College or other distance education) in Years 11 and 12 have a budgetary impact on home schools. This is not the case in Years 7 to 10. This acts as a disincentive for principals to provide shared enrolments in Years 11 and 12.

Figure 5:

Aurora College enrolments, 2015–2018

Source: Principal, Aurora College



Our interim evaluation report found that there was initially a high attrition rate, and there had been timetabling clashes between Aurora College and home schools, but that this had improved over time. We also reported that Aurora College students were generally highly engaged with the lessons provided. Below we present an update to those findings, using data obtained from school principals, and staff and students from Aurora College.

The majority of principals have heard of Aurora College

School principals from rural and remote areas reported a high awareness of Aurora College. From data collected through the 2017 principal survey, we estimated that around 88 per cent (95% CI [84, 91]) of principals in rural and remote areas had heard of Aurora College. Of the 57 secondary school principals and the 31 central school principals who responded, 100 per cent had heard of Aurora College.

Among rural and remote primary school principals specifically, we estimated that around 83 per cent (95% CI [76, 87]) were aware of Aurora College. Awareness is important among primary school principals because one of the main pathways into Aurora College is through the selective schools test which occurs while students are still in primary school.

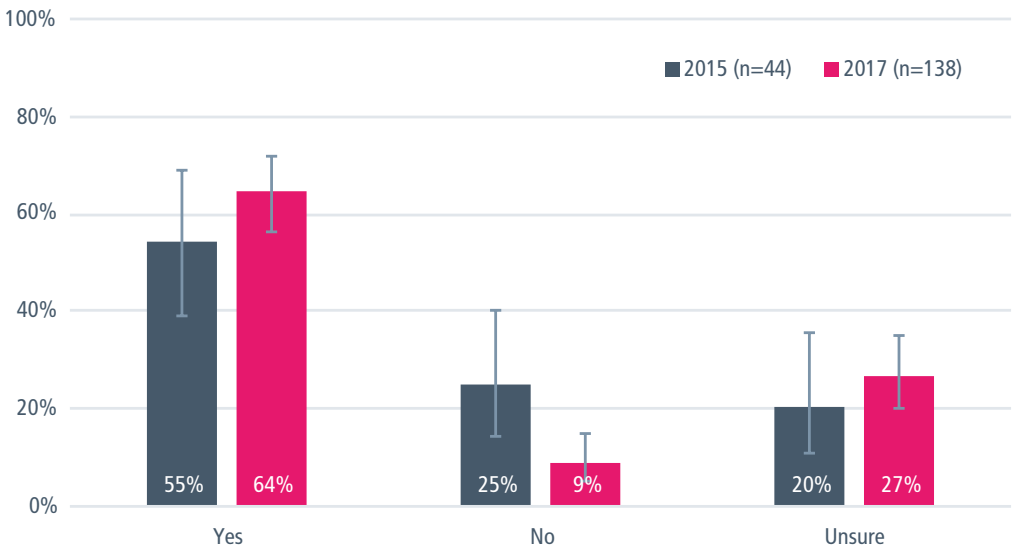
Student engagement at Aurora College is high

Overall, we found that students were positive about their experiences at Aurora College. In 2017 we surveyed students who were attending one of their twice-yearly residential camps. From this survey, we estimated that around 64 per cent (95% CI [56, 72]) of students would choose to go to Aurora College again, if they were to start the school year over and were given the choice again. We estimated that around 9 per cent (95% CI [5, 15]) would not have attended Aurora again, with the remainder being unsure. In 2015, we estimated that around 55 per cent of students would have chosen to attend Aurora College again (Figure 6).

Figure 6:

Estimated proportions (and 95 per cent confidence intervals) of students at Aurora College who would attend Aurora again if given the chance to "go back in time and start this school year over"

Source: Aurora College student survey, 2015 and 2017



One of the key benefits of Aurora College for students was the opportunity it provided to make friends with other students from similar backgrounds. In our interim evaluation report, we found that the most popular aspects of Aurora College were the student residential camps, making new friends, and receiving a free computer. These results were largely repeated in our 2017 survey. Students were asked to rank their favourite aspects of Aurora College out of a possible score of 10. The highest responses were making new friends (mean score 8.5), the student residential camps (mean score 8.4) and "like-minded peers" (mean score 8.1). The social aspect of Aurora College appears to be a large drawcard for students.

Timetabling challenges are being addressed

In our interim evaluation report we reported that a major challenge for students, teachers and principals was aligning timetables between Aurora College and home schools to avoid students missing class time.

Staff from Aurora College have made a concerted effort to address these timetabling issues since the publication of the interim evaluation report, including a survey of lunch, recess and other bell times from all their students' home schools across the state to better understand when students changed classes. Subsequently, Aurora College staff realigned their own class times to minimise the disruption caused in home schools.

The efforts made by Aurora College staff have coincided with a reduction in concern among students about timetabling problems. We estimated that in 2017, 67 per cent (95% CI [59, 74]) of Aurora College students reported missing some class time on at least one day per week as a result of timetabling clashes. Although still a majority, this is a reduction from 2015, when we estimated that 89 per cent (95% CI [76, 97]) of students reported missing some class time on at least one day per week.

Principals were also asked what kind of challenges their school faced in having students attending Aurora College. All principals nominated timetabling issues as a challenge; around 78 per cent (95% CI [58, 91]) considered it a "major" challenge.

Sufficient learning space remains a challenge

After timetabling, the next most commonly cited challenge for principals with students at Aurora was having access to an appropriate learning space for students to attend the online classes; around 39 per cent (95% CI [22, 59]) of principals with students at Aurora considered this a "major" challenge, while 28 per cent (95% CI [14, 49]) did not consider it a challenge.

These results suggest that schools may need additional support to facilitate their students attending Aurora College. In particular, smaller schools, or schools with a large number of Aurora College students, will require a dedicated space within which to conduct Aurora College classes.

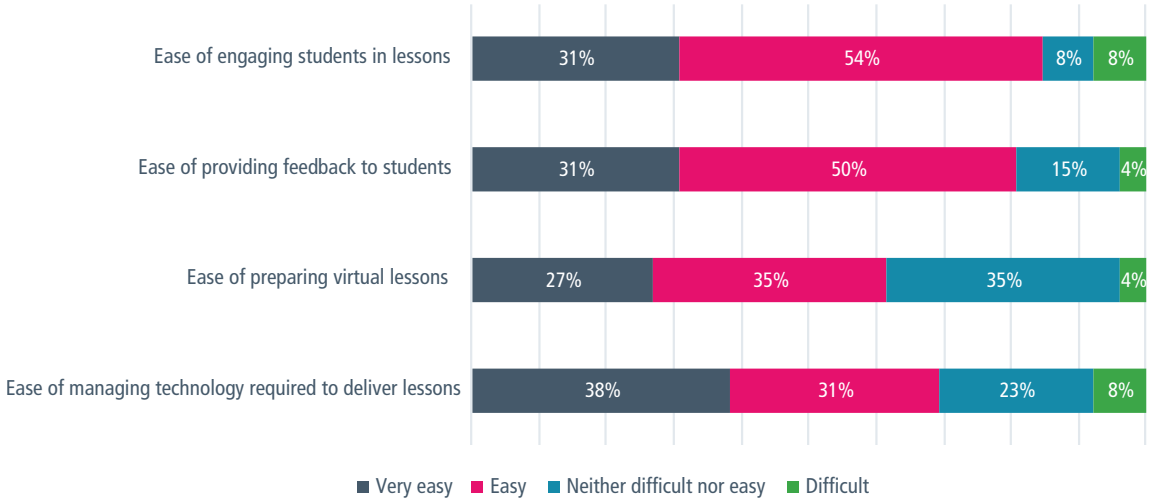
Teachers were generally comfortable teaching at Aurora

Twenty-six Aurora College teachers responded to our survey in 2017. Of those, four were full-time staff. Of the part-time staff the majority were 0.2 FTE (13 teachers), with the remaining ranging from 0.4 to 0.8 FTE. Overall, most teachers felt that all aspects of teaching at Aurora were "easy". We estimated that 85 per cent of teachers (95% CI [64, 95]) felt that engaging students was "easy" or "very easy", and 81 per cent felt (95% CI [60, 92]) that providing feedback was "easy" or "very easy" (Figure 7).

Figure 7:

Estimated proportions of Aurora College teachers reporting ease of different aspects of teaching

Source: Aurora College teacher survey, 2017



Teachers also felt that the level of student engagement was greater at Aurora College; around 64 per cent (95% CI [42, 81]) of teachers reported that the level of student engagement was "more" or "much more" than at their home schools.

When asked what areas of Aurora College could be improved, some teachers noted that it was difficult to monitor students while teaching remotely.

> "[It's difficult] to monitor behaviour at the other end – there's no awareness of what they might be doing on their side of the computer other than screen sharing." (Teacher, Aurora College)

> "Some students are fantastic at hiding the fact that they are doing something other than what they are given." (Teacher, Aurora College)

While the process of monitoring student behaviour was considered more difficult by some teachers, for another teacher, the technology provided opportunities to teach more effectively, and to monitor students' output.

> "[It's] easy to plan and sequence lessons and easy to monitor student work and provide feedback through OneNote." (Teacher, Aurora College)

Most Aurora College teachers were positive about their role and being able to teach engaged and willing students. Some noted challenges related to technology and planning lessons.

Summary

Overall, Aurora College has been a well-implemented action that is providing greater opportunities for gifted and talented students in rural and remote NSW. Problems associated with Aurora College, most notably timetabling, continue to be addressed. It is likely there will continue to be some timetable clashes which may be unavoidable given different class times across the state. Enrolments in Aurora College have grown over time, and students at Aurora College remain highly engaged, and are benefiting from the opportunity to meet like-minded peers. Some schools may need additional support (for example, more classroom space) to facilitate their students attending Aurora College.

5. Findings: Education Networks

Education Networks were established across rural and remote NSW communities as per Action 2.1 of the Blueprint. The original rationale for establishing the Networks was that schools in rural and remote areas often worked in isolation from each other and were not always able to effectively engage with the community. Education Networks were intended to address these problems by encouraging rural and remote schools to share resources, align curriculum or subject offerings, and otherwise collaborate to meet community needs.

From 2014, 67 Education Networks were established using $1.13 million of funding under the Blueprint, with 35 located in the Wagga Wagga Operational Directorate and the remaining 32 in the Tamworth Operational Directorate. For the evaluation we interviewed participants from six Networks across NSW. We also examined data from the CESE principal survey, which included a small number of questions on the Networks.

Principals and school staff generally used the Networks to facilitate greater collaboration between staff (n=26) and for increased access to professional learning (n=33). Of the principals interviewed, 11 specifically noted that the objective of their Network was to improve student outcomes, and 6 mentioned student collaboration or transitions from primary to secondary school. While few principals felt that the objectives of their Network were "fully achieved", this should be expected given that the work of most of the Networks was ongoing (Table 9).

Table 9:

Objectives of Networks and extent of achievement

Source: CESE principal survey, 2017

Objective	Number of mentions (n)	Per cent considered to be "fully achieved"
Staff collaboration	26	15%
Professional learning and improved teaching	33	12%
Improved student outcomes	11	9%
Leadership	7	14%
Student collaboration and transitions	6	0%
Community engagement	4	0%
Broaden the curriculum	8	25%
Other	5	0%
Total	**100**	**12%**

Principals reported that the key strengths of the Networks were providing access to dedicated resources (through seed funding), and that the objectives of the Networks were set by principals, meaning they had the authority to address issues specifically of concern to them. The informal networking and support structure of the Networks also had an ancillary benefit of a perceived improvement in wellbeing for teachers and principals. Networks acted as a forum for professional and personal conversations and helped to combat the isolation that principals and teachers could feel in their role.

Education Networks have also allowed schools to pool funding and other resources to provide greater opportunities for students. For example, the Bijou Network engaged a digital leader to deliver professional development to teaching staff in the fields of robotics, coding and technology, expanding in 2016 to a two day science, technology, engineering, arts and mathematics (STEAM) program delivered to Year 4 students across 16 schools. Interview participants believed that this provided a unique learning opportunity to students that would not have been possible without the schools' involvement in the Network.

Challenges for Networks

There were a number of challenges related to the functioning and sustainability of Networks. The main challenge was that Network activities were often driven by particular individuals, meaning that projects could be abandoned or fade away if there was staff turnover.

> "Personalities or personnel are really critical. Ones who drive things, and ones who try to build sustainability." (Principal)

At times, staff members and principals were resistant to the Networks because of a perception that participation in the Network would lead to an extra workload.

> "Lots of teachers here have a certain way of thinking and there's a lot of pressure on teachers already… introducing a new thing is just another thing they have to do." (Principal)

> "For the first six months or so, I found [the Network] to be a massive thorn in my side... no disrespect for anyone involved in it – I just found that as a new principal, and having to get things organised and in place for my school, all of a sudden I had to take into account all these other schools. I thought, 'Well, this is just so hard. It's so hard.' But after four years of it, my thinking shifted significantly: 'This is the best thing for a schools group that I've actually dealt with.' A large amount of it was because of the learning within the group." (Principal)

Summary

Despite these challenges, the principals and teachers we spoke to were generally enthusiastic about their involvement in their respective Networks and the outcomes they had achieved. Principals reported a range of successes and achievements of the Networks and spoke positively of the activities they were involved in. Education Networks appear to represent a good return from the time and effort invested. They have provided a collaborative structure through which schools can align their resources.

Although the Blueprint suggested that the Networks could help schools to increase their community engagement, Networks were generally not active in this area. Only 4 of the 100 principals who responded to the principal survey indicated they were using their Network to improve community engagement.

Similarly, one possibility described in the Blueprint was that a group of schools might decide to completely share their resources through the use of a single school plan, one budget and staff working across schools. To date, no Education Network has attempted this kind of budgetary alignment.

6. Findings: Networked Specialist Centres

Under Action 13.1 of the Blueprint, Networked Specialist Centres (NSCs) were established with the aim of coordinating services more effectively for students with complex or challenging needs. NSCs were a state-wide action, with 13 of the 22 NSCs supporting Principal Networks that included rural and remote schools. All 22 NSCs were established by the end of 2016. Each NSC has a full-time facilitator, employed at the Principal Education Officer level, who reports to a Director within the School Service Directorate in the Educational Services Division.

The NSC model sought to improve collaboration between schools and other government and non-government agencies. The focus on collaboration aimed to complement existing school-based services and those services already administered by the department's Learning and Wellbeing and School Services Directorates.

As part of the evaluation, we interviewed all 13 NSC facilitators who supported schools in rural and remote locations. Each NSC facilitator oversaw a large number of schools – ranging from 60 to 120 – across up to three Principal Networks. Many of the facilitators had lived and worked in their NSC area for a number of years and had local knowledge and pre-existing relationships with organisations and stakeholders in the community. Many facilitators had also previously worked in other roles related to student wellbeing.

NSC facilitators acted in a coordinating role but this was not always well understood

The main purpose of NSCs was to increase the coordination of support for students with complex needs. To achieve this, all NSC facilitators had established regular stakeholder meetings in which participants could discuss the needs of students requiring complex case coordination. Participants in these meetings generally included a range of department representatives (including school and corporate staff) and sometimes representatives from external agencies such as the Department of Family and Community Services (FACS), NSW Health and the NSW Police Force.

Facilitators spoke about the value of bringing relevant stakeholders together face-to-face where possible, so that agencies were kept informed of each other's activities. This helped to avoid duplication across agencies which could lead to fatigue and disengagement from their clients.

> "There are so many knowledgeable, well-meaning people with little pieces of the puzzle – to be working in isolation, we really aren't doing the child or the family a favour." (NSC facilitator)

> "All those meetings bring us closer together because we're looking at the same faces. So you can pick up the phone and say outside of that meeting 'I've got this situation, who's the best person to talk to', and it happens." (NSC facilitator)

NSC facilitators also reported that external agencies saw the value in NSCs acting as a central point of contact.

> "[Agencies are] saying this is fantastic; what a great initiative to have somebody to contact. For example, FACS, the area they service, they'd have a hundred odd schools as well. So instead of trying to have a relationship with 100 different principals, they've got a central point of reference, someone who can point them in the right direction, so it's been great." (NSC facilitator)

There is a lack of clarity and understanding about the NSC facilitator role

One of the biggest challenges that NSC facilitators reported was a lack of clarity about their role, both among facilitators themselves and among the partners they work with including schools, the department and external agencies.

> "One of the biggest challenges is that the role isn't clear, and I think what makes that hard is you've got people asking you, 'Well, what do you do? What is your role?' And I think that's really hard, because we can't really clearly describe our role because we don't – we're still trying to work out our role." (NSC facilitator)

> "At the moment I'd say NSC facilitators don't have a clear understanding, or there's not a common understanding of what the role is, and then that becomes even more blurred when each of the directors and areas that we're working in has a different understanding of how it works." (NSC facilitator)

Many facilitators also felt, given the crossover between their own role and that of Learning and Wellbeing teams in supporting students, that the NSCs had not been integrated well into the department's existing student support units. In some cases, NSC facilitators reported developing a positive and productive relationship with their School Services colleagues, but in other cases the relationship was less positive.

> "There's some turf wars – 'why are you doing that, that's my job' or 'I don't want to do this job, you can do that' – handball on sort of problem. That's been really tricky, and that's probably been the hardest part of my role. Internally, within our School Services team, reluctance to work with me, reluctance to share information – it's very much, I'm an inconvenience. If I was sitting over there somewhere and it was in the too hard basket, they can just give it to me and I can sort it out." (NSC facilitator)

The lack of clarity around roles resulted in some frustration for facilitators who felt that unrealistic expectations were placed upon them by their colleagues. In particular, facilitators reported that they are often incorrectly thought of as complex case managers, and the NSC was perceived as a physical "centre" where schools could send students with complex needs rather than simply an individual facilitator.

> "I've had several principals ring and say, 'Oh, I've got a complex case. What are you going to do?' and that's where I have to say, 'Well, actually, you really need to be calling your learning and wellbeing officer, and we should have a chat to see what's been put in place'." (NSC facilitator)

> "Some of the PPA [Primary Principals' Association] and SPC [Secondary Principals' Council], they want to know what do I do? There's that misconception where they think we don't do anything and yet I've never worked harder in my life in this job. It's a huge amount of work to collaborate with other educational staff." (NSC facilitator)

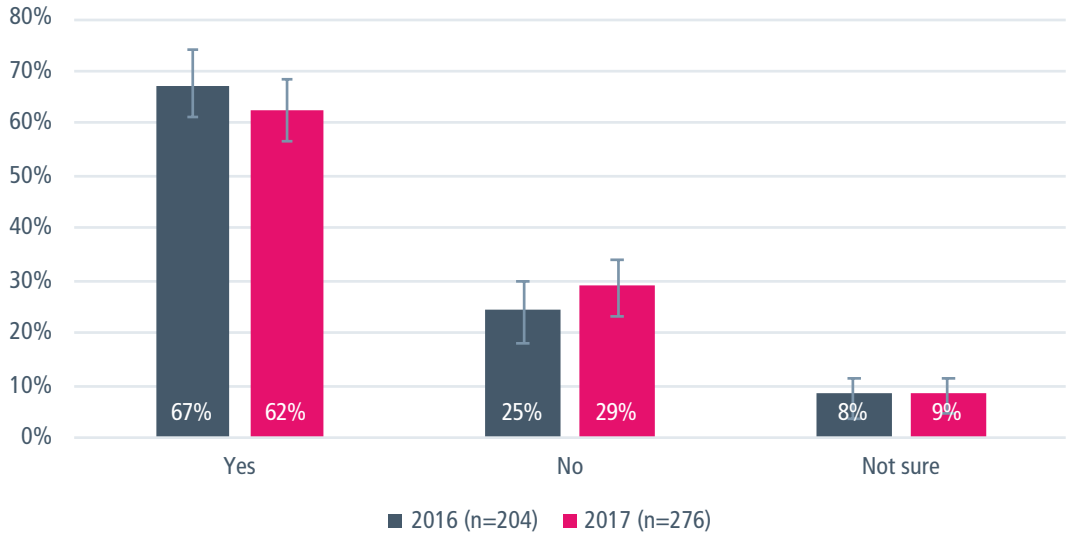
Principals have low awareness and access to NSCs

In the 2017 principal survey, we asked if principals were aware of NSCs and whether they had an NSC to support them. Of the 276 rural and remote principals who completed the survey in 2017, we estimated that around two thirds (62 per cent) (95% CI [56, 68]) had heard of NSCs prior to the survey (Figure 8).

Figure 8:

Estimated proportions (and 95 per cent confidence intervals) of principal awareness of NSCs (Question: "Before this survey, were you aware of NSCs?")

Source: CESE principal survey, 2016 and 2017



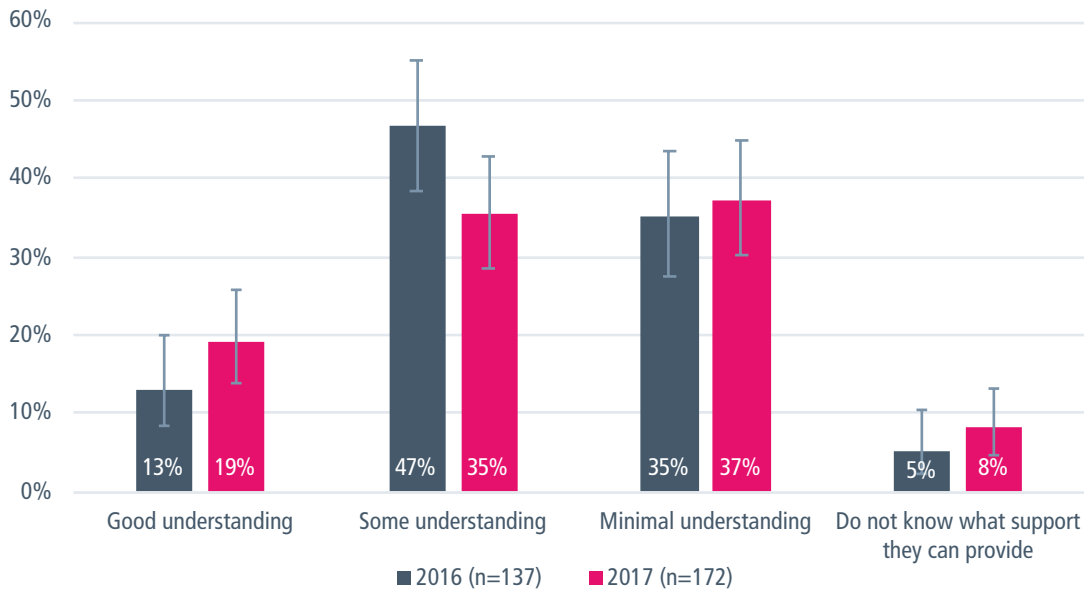
Of the principals who were aware of NSCs we estimated that around 56 per cent (95% CI [48, 63]) reported having an NSC available to their school, increasing from around 40 per cent (95% CI [32, 49]) in 2016. That means that in 2017, approximately one third of principals in rural and remote areas reported having an NSC available to them. This suggests that availability of NSCs for principals is lower than what was intended.

Of the principals from rural and remote locations who were aware of NSCs, we estimated that only 19 per cent (95% CI [14, 26]) reported having a "good understanding" of the support that NSCs could provide. Most principals reported having "some" (35 per cent, 95% CI [29, 43]) or "minimal" (37 per cent, 95% CI [30, 45]) understanding of the support NSCs could provide. There were no meaningful changes in responses from the 2016 survey (Figure 9).

Figure 9:

Extent of principals' reported understanding of what support NSCs could provide

Source: CESE principal survey, 2016 and 2017



The results suggest that the awareness of NSCs among school principals is low and that when principals do know about NSCs, they are not always able to access them.

In response to these challenges, a revised operating model has been developed for NSCs which was released in May 2018 (after the data for this evaluation had been collected). The new model shortens the name to Networked Specialist Facilitators (NSFs) to reflect that no physical 'centres' exist. It intends to provide more clarity around role and function for facilitators, and re-articulates the

primary role of facilitators: to assist schools to support students with complex needs. As part of this role, NSFs support schools to facilitate and coordinate the involvement of other agencies. The model also clarified the strategic, operational and responsive support that NSFs are expected to provide to schools. As part of the new model, data collection processes will also be improved. This model was outside of the scope of the evaluation. The effectiveness of this model could potentially be measured after full implementation has occurred.

Isolating the impact of NSCs was difficult

Facilitators reported that, alongside the uncertainty around the scope of their roles, they were also unclear about how to measure the impact of their work, particularly as the facilitators were only one component of the total support system. Facilitators discussed a number of different ways that they themselves measured their impact. For example, some facilitators spoke about the relationships they had developed with principals, directors and other agencies as a key outcome measure of their role.

> "If they know who I am, and know how to use me and access me, if they are satisfied with the assistance they get when they work with me, if I'm making things easier for them, that's really the measure of success." (NSC facilitator)

Another measure of facilitator success was their ability to build the capacity of the school to manage complex cases themselves, and their ability to coordinate integrated service responses to complex cases.

> "I'll coordinate a meeting with all the wraparound supports and then, at that point, we've got everybody at the same table. I then say, I've got everybody together, and now you need to run with that. We've got the supports up and running, and now you need to continue those relationships with those agency supports." (NSC facilitator)

> "It's rare that we get a lot of wins – we don't tend to have these meetings and everything's rosy and the problems are solved and this child's suddenly well and healthy, but what happens is everyone is on the same page; the agencies all knew what was going on. To call it a win is hard because it didn't end with everything being okay, but there was an intervention and things done that needed to be done." (NSC facilitator)

Facilitators also described their interagency meetings as a good forum for information sharing and determining whether others perceived the NSC to be having an impact through verbal feedback from their colleagues.

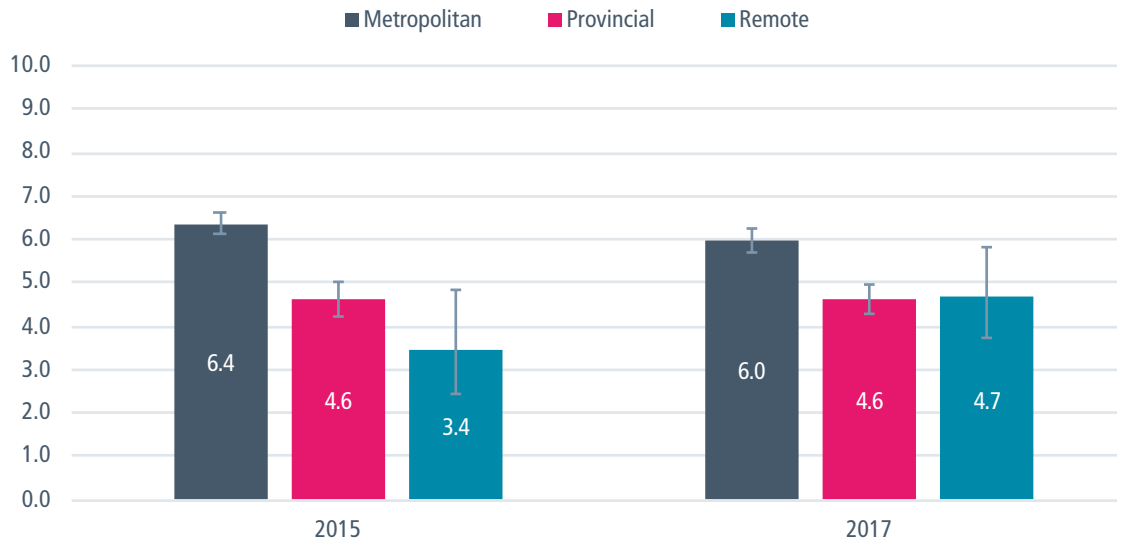
Principals in rural and remote areas still report greater difficulty in accessing coordinated support, although this has improved in remote areas

Principals were asked to rate the ease of accessing support for students with complex needs from sources beyond the existing supports provided by Education Services[12]. We present the results by location in Figure 10. Overall, principals from metropolitan schools rated their ease of accessing support higher than principals from other areas. The results suggested that principals from remote areas rated their ease of accessing support higher in 2017 than in 2015, however there was higher uncertainty around this estimate.

Figure 10:

Estimated mean ratings (and 95 per cent confidence intervals) of principals' reported ease of accessing support for students with complex needs

Source: CESE principal survey, 2015 and 2017



Summary

NSC facilitators have the potential to be an important part of the support system for schools. However, although there appears to be a need for a service coordination function for students with complex needs, NSC facilitators have not had the desired impact at this point. The role is not always well understood by principals and other school and department staff. Facilitators have sometimes struggled to find their place within an existing department support system that has overlapping support units and, at times, poorly defined role or unit boundaries. The result of this lack of clarity is that many principals are unaware they have an NSC facilitator available to them, or even that the role exists at all, and that the principals who are aware are not very clear what NSCs do.

12 The full question was: "Please rate the ability of your school to access support from beyond the school and existing Educational Services Team for students with additional or complex needs".

7. Findings: Preschool funding and enrolments

Quality early childhood education was one of the four key focus areas of the Blueprint. The aim of this focus area was to ensure that children in rural and remote areas 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 were:

- **Actions 1.1 and 3.1:** A new funding model for community preschools that strengthened 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:** Strategies 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 by attending 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.

Preschool funding changes under the Blueprint

The department developed a new needs-based Preschool Funding Model for community preschools (Action 3.1) in response to the 2011 Review of NSW Government Funding for Early Childhood (the Brennan Review)[13]. The new Preschool Funding Model commenced in 2014. It targeted 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. Under the model, $150 million was made available annually to community preschools, with additional loadings for those located in remote areas. A transitional period was implemented to ensure that no preschool would receive less funding as a result of the new model.

In 2017, the Preschool Funding Model was replaced by Start Strong[14], a new funding model built on similar needs-based funding principles. Start Strong is intended to provide greater access to early childhood education to children from lower equity groups, including:

- higher base funding rates based on Socio Economic Index for Areas (SEIFA)[15] score of disadvantage
- additional equity funding for children aged 3 years and over from low income and Aboriginal families
- loadings for outer regional, remote and very remote services.

Start Strong also introduced the Service Safety Net to support community preschools in rural and remote areas, replacing the Preschools for Sustainable Communities Program. The Service Safety Net provides an allocation of $132,000 per year to smaller services in rural and remote areas.

In addition to the new funding model, Action 4.1 of the Blueprint designated $7 million of capital works funding for rural and remote communities that lacked existing early childhood education facilities. This included $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.

13 https://education.nsw.gov.au/about-us/strategies-and-reports/our-reports-and-reviews/funding-for-early-childhood-education-review
14 https://education.nsw.gov.au/early-childhood-education/operating-an-early-childhood-education-service/grants-and-funded-programs/start-strong
15 http://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001

Enrolments among 4 and 5 year olds have increased over time, particularly among Aboriginal children

We have analysed enrolment trends from those preschools that were covered by the Preschool Funding Model (that is, community preschools). We were not able to analyse enrolment trends from facilities that were not operated by the department and, as such, cannot assess overall participation in early childhood education in rural and remote NSW.

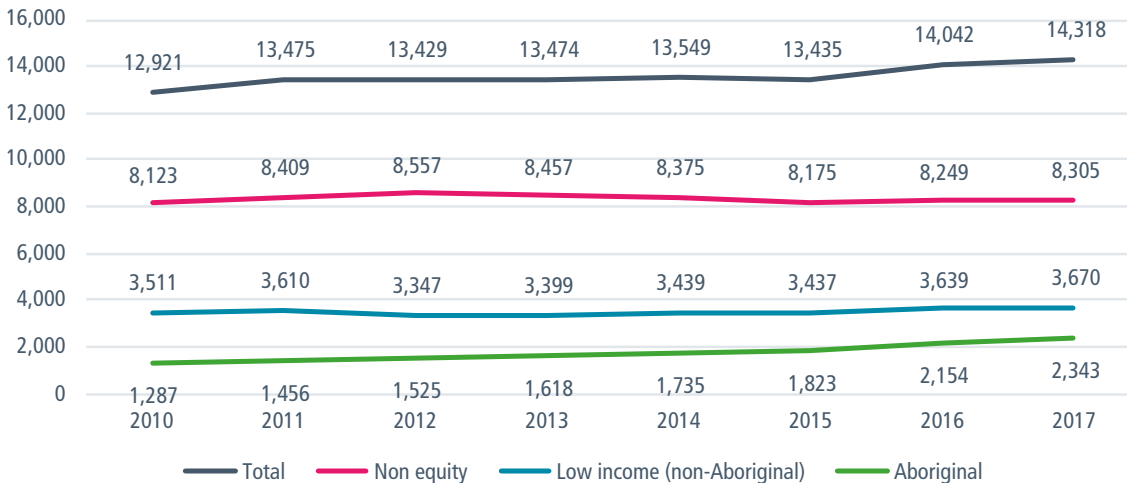
The patterns in enrolments over time in rural and remote areas were markedly different for 4 and 5 year olds compared to 3 year olds (Figure 11 and Figure 12).

The overall number of enrolled 4 and 5 year olds increased, particularly among Aboriginal children. Between 2013 (the year before the Blueprint was announced) and 2017, the number of Aboriginal 4 and 5 year olds enrolled in community preschools in all rural and remote areas increased from 1,618 to 2,343, a 45 per cent increase. The number of low income non-Aboriginal children enrolled in rural and remote areas increased by 8 per cent from 3,399 to 3,670 over the same period. The number of non-equity (that is, non-Aboriginal and not from low income families) enrolments did not rise over the same period, falling by 2 per cent from 8,457 to 8,305. Taking these groups together, total enrolments rose from 13,474 to 14,318, or a 6 per cent increase (Figure 11).

Figure 11:

Enrolments of 4 and 5 year olds in rural and remote community preschools, 2010–2017

Source: NSW Department of Education Early Childhood Education Directorate



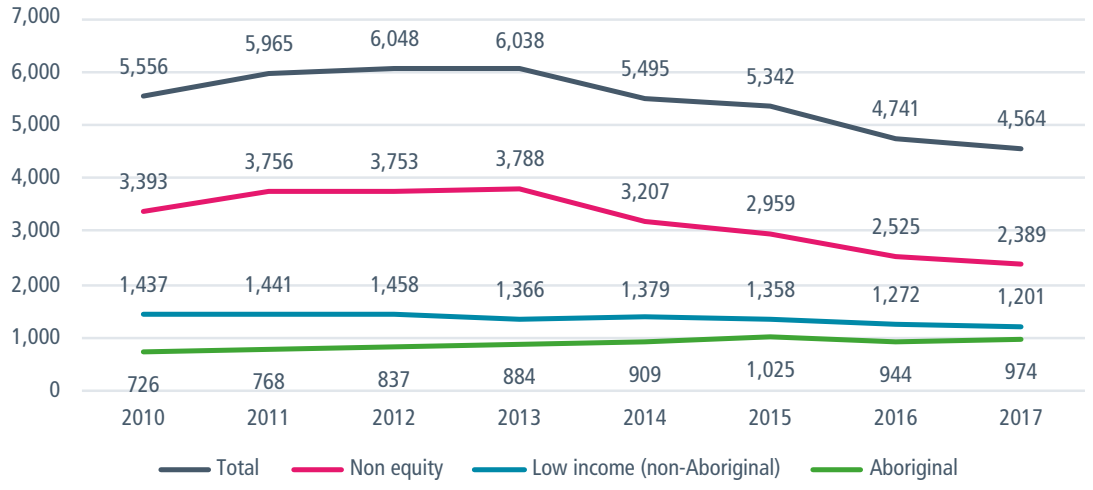
Total enrolments among 3 year olds declined over time, but grew among Aboriginal children

There was a markedly different pattern of enrolments among 3 year old children in rural and remote preschools. Total enrolments of 3 year olds decreased by 24 per cent from 6,038 to 4,564 between 2013 and 2017. This decrease was largely driven by a 37 per cent decrease in enrolments among non-equity children from 3,788 to 2,389. However, there was a 10 per cent increase in enrolments among Aboriginal children from 884 in 2013 to 974 in 2017 (Figure 12).

Figure 12:

Enrolments of 3 year olds in rural and remote community preschools, 2010–2017

Source: NSW Department of Education Early Childhood Education Directorate



Population changes in rural and remote areas of NSW

In assessing changes in preschool populations, it is important to note shifts in the overall population. Population growth in major cities over the years of the Blueprint exceeded that in rural and remote areas, which at times actually decreased[16]. In this context, maintaining a stable enrolment rate during a population decline represents a greater achievement than it would during a time of overall population growth.

The capital grants program was implemented successfully, providing additional preschool places

As part of the Blueprint (Action 4.1), in 2016 the department funded 12 projects through a $7 million allocation for capital works. These projects were in rural and remote areas identified as having a high level of need for more early childhood education places. All of the funded capital works projects were completed by early 2018.

The projects funded as part of the program were anticipated to provide an additional 357 preschool places, leading to a total of 662 preschool places in the relevant services. As at 28 March 2018, the current maximum capacity (the maximum number of children allowed in the preschool at any one time) was 668 for those services funded under the program[17]. There has also been an increase in enrolments in those services over time, from 798 in 2015 to 1,114 in August 2017 (there can be more enrolments than the number of places in a centre, as many children do not attend every day).

Summary

After the introduction of the Preschool Funding Model that was part of the Blueprint, enrolments of 4 and 5 year olds in rural and remote areas increased, particularly among Aboriginal children. Increases in these enrolments occurred despite an overall decline in population over time in these areas. Enrolments of 3 year old non-equity children have declined over time while enrolments of 3 year old Aboriginal children increased by 10 per cent.

16 As estimated by Australian Bureau of Statistics ARIA+ classification: https://www.abs.gov.au/ausstats/abs@.nsf/mf/1270.0.55.005
17 Source: National Quality Agenda IT System

8. Impacts of the Blueprint

The overarching aim of the Blueprint was to reduce the education gap between rural and remote and metropolitan students. Below we present the findings from a series of indicators relating to student achievement and engagement. These include:

- NAPLAN
- Best Start
- school attendance
- student retention from Year 10 to Year 12
- ATAR eligibility
- responses from the TTFM survey of student engagement
- responses from the FoL survey of teacher engagement.

The analyses below estimate the changes in student- and teacher-level outcomes that occurred after the Blueprint was introduced. While we have attempted to identify the general impacts of the Blueprint, in some cases our analyses are simply descriptive. In these cases we do not attempt to directly attribute changes to the Blueprint itself. Change attribution as a result of the Blueprint is also complicated by the concurrent implementation of a range of other initiatives which may also have affected these outcomes.

Gaps in NAPLAN scores between metropolitan and rural and remote schools have not reduced between 2013 and 2017

In Australia, students in Years 3, 5, 7 and 9 participate in NAPLAN tests in May each year. According to the Australia Curriculum and Reporting Authority, the tests measure some of the skills and understandings that students should be able to demonstrate in particular scholastic years[18]. While NAPLAN tests are intended to complement other formal and informal assessments, they provide a standardised measure of student progress in literacy and numeracy that can be used to inform teaching practice and education policy.

To investigate whether student performance on NAPLAN assessments improved after the implementation of the Blueprint reforms, we used the observed NAPLAN scaled scores from 2013 and 2017 to estimate changes in mean scores for students from metropolitan, provincial and remote schools.

The results of our analysis are presented in Table 10[19]. We estimated that the mean NAPLAN Reading and Numeracy scores for students in remote schools in 2017 were close to those for students in remote schools in 2013. Our results also showed that the changes in the gaps between remote and metropolitan locations from 2013 to 2017 were probably all very small.

18 http://nap.edu.au
19 It is important to note that, due to the non-linear growth trajectory of student NAPLAN scores (Goss et al. 2016), estimated increases in NAPLAN scaled scores are not directly comparable across the different scholastic years or across different school locations.

Table 10:

Estimated changes in mean NAPLAN Reading and Numeracy scaled scores across locations between 2013 and 2017, and corresponding change in score gap for students in provincial and remote schools compared to metropolitan schools

		Reading		Numeracy	
Year level	Location	Change in mean scores 2013 to 2017 (95% CI)	Change in gap compared to students in metropolitan schools 2013 to 2017 (95% CI)	Change in mean scores 2013 to 2017 (95% CI)	Change in gap compared to students in metropolitan schools 2013 to 2017 (95% CI)
Year 3	Metropolitan schools	+11 [10, 13]	--	+11 [9, 12]	--
	Provincial schools	+3 [0, 6	-8 [-11, -5]	+7 [5, 9]	-3 [-6, -1]
	Remote schools	-2 [-20, 15]	-14 [-31, 4]	+9 [-5, 22	-2 [-15, 11]
Year 5	Metropolitan schools	+1 [0, 3]	--	+3 [1, 4]	--
	Provincial schools	-5 [-7, -3]	-6 [-9, -4]	+5 [3, 7]	+2 [0, 5]
	Remote schools	-7 [-18, 3]	-9 [-19, 1]	+12 [-1, 26]	+10 [-3, 23]
Year 7	Metropolitan schools	+4 [3, 6]	--	+9 [7, 11]	--
	Provincial schools	-1 [-3, 1]	-5 [-8, -2]	+6 [4, 8]	-3 [-6, 0]
	Remote schools	-5 [-17, 8]	-9 [-21, 3]	+3 [-10, 16]	-6 [-18, 6]
Year 9	Metropolitan schools	+3 [1, 4]	--	+6 [3, 10]	--
	Provincial schools	0 [-2, 2]	-3 [-5, 0]	+14 [12, 17]	+8 [4, 12]
	Remote schools	0 [-13, 12]	-3 [-14, 8]	+14 [5, 23]	+8 [-1, 16]

Students who were exposed to the Blueprint reforms do not perform better on their NAPLAN assessments than similar students who were not exposed

To investigate whether students who were exposed to the Blueprint reforms performed better on their NAPLAN assessments than similar students who were not exposed to the Blueprint reforms, we sought to compare the NAPLAN scores for those students from provincial and remote schools to the scores for similar students from metropolitan schools. Our analysis produced groups of comparable students who had:

- similar baseline literacy and numeracy scores
- similar expected outcomes
- similar levels of socio-educational advantage
- similar Aboriginal and/or Torres Strait Islander status
- similar gender status
- similar rates of non-English speaking backgrounds.

For each comparison, we used data from two student cohorts to create two groups of similar students: a pre-Blueprint-implementation group and a post-Blueprint-implementation group. We used the data from each pre-implementation group to predict the NAPLAN outcomes for those students in the relevant post-implementation group. As students from metropolitan, provincial and remote schools tended to have different NAPLAN scores before the introduction of the Blueprint reforms, predicting outcomes in this way allowed us to control for pre-existing differences in terms of expected growth.

We investigated differences across three growth periods: Kindergarten to Year 3; Year 3 to Year 5; and Year 7 to Year 9. Table 11 and Figure 13 present the results of our analysis. We present the differences in NAPLAN scores for provincial and remote students, relative to the comparison group. We also include an estimate of the "true difference" which is based on the effect sizes calculated, and the 95 per cent confidence intervals.

According to Cohen (1995), effect sizes between 0 and 0.2 represent very small effects, between 0.2 and 0.5 represent small effects, between 0.5 and 0.8 represent medium effects, and above 0.8 represent large effects. However, it is important to note that these classifications are somewhat arbitrary and do not consider the consequences of the effects. It is also important to recognise that smaller differences become more meaningful for students with higher NAPLAN scores.

After controlling for some potential confounders, we estimate that the average Numeracy scores for students from remote schools who were exposed to the Blueprint were close to those for similar students from metropolitan schools. The true differences were probably very small to small. Similarly, the estimated average Reading scores for students exposed to the Blueprint in remote schools were close to those for similar students from metropolitan schools. This represented a true difference that was probably very small to small, and more likely to be negative than positive.

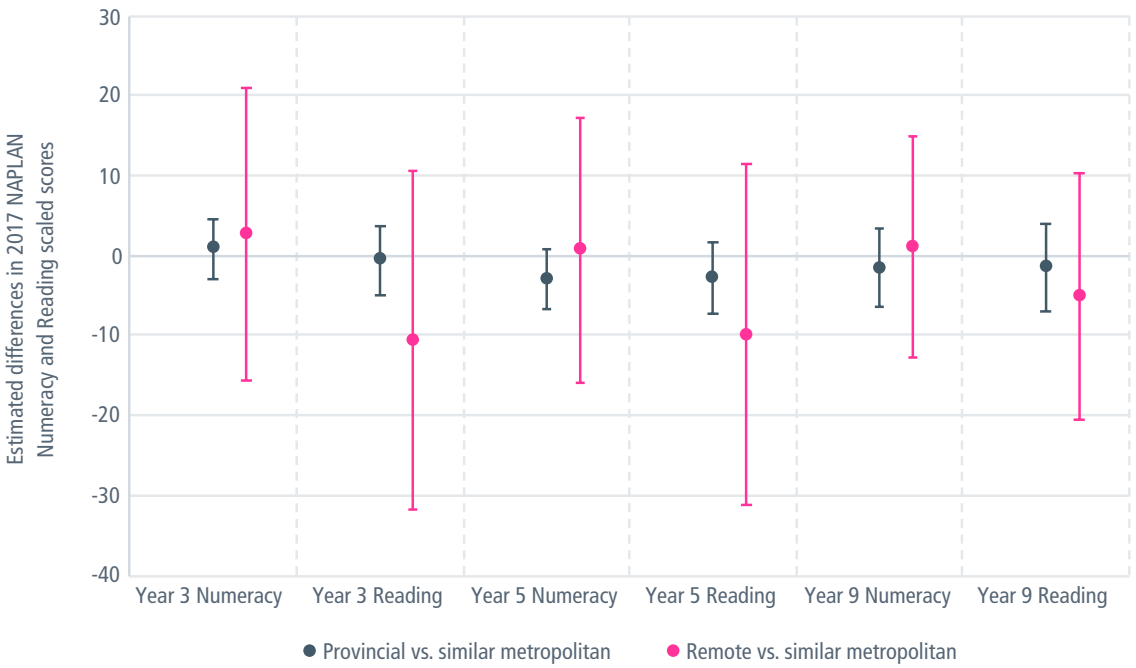
Table 11:

Differences in 2017 NAPLAN Numeracy and Reading scores for provincial and remote students compared to similar students from metropolitan schools

		Provincial students compared to similar students from metropolitan schools		Remote students compared to similar students from metropolitan schools	
Year level	**Measure**	**Difference in mean scores (95% CI)**	**Effect size interpretation**	**Difference in mean scores (95% CI)**	**Effect size interpretation**
Year 3	**Numeracy**	+1 [-3, 4]	Very small	+3 [-16, 21]	Very small to small
	Reading	-1 [-5, 4]	Very small	-11 [-32, 11]	Very small to small, more likely to be negative than positive
Year 5	**Numeracy**	-3 [-7, 1]	Very small	+1 [-17, 17]	Very small to small
	Reading	-3 [-7, 2]	Very small	-10 [-31, 11]	Very small to small, more likely to be negative than positive
Year 9	**Numeracy**	-2 [-6, 3]	Very small	+1 [-13, 15]	Very small to small
	Reading	-1 [-7, 4]	Very small	-5 [-20, 10]	Very small to small, more likely to be negative than positive

Figure 13:

Differences in 2017 NAPLAN Numeracy and Reading scores for provincial and remote students compared to similar students from metropolitan schools



The gap between remote and metropolitan students on the Best Start Kindergarten Assessment has decreased since 2014

Best Start measures each student's literacy and numeracy skills at the beginning of Kindergarten and was fully rolled out to NSW government schools in 2010. Through identification of student skill levels, Kindergarten teachers can differentiate their teaching according to the individual needs of their students.

We looked at data from Best Start by location for the following aspects: reading texts, comprehension, aspects of writing, phonics and early arithmetic strategies. We present the data in Appendix 5.

Since 2010, the gap between metropolitan and provincial students has been consistently small for all of the reported aspects, with declining trends across both location categories for reading texts, and stable trends in the other measures. Since the start of the Blueprint, the existing trends among metropolitan and provincial students have largely been maintained.

Since 2014, the gaps between metropolitan and remote students have narrowed on each of the Best Start measures. However, this finding needs to be treated with caution given the uncertainty in the aggregate Best Start information for remote Kindergarten students due to the low number of remote students.

Mean school attendance did not meaningfully change in rural and remote schools

To determine the impact of the Blueprint on school attendance we compared mean attendance rates for provincial and remote schools to those for metropolitan schools between 2010 and 2017. Mean attendance rates for primary and secondary students are presented in Appendix 6.

Mean attendance rates for metropolitan schools have consistently exceeded those of provincial and remote schools over time, and these groups of schools had common trends in mean attendance rates both before and after the Blueprint's introduction. Mean attendance rates for remote schools appear to be subject to a greater degree of year-to-year volatility than metropolitan and provincial schools because remote schools comprise a small proportion of the total sample.

To accurately assess changes in attendance rates following the Blueprint, we compared the difference in attendance rates between metropolitan, provincial and remote schools before and after the Blueprint. We present the results in Table 12.

When primary and secondary schools were combined, we found that following the introduction of the Blueprint, the change in the attendance rate at provincial schools was 0.02 percentage points (95% CI [0.00, 0.03]) higher than the change seen in metropolitan schools. The same comparison for metropolitan and remote schools following the introduction of the Blueprint found that the change in the attendance rates in remote schools was 0.01 percentage points (95% CI [-0.13, 0.11]) lower than the change seen in metropolitan schools.

Similar negligible differences in the changes in attendance rates following the introduction of the Blueprint were found between provincial and metropolitan schools when we analysed primary schools alone. The change in the attendance rate at remote schools was 0.12 percentage points (95% CI [0.05, 0.18]) lower than the change seen in metropolitan schools.

When we analysed secondary schools alone, the change in the attendance rate at provincial schools was 0.01 percentage points (95% CI [-0.04, 0.03]) lower than the change seen in metropolitan schools. The change in the attendance rate at remote schools was 0.2 percentage points (95% CI [-0.45, 0.02]) lower than the change seen in metropolitan schools.

Table 12:

Estimates for changes in attendance rates

Comparison	Primary & Secondary schools	Primary schools	Secondary schools
Provincial vs. metropolitan	0.02 percentage points (95% CI [0.00, 0.03])	0.02 percentage points (95% CI [0.01, 0.03])	-0.01 percentage points (95% CI [-0.04, 0.03])
Remote vs. metropolitan	-0.01 percentage points (95% CI [-0.13, 0.11])	0.12 percentage points (95% CI [0.05, 0.18])	-0.20 percentage points (95% CI [-0.45, 0.02])

Teachers' self-assessment suggests that the quality of teaching improved on some measures in provincial schools, but there is uncertainty on changes in remote schools

To measure the quality of teaching, we used data from the FoL survey, which asks teachers to self-assess against survey items that are grouped into eight drivers of student learning: inclusive school; leadership; parental involvement; collaboration; learning culture; data informs practice; teaching strategies; and technology. We present the data in Appendix 7.

Among primary school teachers, we found an increase in the measures of inclusive school, leadership and learning culture, for both metropolitan and provincial teachers. The largest increase was for inclusive school with an effect size of 0.31 for metropolitan teachers, and 0.28 for provincial teachers. The estimated effect was similar for remote teachers (0.28), however the smaller sample of remote teachers meant that the uncertainty surrounding that effect size and all other estimates for this cohort (as measured by the 95 per cent confidence intervals) was much larger. There was also evidence of an improvement in the remaining five measures for metropolitan teachers, but not for provincial teachers or remote teachers (Appendix 7).

Among secondary school teachers there appear to have been fewer positive changes, particularly among remote teachers, although the uncertainty around the estimates was still too high to allow us to make firm conclusions on the changes among that group. We found evidence of positive changes among both metropolitan and provincial teachers for the inclusive school, data informs practice, and teaching strategies measures. We also found evidence of positive changes among metropolitan teachers on the leadership, learning culture and technology measure. However, generally the changes between 2014 and 2017 were less than 0.2 of a standard deviation, indicating the magnitude of the change was negligible (Appendix 7).

Overall, the results of the FoL survey indicated that, based on teacher self-assessment, there were no improvements in the quality of teaching in provincial schools over and above what was observed in metropolitan schools from 2014 to 2017. Estimates for the quality of teaching in remote schools could only be made with a high degree of uncertainty, meaning that the "true" changes may have been either negative or positive.

Student engagement improved on some measures in provincial schools, but not in remote schools

To measure student engagement, we used data from the TTFM student survey. TTFM is part of The Learning Bar's survey package conducted in NSW government schools each year, and includes a range of measures relating to student engagement and student perceptions of teacher quality. We examined the following six measures in our analyses: interest and motivation; values school outcomes; effort; rigour; effective learning time; and relevance. We present the data in Appendix 8.

There was a positive change in the interest and motivation and effective learning outcomes at metropolitan and provincial schools. However, in both instances the scope of change values (indicated by the 95 per cent confidence intervals) fell within 0.2 of a standard deviation, indicating that the magnitude of the change was negligible.

From 2015 to 2017 there was a negative change in student attitudes in values school outcomes across all three locations, and in effort in metropolitan and provincial schools. However, in both instances the scope of change values (indicated by the 95 per cent confidence intervals) also fell within 0.2 of a standard deviation, indicating that the magnitude of the changes was negligible.

Overall, the results of the TTFM survey showed similar patterns in student engagement in both provincial and metropolitan schools between 2015 and 2017, with marginal changes in both groups. Estimated student engagement in remote schools holds a high degree of uncertainty, meaning that the "true" changes may have been either negative or positive.

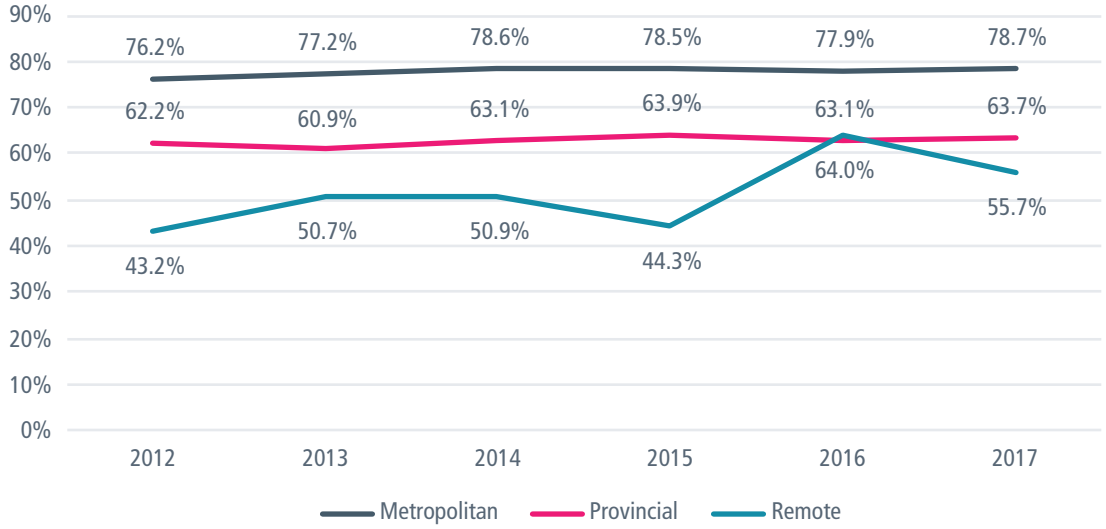
School retention and ATAR have remained stable over time for provincial students, with some fluctuation among remote students

We describe the Apparent Retention Rate (ARR) for Year 10–12 from 2012 to 2017[20] in Figure 14. Over time, the Year 10–12 ARR has been around 15 percentage points higher in metropolitan schools than provincial schools; a gap that has remained largely stable. There has been more fluctuation in the ARR in remote schools; increasing from 44 per cent in 2015, to 64 per cent in 2016, before falling back to 56 per cent in 2017. The data suggests that, over time, there has been an increase in the ARR among remote schools. However, given the low number of students in those schools, ARR is likely to continue to fluctuate in future years.

Figure 14:

Apparent retention rates (Year 10–12) by location, 2012–2017

Source: CESE Statistics Unit's National Schools Statistics Collection data cube



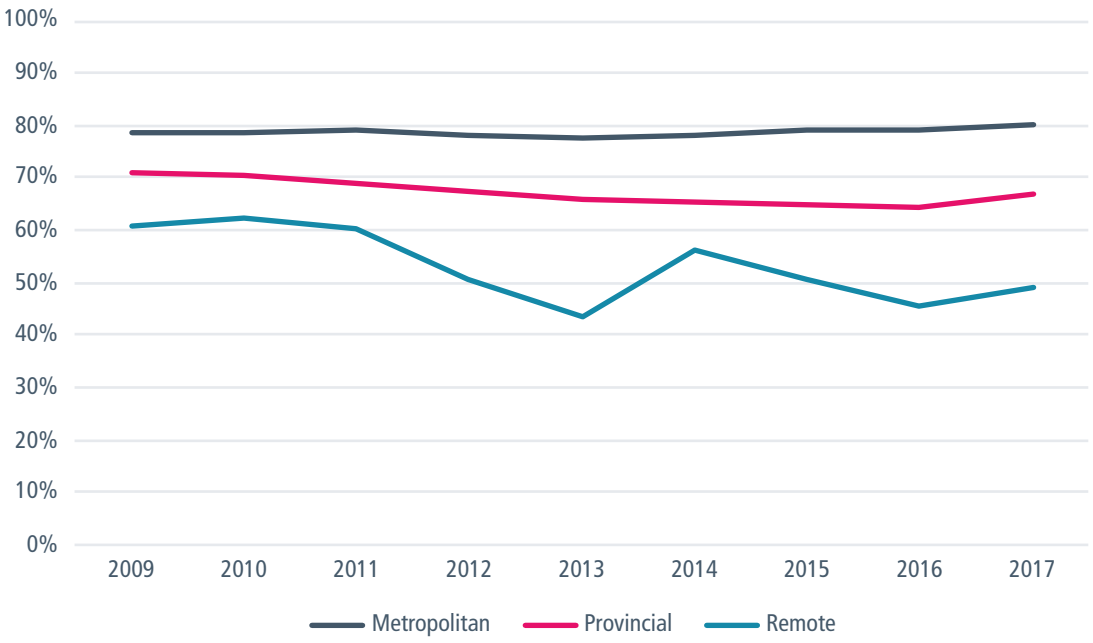
We present the proportion of students awarded an HSC who were eligible for an ATAR in Figure 15. Students in metropolitan areas have had a higher rate of ATAR achievement than students from provincial and remote areas over time.

Among provincial students, the proportion of students awarded an HSC who were eligible for an ATAR declined gradually from 2009 to 2016 (from 71 per cent to 65 per cent), before increasing slightly in 2017 to 67 per cent. Among remote students, there has also been a decline in the proportion of students awarded an HSC who were ATAR eligible over time from 61 per cent in 2009, to 49 per cent in 2017, with some fluctuations in the years between. This data suggests that there was no increase in ATAR eligibility associated with the Blueprint.

Figure 15:

Proportion of students awarded an HSC who are eligible for an ATAR

Source: CESE Statistics and Analysis Unit



20 ARR measures the ratio of the total FTE of students in a designated year (i.e. Year 12 in 2017) divided by the total FTE of students in a previous year (i.e. Year 10 in 2012).

Students in rural and remote areas were less likely than metropolitan and provincial students to have taken more advanced subjects in English and mathematics

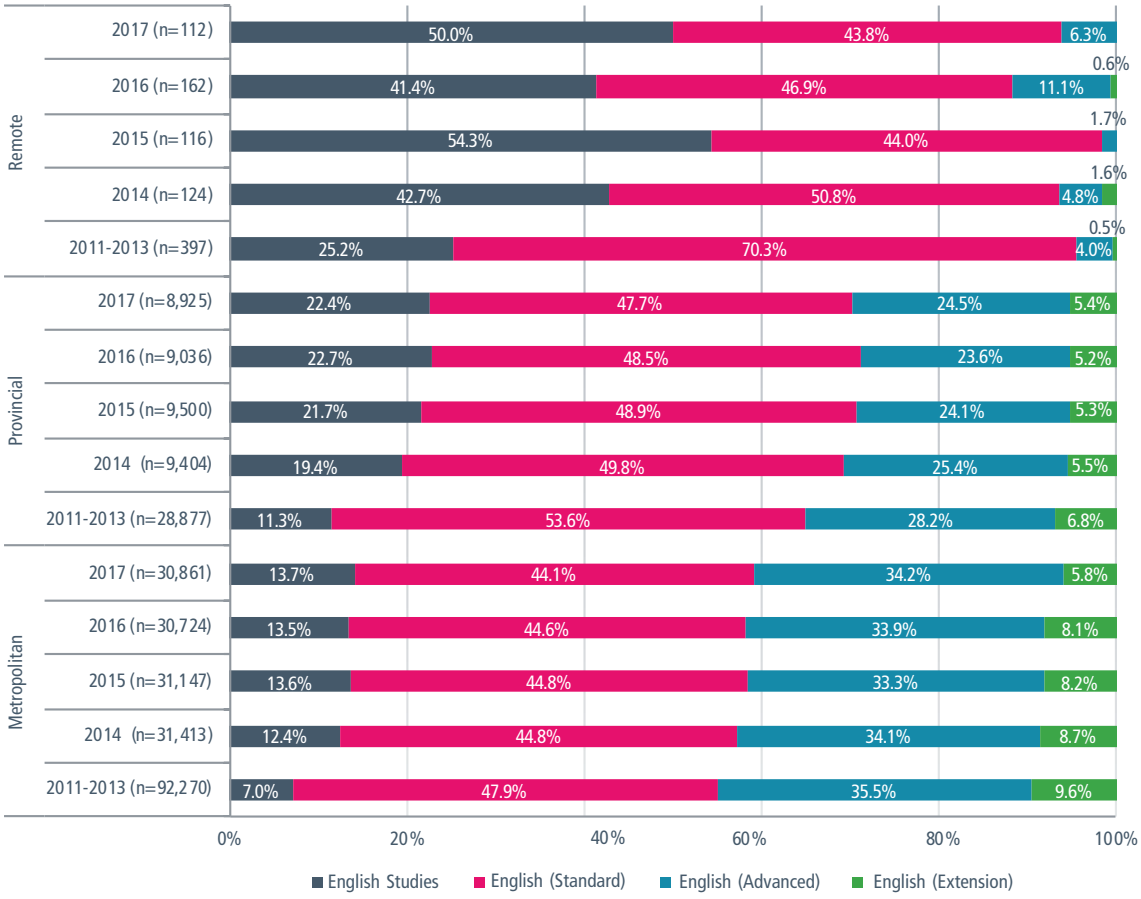
The proportions of students taking each type of HSC English class between 2011 and 2017 are presented in Figure 16. In each year from 2011 to 2017, a smaller proportion of rural and remote than metropolitan HSC students studied English (Extension) and English (Advanced). For example, 9.6 per cent of metropolitan students studied English (Extension) in the 2011–2013 period (prior to the Blueprint), compared to 6.8 per cent of provincial and 0.5 per cent of remote students. In 2017, 5.8 per cent of metropolitan and 5.4 per cent of provincial students studied English (Extension). This subject was not studied by any remote students in 2017.

In the 2011–2013 period (prior to the Blueprint), 7 per cent of metropolitan students took English Studies. In 2017 this proportion had grown to 13.7 per cent. Among provincial students, 11.3 per cent took English Studies in 2011–2013, growing to 22.4 per cent in 2017. Among remote students, 25.2 per cent took English Studies in 2011–2013, growing to 50 per cent in 2017.

Figure 16:

Proportions of students taking specialist HSC English subjects, 2011–2017

Source: NSW Education Standards Authority (NESA)



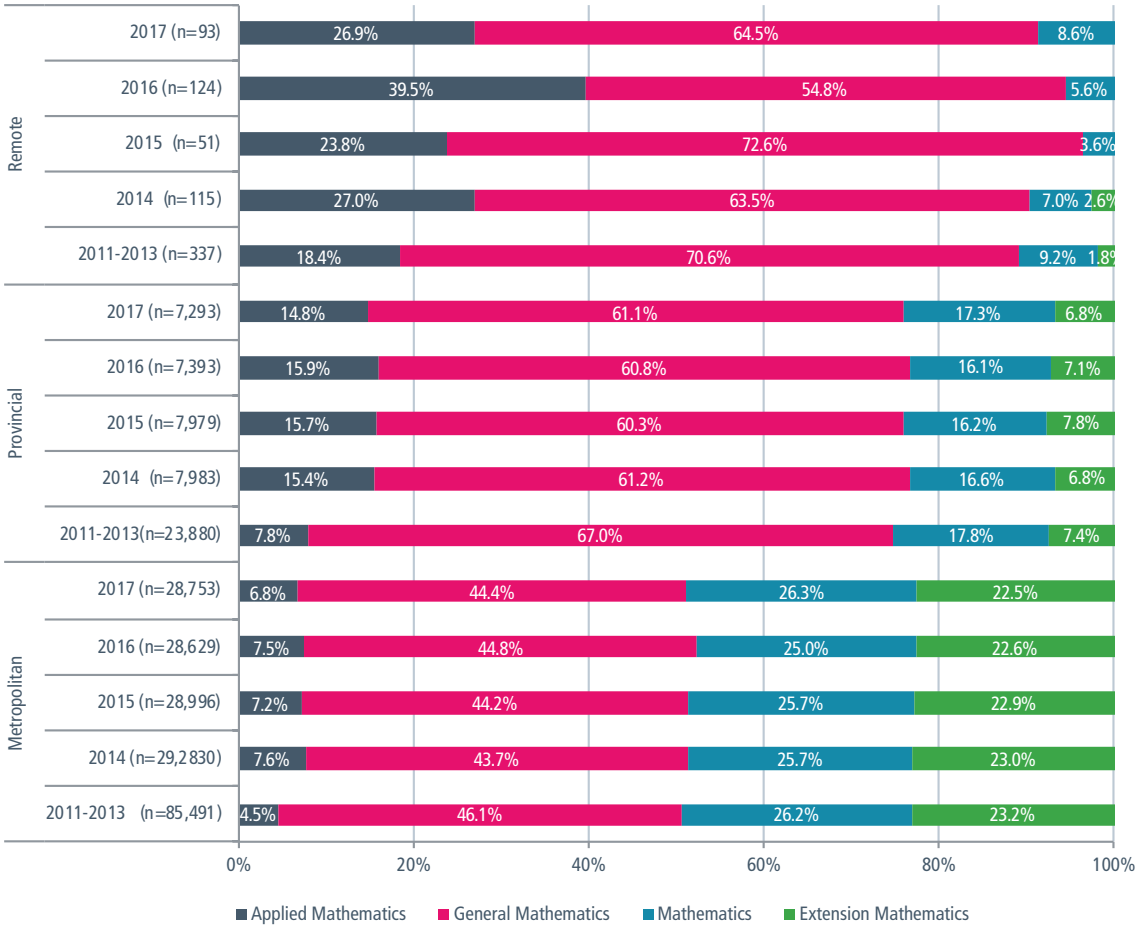
In each year from 2011 to 2017, a smaller proportion of rural and remote students studied mathematics and extension mathematics compared to metropolitan students. For example, 23.2 per cent of metropolitan students studied extension mathematics in the 2011–2013 period, compared to 7.4 per cent of provincial and 1.8 per cent of remote students. In 2017, 22.5 per cent of metropolitan and 6.8 per cent of provincial students studied extension mathematics. This subject was not studied by any remote students in 2017.

In the 2011–2013 period, 18.4 per cent of remote HSC students studied applied mathematics (the least advanced mathematics subject), growing to 26.9 per cent in 2017. Among provincial students, 7.8 per cent studied applied mathematics in 2011–2013, growing to 14.8 per cent in 2017. In the 2011–2013 period, 4.5 per cent of metropolitan students studied applied mathematics, growing to 6.8 per cent in 2017.

Figure 17:

Proportions of students taking specialist HSC mathematics subjects, 2011–2017

Source: NSW Education Standards Authority (NESA)



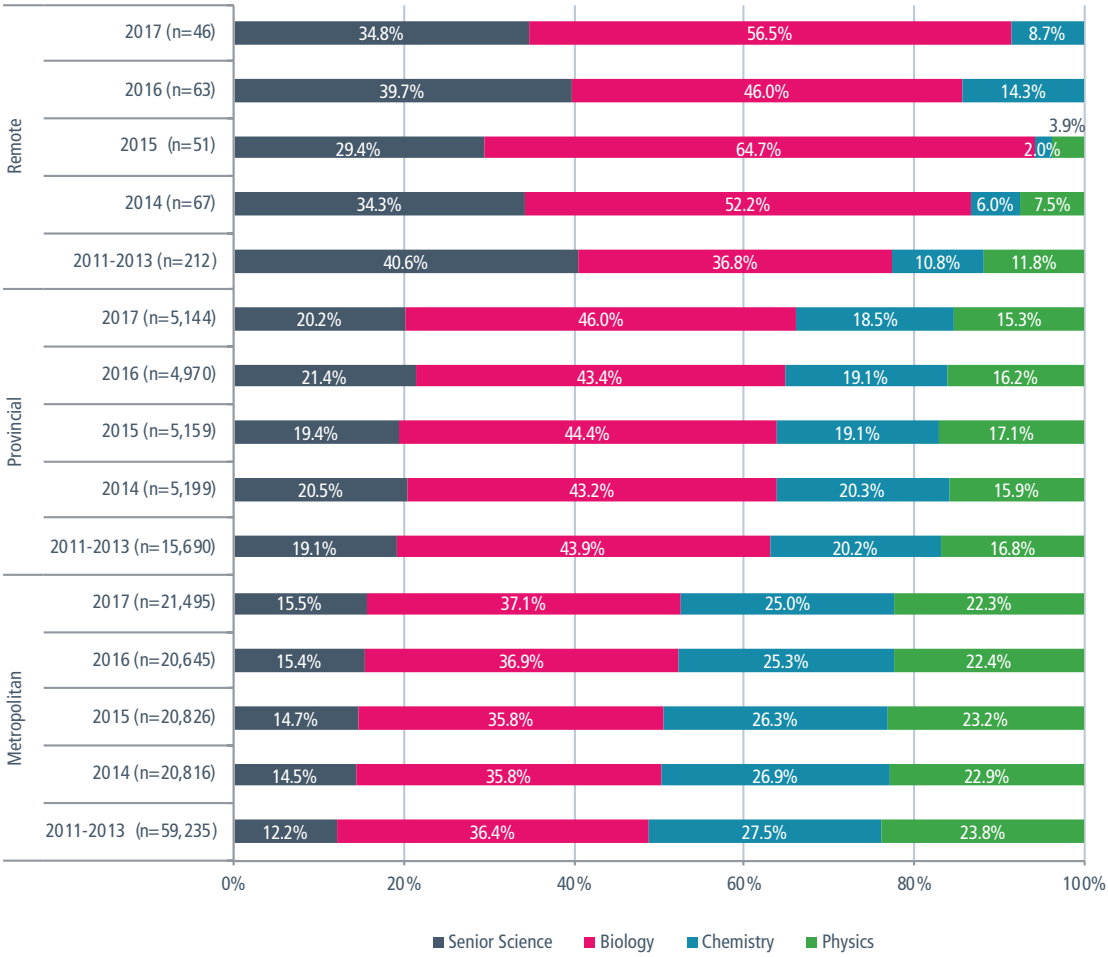
For HSC students studying science subjects, both provincial and remote students have been consistently less likely to study physics and chemistry but are more likely to take biology and senior science (Figure 18). For example, 23.8 per cent of metropolitan students studied physics in the 2011–2013 period, compared to 16.8 per cent of provincial and 11.8 per cent of remote students. In 2017, 22.3 per cent of metropolitan and 15.3 per cent of provincial students studied physics, but no remote students studied this subject.

There was no clear change in the gaps between the proportions of students studying each type of HSC science subject.

Figure 18:

Proportions of students taking specialist HSC science subjects, 2011–2017

Source: NSW Education Standards Authority (NESA)



Summary of the impact of the Blueprint

Our analysis of NAPLAN scores shows that there remains a "remoteness gap" between metropolitan and provincial students, and between metropolitan and remote students in their results. There appears to be a clear relationship between remoteness and NAPLAN achievement: metropolitan students, on average, score higher in NAPLAN than provincial students, who in turn score higher than remote students. There is no evidence that these gaps have reduced after the implementation of the Blueprint, although there is higher uncertainty surrounding the changes in remote schools.

The true impact of the Blueprint was probably very small on students from provincial schools whose average NAPLAN scores were estimated to range from around 3 points lower to 1 point higher than the metropolitan comparison group, depending on the year level and type of assessment. There was a wider range of scores for remote students, but also a higher level of uncertainty, with the true effect probably being very small to small. The estimated average NAPLAN scores for remote students ranged from around 11 points lower (for Year 3 Numeracy) to around 3 points higher (for Year 3 Reading) compared to the metropolitan comparison students.

Students in rural and remote areas were less likely in general than metropolitan students to have studied more advanced subjects in English and mathematics from 2011 to 2017.

We found no meaningful change in attendance rates for rural and remote primary or secondary schools since the introduction of the Blueprint. However, increasing school attendance was not an explicit focus of the Blueprint as a whole, nor was it a focus of the individual actions that were part of this evaluation, with the possible exception of Networked Specialist Centres.

On both student engagement and teacher quality, the results of our analyses showed similar patterns in both provincial and metropolitan schools from 2015 to 2017, with marginal changes experienced in both groups. Estimates of student engagement and teacher quality in remote schools could only be made with a high degree of uncertainty, meaning that the "true" changes may have either been negative or positive.

9. Conclusions and discussion

The Blueprint included a range of actions that aimed to address the discrepancy in educational outcomes between metropolitan and rural and remote students. Some of these actions were successful in achieving their aims while others were less effective.

Overall, our analysis has also shown that, for the most part, the outcomes for rural and remote students have not improved relative to metropolitan students since the introduction of the Blueprint. On some isolated measures of student engagement and teacher quality, there has been overall improvement in rural and remote areas, but these improvements were generally matched by similar improvements among metropolitan students, meaning that the gap between rural and remote and metropolitan students has not reduced. It should be noted that estimates around outcomes and findings for remote teachers and students in particular involved a high degree of uncertainty due to the small sample sizes.

Below we present a summary of the key findings and a discussion of overall patterns and policy implications.

Summary of findings

The 50 per cent rental subsidy had little impact on teacher retention

As part of the Blueprint, the department introduced a 50 per cent rental subsidy at some four-point schools with the aim of attracting and retaining teachers. Overall, our analysis found that this subsidy had no meaningful impact on teacher retention. Any change in the risk of teachers leaving those schools where the subsidy was introduced was probably very small to small, and may have been either positive or negative.

Aurora College provides an important option for gifted and talented students in rural and remote areas

Overall, Aurora College has provided greater opportunities to gifted and talented students from rural and remote areas to study higher level subjects. Enrolments in Aurora College have grown over time, and previously-identified issues related to timetabling continue to be addressed. The proportion of students who reported missing a class at their home school due to timetabling issues dropped from around 89 per cent in 2015 to around 67 per cent in 2017. However, we estimated that in 2017 around 78 per cent of principals (95% CI [58, 91]) with students at Aurora College considered timetabling issues to still be a "major challenge". Students at Aurora College remain highly engaged and reported that they appreciate the opportunity to interact with like-minded peers. If given the choice, around 64 per cent (95% CI [56, 72]) of students would choose to go to Aurora College again, if they were to start the school year over.

Education Networks and Networked Specialist Centres have had little impact

Education Networks provided principals and schools with an opportunity to collaborate more effectively. The ability of schools to tailor these Networks to their needs was seen as a key strength. However, while schools have largely used the Networks to share resources, they have not been used in the more substantial ways originally envisaged in the Blueprint, for example to increase community engagement or share budgets.

NSC facilitators have worked effectively with schools and services to coordinate support for students with complex needs. However, some facilitators were unsure of their overall effectiveness in the absence of robust outcome measures. Further, some facilitators expressed confusion about the scope of the role and how they could be most effective in it. A new operating model for NSC facilitators was developed and implemented in early 2018. This model was outside the scope of the evaluation.

Enrolments of 4 and 5 year old Aboriginal children and children from low income families in community preschools have increased

Between 2013 and 2017, the number of Aboriginal 4 and 5 year olds enrolled in community preschools in rural and remote areas increased by 45 per cent. The number of non-Aboriginal 4 and 5 year old children from low income families enrolled increased by 8 per cent. These increases occurred despite an overall decline in the population in these areas over time. Enrolments of 3 year old non-equity children (non-Aboriginal and not from low income families) have declined over time.

The gaps between rural and remote and metropolitan students has generally not reduced on key indicators related to student achievement

Our analysis shows that since the introduction of the Blueprint, the gap in **NAPLAN scores** and **school attendance** between rural and remote students and metropolitan students has not reduced. The gap in **retention** between remote students and metropolitan students has narrowed since the introduction of the Blueprint. However, the gap in retention between provincial students and metropolitan students has not reduced. The gaps between remote students and metropolitan students have narrowed on each of the **Best Start measures** since the introduction of the Blueprint. However, the gaps between provincial students and metropolitan students has not reduced.

On **NAPLAN scores**, we estimated that the mean NAPLAN Reading and Numeracy scores for students in remote schools in 2017 were close to those for students in remote schools in 2013. Our results also showed that the changes in the gaps between remote and metropolitan locations from 2013 to 2017 were probably all very small.

Following the introduction of the Blueprint, the change in the **attendance rate** for remote schools (primary and secondary combined) was 0.01 percentage points (95% CI [-0.13, 0.11]) less than the change seen in metropolitan schools. This represents a negligible difference; the gap in school attendance between remote students and metropolitan students did not meaningfully change.

Discussion

The negative relationship between location and outcomes has persisted for decades, with a long term gap between metropolitan and rural and remote students on a range of assessments (Halsey 2018). It is likely that reducing this gap will require a long term, sustained effort, of which the Blueprint only represents a first step. Our evaluation shows that the Blueprint achieved only limited success against its aims of reducing the outcome gaps between metropolitan and rural and remote students. In this context, the value of this evaluation is in highlighting the severity of the problem, as well as identifying potentially effective future policy directions based on those actions which have shown some success.

The Independent Review into Rural and Remote Education (Halsey 2018) also highlighted the importance of non-school factors in student outcomes. Among the 11 recommendations of the Review are a greater role for the philanthropic sector, and stronger measures to assist rural and remote students to transition beyond school. These recommendations recognise the role of the broader community in developing successful students. Similarly, as the Review states:

> "Student achievements and beyond school opportunities are shaped by a diverse blend of in-school and community and home factors, as well as interactions between them and knowledge of opportunities and what is happening in the wider world." (Halsey 2018, p19)

The persistence of the gaps suggests that the department should maintain a focus on the education of rural and remote students. The findings from this evaluation offer some insights into how future efforts may be better targeted for greater impact.

Having said this, this evaluation has not assessed the impact of a range of new initiatives or revised actions that have been implemented by the department in recent years. These new initiatives have increasingly been designed with the issues above in mind. Early anecdotal evidence suggests that these new initiatives have the potential to be more successful than those considered in this report. The effectiveness of these initiatives should be subject to future evaluation.

A refreshed strategy

A new strategy for rural and remote education should be evidence-informed and maintain a cohesive focus on improving student outcomes. A program logic methodology should be applied to a future plan to ensure that there is a clear definition of success; that there is coherence across activities; that there are adequate and robust measures available; and there is strong, central coordination, enabling continual monitoring and adjustment of initiatives as required to ensure success. The new strategy should incorporate revised remoteness classifications to allow funding to be more accurately targeted to rural and remote areas.

Addressing quality of teaching remains fundamental

The Blueprint focused heavily on attracting and retaining quality staff in rural and remote locations. This focus should be maintained.

Filling vacant positions with quality teachers is also a critical issue for principals in rural and remote schools. This view was expressed to us repeatedly by interview participants, and is also one of the key findings of the recent Independent Review in Rural and Remote Education (Halsey 2018). To address this issue, the Blueprint introduced an additional 50 per cent rental subsidy for some schools. However our analysis showed that this subsidy did not have the desired effect of increasing teacher retention.

Financial incentives appear to attract teachers to rural and remote locations, but have had no impact on retention. Based on our analysis, financial incentives such as those introduced as part of the Blueprint may only have a limited impact on the decisions of teachers to remain in a rural and remote location. Lifestyle factors related to local amenities, as well as proximity to major centres and transport, entertainment and recreational opportunities, are likely to play an equal or even greater role in their decision making. Future incentive packages should also incorporate professional learning, curriculum planning support and personal support, including measures to support mental health and wellbeing and promote a sense of belonging. To maximise the effectiveness of financial incentives, they should be administered fairly, transparently and with as little "red tape" as possible to ensure that the benefits clearly outweigh the costs of accessing them.

However, in addition to renewed efforts to attract and retain new staff to rural locations, a refreshed strategy should provide greater focus on the professional development of teachers currently in these areas. Improving access to relevant, high quality professional learning for teachers in these areas may offer a much quicker route to improved student outcomes. The department should consider flexible delivery models that overcome barriers associated with distance by, for example, making use of technology, on-site training or decentralised learning opportunities.

Networking and collaboration need support to effect improvement

The Blueprint included some actions aimed at increasing the collaboration between rural and remote schools, in particular the Education Networks. Some school staff felt that, while potentially valuable, greater collaboration could sometimes result in a greater workload and that this may represent a barrier to ongoing or greater collaboration. However, feedback from school staff indicates that where they are able to see the value of collaboration and, importantly, where they have meaningful input into the purpose of that collaboration, it is likely to be a sustainable and beneficial activity.

A refreshed strategy should make a clear case about the relationship between collaboration and networking with improved student outcomes. Guidance and examples of effective practices that are successful at improving student outcomes should be provided, along with measures of success.

Providing a varied curriculum in rural and remote areas requires innovative approaches

Halsey (2018) highlighted the need for the curriculum for rural and remote students to be relevant, flexible and engaging to encourage them to remain at school and maximise their chances of success. The report highlighted a critical question for rural and remote education:

> "So a student might ask, 'am I learning so I can leave my community, am I learning so I can stay locally, or am I learning so I have a real choice about what I do?'." (Halsey, 2018, p15)

Smaller rural and remote schools may also have the added challenge of delivering a broad enough range of curriculum options for students. Our evaluation found that the gaps in the study of advanced subjects in English and mathematics between rural and remote students and metropolitan students have not reduced since the introduction of the Blueprint. It is unclear why rural and remote students are less likely to take more advanced subjects. However the difficulties of providing a diverse curriculum in smaller schools with low enrolments, small class sizes and limited access to experienced teachers has been noted previously (Halsey 2018).

Technology presents one potential solution to these challenges. Aurora College, which has been developed specifically for gifted and talented students, has demonstrated that delivering specialist subjects remotely using interactive technology is possible. This new way of delivering lessons and interacting with students presents both challenges and important opportunities in providing a relevant and varied curriculum for rural and remote students. However, given the relative novelty of the technology, understanding the most effective ways to use it will be an ongoing process which may involve a degree of trial and error.

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Appendix 1: Technical details of NAPLAN analysis

The evaluation aimed to investigate whether students exposed to the Blueprint reforms performed better on their NAPLAN assessments than similar students who were not.

Data sources

Outcome measures

The outcome measures were the results from the National Assessment Program – Literacy and Numeracy (NAPLAN). In Australia, students in Year 3, 5, 7 and 9 participate in NAPLAN tests in May each year. According to the Australia Curriculum and Reporting Authority, the tests measure some of the skills and understandings that students should be able to demonstrate at particular scholastic years. While NAPLAN tests are intended to complement other formal and informal assessments, they provide a standardised measure of student progress in literacy and numeracy that can be used to inform teaching practice and education policy.

Baseline literacy and numeracy measures

When the Year 5 NAPLAN and Year 9 NAPLAN scores were the focus of the analysis, Year 3 NAPLAN and Year 7 NAPLAN student scores, respectively, formed the baseline achievement measures. When the Year 3 NAPLAN scores were the focus of the analysis, students' achievement on the department's Literacy and Numeracy Continua (described below) formed the baseline achievement measures.

Prior to their first NAPLAN tests in Year 3, all students in NSW government primary schools undergo an assessment of their literacy and numeracy skills within the first five weeks of Kindergarten. All students participate in a teacher-administered assessment that consists of 36 literacy and 36 numeracy tasks. These tasks are designed to help teachers identify the literacy and numeracy skills that each student brings with them to school. After the item-level assessment, teachers make discretionary judgements regarding each student's placement on the department's Literacy and Numeracy Continua. The Continua consist of empirically supported aspects of literacy and numeracy learning[21]. To track student progress along the Continua, each aspect is delineated by a series of sequential clusters that describe the skills and knowledge students should be able to demonstrate at particular point in times.

Background information

To enrol a student in a NSW government school, parents or guardians must complete a student enrolment form with questions on: (1) student gender; (2) student Aboriginal status; (3) language spoken at home; (4) parent school education; (5) parent educational qualification; and (6) parent occupation group[22]. While we did not need to modify the first three variables to include them in the analysis, we created a composite measure of socio-educational advantage (SEA) from the parent background variables[23] [24].

Details of analysis

The first step in our analysis involved identifying samples of students who were not exposed to the Blueprint reforms but who were similar to those who were exposed. Our analysis produced groups of comparable students who had:

- similar baseline literacy and numeracy scores;
- similar expected outcomes;

21 The Literacy Continuum has eight aspects: (1) Reading Texts; (2) Vocabulary Knowledge; (3) Comprehension; (4) Aspects of Writing; (5) Aspects of Speaking; (6) Phonics; (7) Phonemic Awareness; and (8) Concepts about Print. The Numeracy Continuum has seven aspects: (1) Counting Sequences and Numerical Identification; (2) Early Arithmetical Strategies; (3) Pattern and Number Structure; (4) Multi-unit Place Value; (5) Multiplication and Division; (6) Fraction Units; and (7) Measurement.

22 For two parent families, two sets of response options are provided.

23 Between 10 and 16 per cent of the students in the various samples were missing some parent background information. To reduce the potential bias due to the missing parent background data, we used multiple imputation techniques to estimate a range of plausible values for the missing information (refer to Rickard & Lu 2014 for more information on the imputation techniques).

24 To operationalise SEA, we coded the ordinal response categories for the parent variables for school education and non-school educational qualification from 1 to 4 (or from 1 to 5 for the occupation group variable), with 1 representing the lowest category and 4 (or 5) representing the highest category. We then summed the coded parent variables. For two parent families, we summed the information for each parent separately and averaged the two results.

- similar levels of socio-educational advantage;
- similar rates of Aboriginal and/or Torres Strait Islander students;
- similar rates of male students; and
- similar rates of students from non-English speaking backgrounds.

For each growth period of interest (Kindergarten to Year 3, Year 3 to Year 5, and Year 7 to Year 9), we used data from two student cohorts in our analysis:

1. students who completed the relevant baseline and outcome assessments before the implementation of the Blueprint (pre-implementation group);
2. students who completed the relevant baseline and outcome assessments after the implementation of the Blueprint (post-implementation group).

To estimate differences in the early years of primary school, we used data from:

1. students who completed Kindergarten in 2010 and stayed at the same school until their Year 3 NAPLAN assessments in 2013
2. students who completed Kindergarten in 2014 and stayed at the same school until their Year 3 NAPLAN assessments in 2017.

To estimate differences in the later years of primary school, we used data from:

1. students who completed Year 3 in 2011 and stayed at the same school until their Year 5 NAPLAN assessments in 2013
2. students who completed Year 3 in 2014 and stayed at the same school until their Year 5 NAPLAN assessments in 2016.

Finally, to estimate differences in secondary schools, we used data from:

1. students who completed Year 7 in 2011 and stayed at the same school until their Year 9 NAPLAN assessments in 2013
2. students who completed Year 7 in 2014 and stayed at the same school until their Year 9 NAPLAN assessments in 2016.

Additional information on these student cohorts is presented at the end of this appendix.

To determine the expected outcomes for the post-implementation groups, we first fit mixed-effects regression models to the data from the pre-implementation groups. The estimated model parameters were then used to predict the outcomes for the relevant post-implementation cohorts. The models included information on baseline literacy and numeracy achievement, level of socio-educational advantage (SEA), Aboriginal and Torres Strait Islander (ATSI) status, non-English speaking background (NESB) status, and male status.

At the outset, we decomposed the outcomes and model inputs into their constituent within and between components via cluster mean centering (Enders & Tofighi 2007). We then used a series of locally weighted regression models to visualise the functional relationships between each input and the decomposed outcomes. These bivariate analyses revealed that linear predictors were likely a good first choice, with the initial models written as:

$$\begin{aligned} y_{ij} = \beta_{00} &+ \beta_{01} \cdot \text{SM baseline numeracy}_j + \beta_{02} \cdot \text{SM baseline literacy}_j + \beta_{03} \cdot \text{SM SEA}_j + \\ &\beta_{04} \cdot \text{SM ATSI}_j + \beta_{05} \cdot \text{SM NESB}_j + \beta_{06} \cdot \text{SM male}_j + u_{0j} + \\ &\beta_{10} \cdot \text{CMC baseline numeracy}_{ij} + \beta_{20} \cdot \text{CMC baseline literacy}_{ij} + \beta_{30} \cdot \text{CMC SEA}_{ij} + \\ &\beta_{40} \cdot \text{CMC ATSI}_{ij} + \beta_{50} \cdot \text{CMC NESB}_{ij} + \beta_{60} \cdot \text{CMC male}_{ij} + e_{ij} \end{aligned}$$

$$\text{for } j = 1,2,\ldots,J \text{ schools}, i = 1,2,\ldots,n_j \text{ students}, u_{0j} \sim N(0, \sigma_{u0}^2) \text{ and } e_{ij} \sim N(0, \sigma_e^2).$$

To check the specification of the initial models, we plotted the within-school predictors against the full residuals from the models and the between-school predictors against the best linear unbiased predictions of the random effects. Once again, we used a series of locally weighted regression models to look for areas of misfit. Based on the results, we added quadratic and cubic terms for the baseline numeracy and literacy inputs. For the models predicting the Year 3 NAPLAN outcomes, we also added quadratic terms for the within and between components of the SEA input. Likelihood ratio tests were used to assess whether the additional terms jointly improved the fit of the models. Wald tests were then used to assess the significance of each of the highest-order polynomials, with non-significant polynomials sequentially removed from the models. With each removal, we used likelihood ratio tests to assess whether the overall fit of the model decreased significantly.

Once we had determined the best functional forms for the continuous predictors, we allowed the coefficients for the various within-school predictors to vary across schools. The additional random effects were added sequentially, with the most relevant predictors allowed to vary across schools before the less relevant predictors. We used likelihood ratio tests to assess the significance of each additional random effect, with only significant terms retained in the model. All models were estimated with unstructured covariance matrices. The sequential testing allowed us to find the most appropriate random-effects specification that was justified by the data.

The results showed that maximal random effect specification provided the best fit to the data. Once we were satisfied that the various outcomes were appropriately conditioned on the inputs, we used the final sets of estimated model parameters to calculate predicted outcomes for the relevant post-implementation cohorts. The predictions included the fixed-portion of the linear predictor plus the predicted Empirical Bayes means of the random effects. The final modelled proportion of variances are presented in Table 13.

Table 13:

Final modelled proportion of variances

	Year 3		Year 5		Year 9	
	Reading	Numeracy	Reading	Numeracy	Reading	Numeracy
Snijders/Bosker R-squared Level 1	.39	.42	.66	.65	.73	.83
Snijders/Bosker R-squared Level 2	.62	.61	.80	.77	.93	.96

After we estimated the expected outcomes for the students in the post-implementation cohorts, we used propensity scores to weight the data from the control students. These weights effectively reconfigured their data so that it matched the data from the treated students. Before we calculated the propensity scores, we excluded control students that had covariate values outside the range observed for the relevant treated students.

To calculate the propensity scores, we fit logistic regression models to the data from the post-implementation cohorts. The initial models can be written as:

$$\begin{aligned}\Pr(\text{treated}_i = 1) = \text{logit}(&\beta_0 + \beta_1 \cdot \text{baseline numeracy}_i + \beta_2 \cdot \text{predicted posttest numeracy}_i + \\ &\beta_3 \cdot \text{baseline literacy}_i + \beta_4 \cdot \text{predicted posttest literacy}_i + \\ &\beta_3 \cdot \text{SEA}_i + \beta_4 \cdot \text{male status}_i + \beta_5 \cdot \text{ATSI status}_i + \beta_6 \\ &\cdot \text{NESB status}_i)\end{aligned}$$

$$\text{for } i = 1,2,\ldots,N \text{ students.}$$

As the population of interest concerned only those students who were exposed to the Blueprint, we only weighted the data for those students who attended metropolitan schools. The weights were applied as:

$$\text{weight}_i = \begin{cases} \text{PS}_i/(1-\text{PS}_i) & \text{if Blueprint}_i = 0 \\ 1 & \text{if Blueprint}_i = 1 \end{cases}$$

One key assumption underlying the propensity score weighting technique involves covariate balance. In brief, the technique only yields unbiased estimates of treatment effects when the distributions for all confounding covariates are similar across the groups of interest. To investigate whether the weighting procedure balanced the levels of the observed covariates, we calculated standardised bias measures for each covariate. For continuous covariates, we calculated the standardised bias measures as:

$$d = (\hat{\mu}_{\text{treated}} - \hat{\mu}_{\text{control}})/\hat{\sigma}_{\text{treated}}$$

where $\hat{\mu}_{CC}$ represents the estimated mean for the Blueprint group, $\hat{\mu}_{\text{CONTROL}}$ represents the estimated mean for the weighted control group, and $\hat{\sigma}_{CC}$ represents the estimated standard deviation for the Blueprint group. For dichotomous covariates, we calculated the standardised bias measures as:

$$d = (\hat{\pi}_{\text{treated}} - \hat{\pi}_{\text{control}})/\sqrt{(\hat{\pi}_{\text{treated}}(1 - \hat{\pi}_{\text{treated}}))}$$

where $\hat{\pi}_{CC}$ represents the estimated proportion for the Blueprint group and $\hat{\pi}_{\text{CONTROL}}$ represents the estimated proportion for the control group. It is convention to consider a covariate balanced if the standardised bias is less than 0.25 (Harder et al. 2010). The standardised bias measures for the weighted and unweighted samples are presented in Figure 19 to Figure 24.

Figure 19:

Standardised bias measures before and after weighting – Year 3 NAPLAN, remote schools

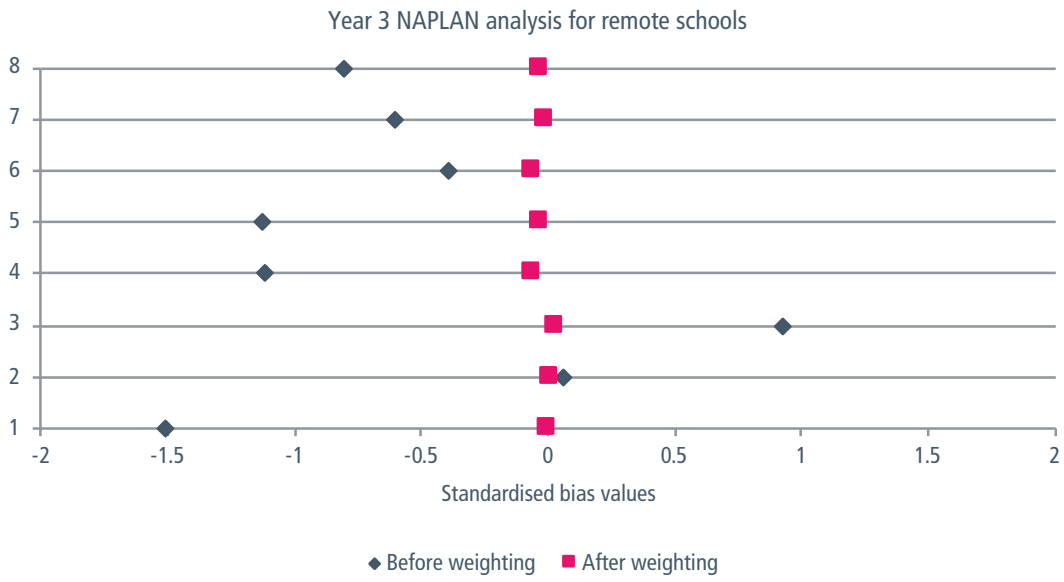


Figure 20:

Standardised bias measures before and after weighting – Year 3 NAPLAN, provincial schools

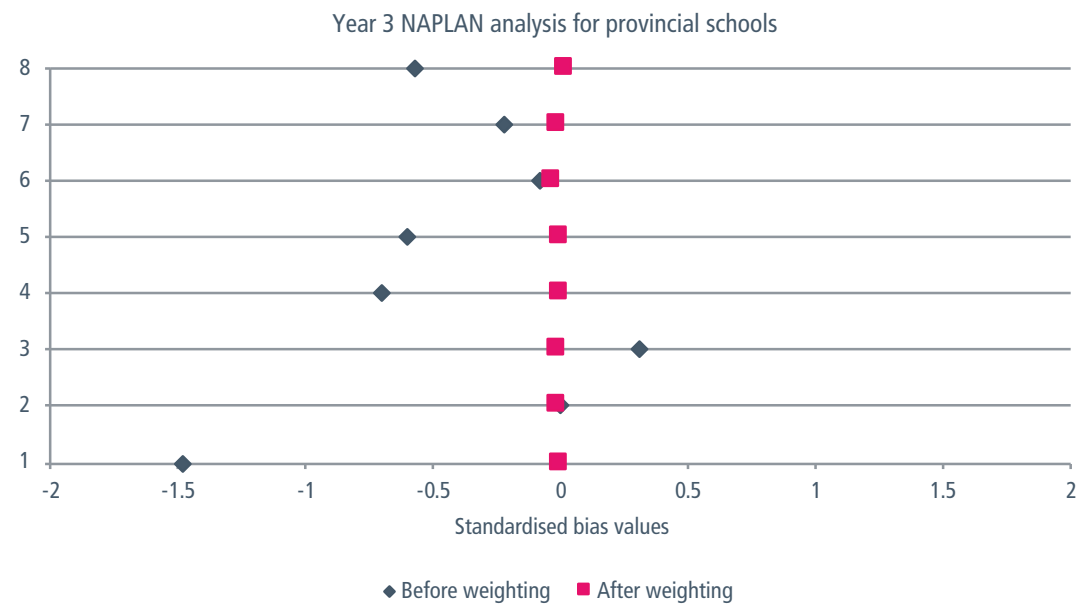


Figure 21:

Standardised bias measures before and after weighting – Year 5 NAPLAN, remote schools

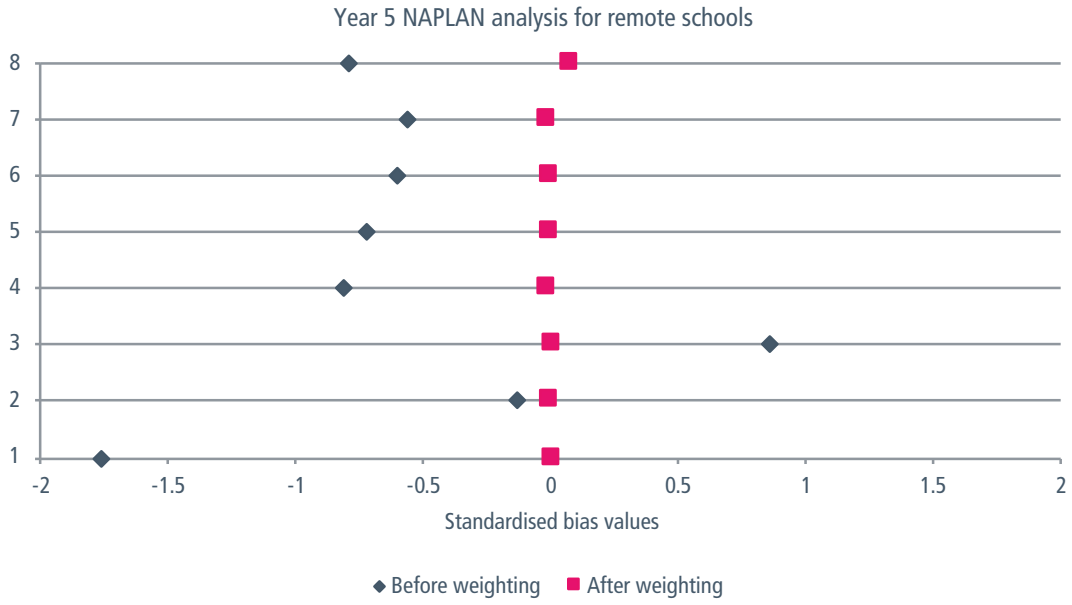


Figure 22:

Standardised bias measures before and after weighting – Year 5 NAPLAN, provincial schools

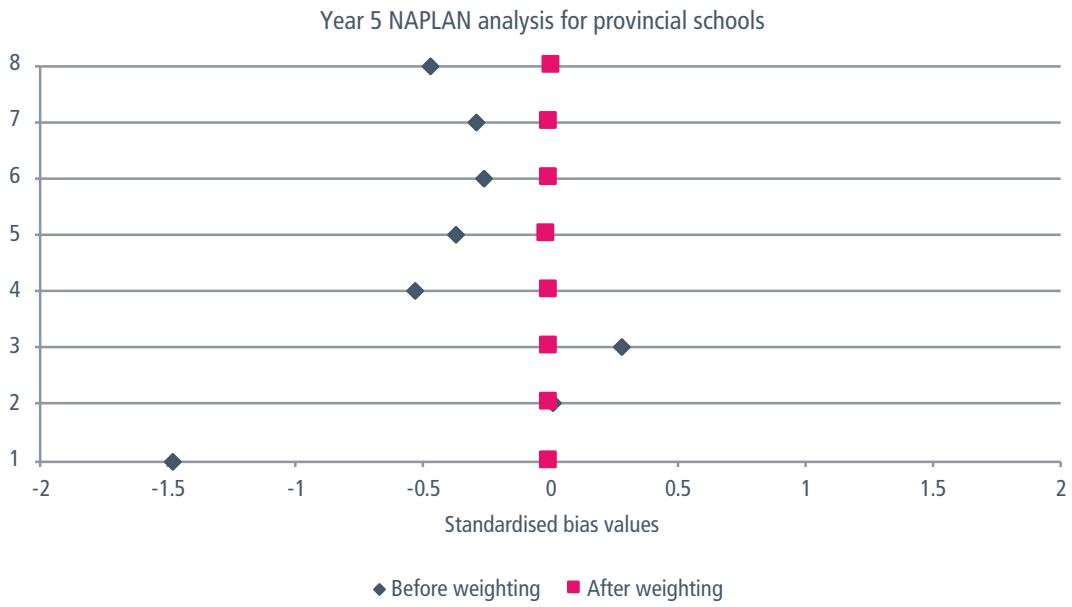


Figure 23:

Standardised bias measures before and after weighting – Year 9 NAPLAN, remote schools

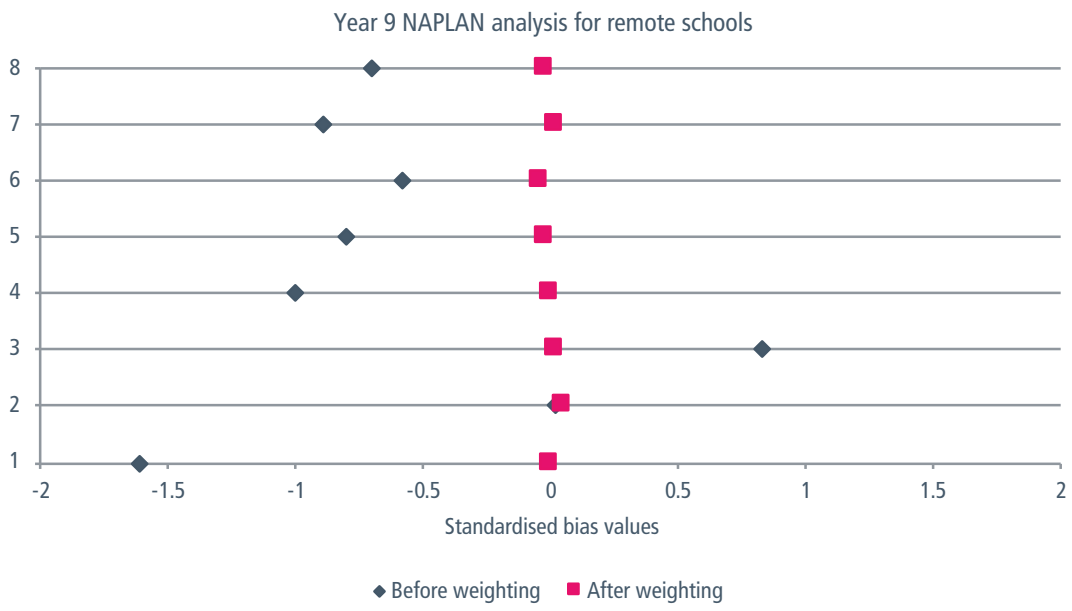
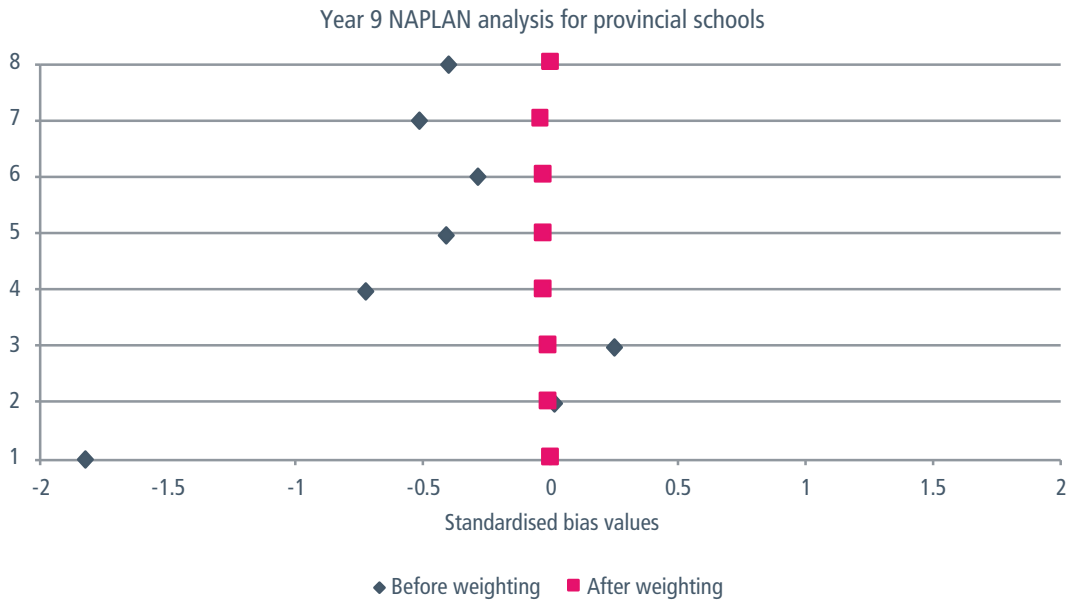


Figure 24:

Standardised bias measures before and after weighting – Year 9 NAPLAN, provincial schools



Once the covariate balance between each group of students had been assessed, the final step was to compare the mean score for the treated students to the weighted mean score for the control students. We used weighted linear regression models with cluster robust standard errors to determine the effect estimate, as presented in Table 14.

Table 14:

Final parameter estimates from weighted linear regression models

		Coefficient	Standard error	*t*	*p*	Lower limit	Upper limit
Remote schools	Year 3 Numeracy	2.56	9.31	0.28	.78	-15.70	20.82
	Year 3 Reading	-10.67	10.81	-0.99	.32	-31.89	10.55
	Year 5 Numeracy	0.60	8.50	0.07	.94	-16.08	17.28
	Year 5 Reading	-9.89	10.85	-0.91	.36	-31.18	11.40
	Year 9 Numeracy	1.01	7.05	.14	.89	-12.87	14.89
	Year 9 Reading	-5.08	7.86	-0.65	.52	-20.55	10.39
Provincial schools	Year 3 Numeracy	0.78	1.87	0.42	.68	-2.89	4.44
	Year 3 Reading	-0.65	2.16	-0.30	.76	-4.88	3.58
	Year 5 Numeracy	-3.06	1.92	-1.59	.11	-6.83	0.71
	Year 5 Reading	-2.82	2.27	-1.25	.21	-7.27	1.62
	Year 9 Numeracy	-1.56	2.52	-0.62	.54	-6.51	3.39
	Year 9 Reading	-1.47	2.83	-0.52	.60	-7.03	4.09

Additional information on student cohorts

Kindergarten to Year 3 NAPLAN cohorts

Of the 131,880 Kindergarten students who were enrolled in a NSW government school in 2010 or 2014, 96,210 (73 per cent) stayed at the same school until their Year 3 NAPLAN assessments. While there were no meaningful differences in student mobility rates across the two cohorts (RR[25] = 1.04), the Kindergarten students who attended a provincial school (RR = 1.13) or a remote school (RR = 1.39) were slightly more likely to change school before their Year 3 NAPLAN assessments than those who attended a metropolitan school.

Of the 96,210 Kindergarten students who stayed at the same school, 3,711 (3.9 per cent) did not participate in their Year 3 Numeracy assessment while 3,445 (3.6 per cent) did not participate in their Year 3 Reading assessment. While there were no meaningful differences in participation rates across the two cohorts (Numeracy RR = 1.00; Reading RR = 1.00), the students who attended a provincial school (Numeracy RR = 1.33; Reading RR = 1.30) or a remote school (Numeracy RR = 1.86; Reading RR = 2.00) were more likely to not participate in the NAPLAN assessments.

Of the 92,210 Kindergarten students who stayed at the same school and had valid Year 3 assessment data, 702 (0.8 per cent) had missing Continua data and 9,004 (9.8 per cent) had some missing parent background data. While it is unlikely that the small amount of missing Continua data would greatly influence the results of our analysis, the impact of the missing parent background data may be more substantial. To reduce the potential bias due to the missing parent background data, we used multiple imputation techniques to estimate a range of plausible values for the missing information (refer to Rickard & Lu 2014 for more information on the imputation techniques).

In total, the final 2010 sample included 33,763 students from metropolitan schools, 9,684 students from provincial schools and 223 students from remote schools. Similar counts were observed for the final 2014 sample, with 37,410 students from metropolitan schools, 10,178 students from provincial schools and 202 students from remote schools.

Year 3 NAPLAN to Year 5 NAPLAN cohorts

Of the 125,905 Year 3 students who were enrolled in a NSW government school in 2011 or 2014, 100,287 (79.7 per cent) stayed at the same school until their Year 5 NAPLAN assessments. While there were no meaningful differences in student mobility rates across the two cohorts (RR = 0.98), the Year 3 students who attended a remote school (RR = 1.26) were slightly more likely to change school before their Year 5 NAPLAN assessments than those who attended a metropolitan school. There were no meaningful differences between the students who attended a provincial school (RR = 1.01) and those who attended a metropolitan school.

Of the 100,287 Year 3 students who stayed at the same school, 3,983 (4.0 per cent) did not participate in their Year 5 Numeracy assessment while 3,605 (3.6 per cent) did not participate in their Year 5 Reading assessment. While there were no meaningful differences in participation rates across the two cohorts (Numeracy RR = 1.00; Reading RR = 1.00), the students who attended a provincial school (Numeracy RR = 1.29; Reading RR = 1.24) or a remote school (Numeracy RR = 1.61; Reading RR = 1.81) were more likely to not participate in the NAPLAN assessments.

Of the 96,030 Year 3 students who stayed at the same school and had valid Year 5 NAPLAN assessment data, 2,814 (2.9 per cent) had missing Year 3 NAPLAN assessment data and 7,861 (8.2 per cent) had some missing parent background data.

In total, the final 2011 sample included 34,007 students from metropolitan schools, 10,583 students from provincial schools and 250 students from remote schools. Similar counts were observed for the final 2014 sample, with 37,008 students from metropolitan schools, 11,046 students from provincial schools and 236 students from remote schools.

25 Relative Risk

Year 7 NAPLAN to Year 9 NAPLAN cohorts

Of the 104,327 Year 7 students who were enrolled in a NSW government school in 2011 or 2014, 88,660 (85.0 per cent) stayed at the same school until their Year 9 NAPLAN assessments. While there were no meaningful differences in student mobility rates across the two cohorts (RR = 0.96), the Year 7 students who attended a provincial school (RR = 1.26) or a remote school (RR = 1.67) were slightly more likely to change school before their Year 9 NAPLAN assessments than those who attended a metropolitan school.

Of the 88,660 Year 7 students who stayed at the same school, 8,554 (9.6 per cent) did not participate in their Year 9 Numeracy assessment while 7,597 (8.6 per cent) did not participate in their Year 9 Reading assessment. While there were no meaningful differences in participation rates across the two cohorts (Numeracy RR = 0.98; Reading RR = 0.99), the students who attended a provincial school (Numeracy RR = 1.50; Reading RR = 1.46) or a remote school (Numeracy RR = 2.42; Reading RR = 2.22) were more likely to not participate in the NAPLAN assessments.

Of the 78,999 Year 7 students who stayed at the same school and had valid Year 9 NAPLAN assessment data, 2,508 (3.2 per cent) had missing Year 7 NAPLAN assessment data and 11,486 (14.5 per cent) had some missing parent background data.

In total, the final 2011 sample included 28,971 students from metropolitan schools, 9,934 students from provincial schools and 184 students from remote schools. Similar counts were observed for the final 2014 sample, with 28,162 students from metropolitan schools, 8,945 students from provincial schools and 189 students from remote schools.

Appendix 2: Technical specifications of regression analysis of the *Tell Them From Me* student survey

Analysis was performed on the 2015 and 2017 TTFM student surveys to understand the relationship between students' attitudes on aspects of school engagement (interest and motivation, values school outcomes and effort) and the quality of teaching instruction (rigour, effective learning time and relevance) they received from their teachers at different locations.

The analysis focused on whether students' attitudes towards the indicators of quality teaching and school engagement changed between 2015 and 2017. To ensure that changes in the different locations could be comparable, each student's scores on all indicators were standardised[26] prior to the regression analysis. 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 account for this, cluster robust standard errors were used. Overall, a total of 137,536 students in 2015 and 153,350 in 2017 were included in the sample. Table 15 shows the sample by location and year used in the analysis of each aspect.

Table 15:

Number of students who provided responses for each aspect of TTFM survey by location and year

Source: *Tell Them From Me* student survey

	2015			2017		
Aspects	**Metropolitan**	**Provincial**	**Remote**	**Metropolitan**	**Provincial**	**Remote**
Interest and motivation	100,662	31,898	858	113,709	34,635	917
Effort	101,026	32,062	859	112,309	34,230	901
Values schools outcomes	101,641	32,064	870	113,871	34,654	920
Rigour	101,513	32,223	867	113,772	34,682	915
Effective learning time	100,204	31,736	856	112,065	34,144	900
Relevance	100,555	31,911	857	113,254	34,500	908

The analysis shows two comparisons: firstly, the change between 2015 and 2017 as a ratio of the standard deviation in each location; and secondly, as the unit of analysis is in standard deviations, the changes between locations can also be compared. Finally, an effect size of 0.2 has been decided as a benchmark for meaningful changes relative to an acceptable threshold for meaningful changes.

STATA software version 14 was used to perform the regression analysis. The model used in the current study can be formally expressed as:

$$Standardised\ Score_k = \beta_0 + \beta_1 Time\ indicator + \varepsilon_k$$

Where:

- β_0 is the estimated standardised score in 2015
- β_1 is the estimated change between 2017 and 2015
- ε_k is the error term.

A total of 18 regressions were performed separately for each of the six indicators in each of the three locations for each student.

26 The standardised score for each indicator in each location is calculated by the observed score minus the mean of the 2015 score divided by the standard deviation of the 2015 score.

Appendix 3: Technical details on teacher retention analysis

Research aim

In 2014, to enhance teacher retention at selected four-point schools (predominantly schools in provincial locations[27]), a 50 per cent rental subsidy was introduced. This research aims to describe whether this change in policy led to teachers staying longer compared to teachers prior to the introduction of the 50 per cent rental subsidy. Additionally, we considered whether the introduction of the Blueprint influenced teacher retention at six-point[28] and eight-point[29] schools as well[30].

Method

We used a proportional hazard model in survival analysis to determine whether teachers in non-metropolitan locations stayed longer in their teaching positions compared to teachers in the same locations prior to the introduction of the Blueprint. Survival analysis is a statistical technique that analyses the length of time elapsed between an event starting and ending – such as death or failure.

The primary aim of the analysis compares whether teachers stay longer (survive) at four-point schools with the 50 per cent rental subsidy than teachers without it prior to the introduction of the Blueprint. The teacher retention results are based on whether a contract is terminated or extended. To achieve balanced observations before and after the introduction of the Blueprint, four years of data were captured for the pre-period (2010 – 2013) and four years of data were captured for the post-period (2014 – 2017). In the proportional hazard model used for this analysis, the 50 per cent rental subsidy in the pre-period is the baseline risk function against which all other categories (six point schools, eight point schools and schools not receiving subsidies) are compared. An indicator variable of post-period was also included in the model as well as interaction terms between all variables. The estimated hazard ratios represent the percentage change of the leaving school risk for teachers after the introduction of the Blueprint for each subsidy.

Data

Teachers' appointment records were extracted from the department's teacher workforce database. Only records on 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, if the break between contracts was less than 90 days, the records were combined and it was classified as one appointment. Ninety days was chosen as the cut-off point for continuous employment to ensure that teachers whose contracts were renewed at the end of the summer school holidays (December to February) would not be classified as terminated (non-survivors) from their contract in the previous year.

The final sample, which included both pre- and post-period combined appointment records was 33,269 and accounted for 20,724 teachers. In the pre-period, there were 16,367 combined appointment records for 12,156 teachers. The post-period sample included 16,902 combined appointment records for 12,587 teachers. Each record indicates the duration of appointment at a single school for a teacher and includes (1) the start and end date of the appointment, (2) the school code, (3) the employee number, (4) the type of incentive received (0=no rental subsidy, 1=50 per cent rental subsidy, 2=70 per cent rental subsidy, and 3=90 per cent rental subsidy), (5) an indicator for post-period and (6) whether we observed the teacher leaving the school during the pre- and post-periods.

27 The Blueprint uses the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) Remoteness Classification to define schools as rural and remote. The MCEETYA classification includes metropolitan, provincial, remote and very remote categories, with the last three groups considered as rural and remote in the Blueprint.
28 The rental subsidy at six-point schools is 70 per cent.
29 The rental subsidy at eight-point schools is 90 per cent.
30 The 70% and 90% rental subsidies in six- and eight-point schools have been in effect since 2003. In the Blueprint, additional incentives were introduced for these schools.

Model and results

The proportional hazard model is:

$$h(t) = h_0(t)\exp(b_1 \text{ No rental subsidy} + b_2 \text{ 6 point schools} + b_3 \text{ 8 point schools} + b_4 \text{ Post period} + b_5 \text{ No rental subsidy} * \text{Post period} + b_6 \text{6 point schools} * \text{Post period} + b_7 \text{ 8 point schools} * \text{Post period})$$

Where *h(t)* represents the leaving school risk function, h_0 *(t)* is the baseline leaving school risk function for a teacher in the pre-period in the school that offered the 50 per cent rental subsidy in the post-period. As it was expected that some teachers would have multiple contracts, their retention may be influenced by their own pattern of employment and each contract could be correlated. To account for this, cluster robust standard errors were used. The estimated hazard ratios are summarised in Table 16.

Table 16:

Estimated hazard ratios for teacher retention based on the type of incentive received before and after the introduction of the Blueprint

	Hazard ratios	95 per cent confidence intervals	
	exp(b)	Lower bound	Upper bound
Type of incentive received			
No rental subsidy	0.974	0.889	1.068
6-point school	1.041	0.928	1.169
8-point school	1.088	0.929	1.275
Post-period	0.977	0.859	1.112
No rental subsidy *Post-period	0.935	0.818	1.068
6 point schools* Post-period	0.947	0.797	1.124
8 point schools * Post-period	1.049	0.833	1.321

50 per cent rental subsidy

As Table 16 shows, compared with a teacher in the pre-period in the school that offered the 50 per cent rental subsidy in the post-period, the risk of leaving in the post-period is as low as 85.9 per cent and as high as 111.2 per cent.

Receiving no rental subsidies

We can determine the risk change for teachers not receiving subsidies by manipulating the hazard ratios and the standard error terms of the post-period variable, and the interaction of the post-period and no rental subsidy school variables. Compared with a teacher in the pre-period in the school that is not offered the 50 per cent rental subsidy in the post-period, the risk of leaving in the post-period is as low as 87.9 per cent and as high as 94.9 per cent of the risk in the pre-period. This indicates that since the introduction of the Blueprint, the risk of leaving has also been reduced for those teachers not receiving a rental subsidy. It is possible that concurrent educational reforms in combination with the Blueprint are having a positive effect on overall teacher retention.

Six-point schools

We can determine the change in the risk for teachers at six point schools by manipulating the hazard ratios and the standard error terms of the post-period variable and the interaction of the post-period and six point school variables. C with a teacher in the pre-period, the risk of leaving in the post-period is as low as 84.3 per cent and as high as 101.5 per cent of the risk in the pre-period.

Eight-point schools

We can determine the change in the risk for teachers at eight point schools by manipulating the hazard ratios and the standard error terms of the post-period variable and the interaction of the post-period and eight point school variables. Compared with a teacher in the pre-period, the risk of leaving in the post-period is as low as 77.5 per cent and as high as 135.5 per cent of the risk in the pre-period.

In our interim evaluation report, we found no evidence that the introduction of the Blueprint was associated with more experienced teachers moving to four, six and eight-point rural and remote schools. Analysis of the 2017 FoL teacher survey also showed that willingness of experienced teachers to move to rural and remote locations was lower than for teachers with less experience.

Appendix 4: Other Blueprint actions

The interim evaluation report provided some information on the following additional actions that were part of the Blueprint. Here we provide an update of the implementation of those actions.

The rural and remote mentoring program

Action 7.3 of the Blueprint included 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.

In 2016, the rural and remote mentoring program was expanded and redeveloped into the state-wide Leadership Development Initiative, as part of the School Leadership Strategy. The School Leadership Strategy has been evaluated separately by CESE, as part of the Great Teaching, Inspired Learning evaluation. This evaluation found that the Leadership Development Initiative was a valuable program that was working well for many participants and mentors, and enhancing their leadership capacity. The evaluation did not estimate the impact on rural and remote teachers specifically. Numbers of rural and remote participants in the Leadership Development Initiative are presented in Table 17.

Table 17:

Participants in the Leadership Development Initiative

Source: Leadership and High Performance Directorate, Department of Education

Year	Type of participant	Total participants	Rural and remote participants	% Rural and remote
2016	Mentors	62	18	29%
	Mentees	172	61	35%
	Total	234	79	34%
2017	Mentors	77	15	19%
	Mentees	119	33	28%
	Total	196	48	24%

NAPLAN and HSC marking

The NSW Education Standards Authority (NESA) has continued to provide training to rural and remote teachers in NAPLAN and HSC marking. In 2017, NESA held a series of HSC marking workshops. A total of 38 rural and remote teachers participated in onscreen HSC marking workshops in English and Biology, and 86 participated in practical marking workshops in Music Composition, Drama, Textiles and Design and Visual Arts.

A total of 111 provincial, and three remote schools had at least one teacher complete a NAPLAN Online Training module as of May 2018 (143 teachers in total).

Teachers from rural and remote schools were also appointed for actual HSC marking: in 2015 there were 424; in 2016 there were 456; and in 2017 there were 467.

Rural teacher exchange program

A rural teacher exchange program was introduced under Action 7.1 of the Blueprint. The program allowed 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. However, take-up of the program was low, with only two exchanges, and one secondment during 2015 and 2016. This was largely due to a mismatch in desired transfer locations, with most metropolitan applicants wanting to go to provincial schools in larger towns or coastal locations, and most of the rural applicants wanting to go to another rural and remote area, instead of Sydney or other metropolitan areas.

Subsequently, this program has been replaced by the Rural Experience Program. The new program no longer requires an exchange and has modified timeframes and requirements. It allows experienced teachers to take up a short term placement at a rural and remote school, and receive a $500 additional allowance per week.

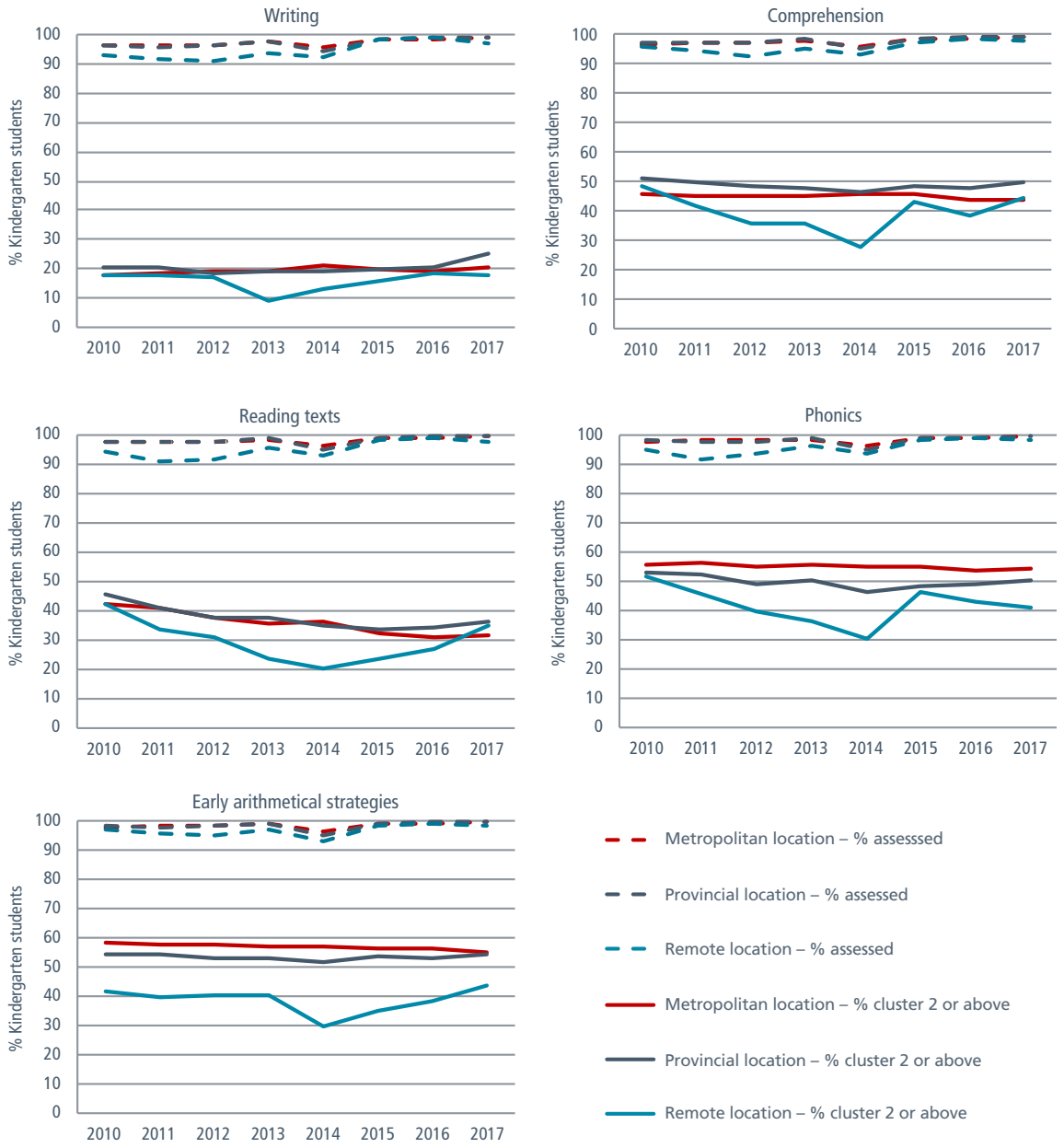
Appendix 5: Best Start Kindergarten Assessment

Figure 25 presents descriptive data from Best Start by location for the following aspects: reading texts, comprehension, aspects of writing, phonics and early arithmetic strategies.

Figure 25:

Proportion of children assessed and at cluster 2 or above for Best Start

Source: CESE Best Start Kindergarten Assessment Data and Learning and Teaching Directorate



Appendix 6: Attendance rates

Mean attendance rates for primary students (Figure 26) and secondary students (Figure 27) are presented below.

Figure 26:

Mean attendance rate in primary schools, 2010–2017

Source: Return of absences census, CESE Statistics and Analysis Unit

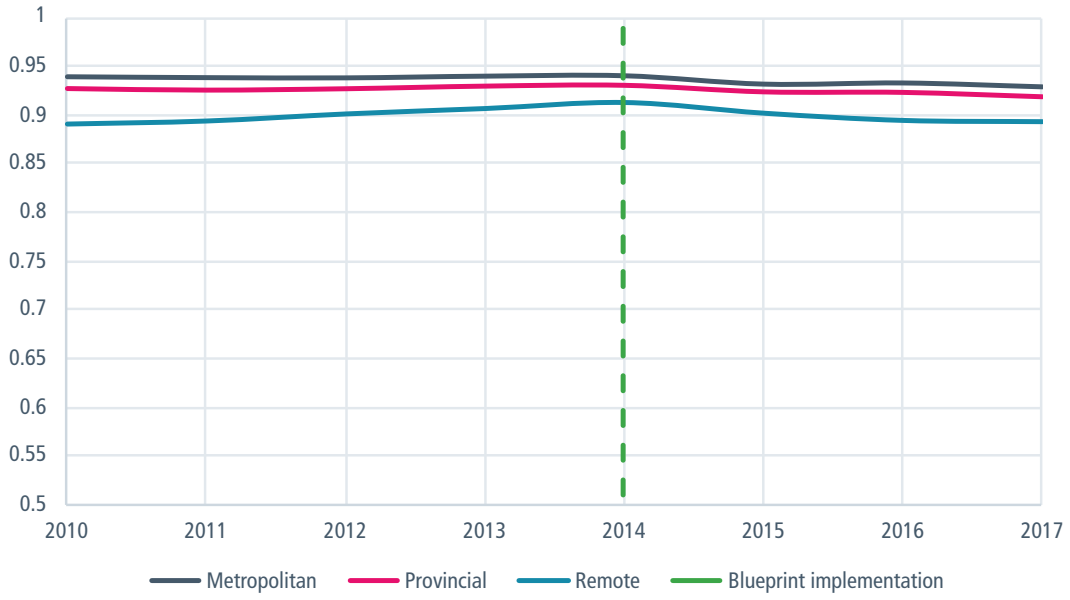
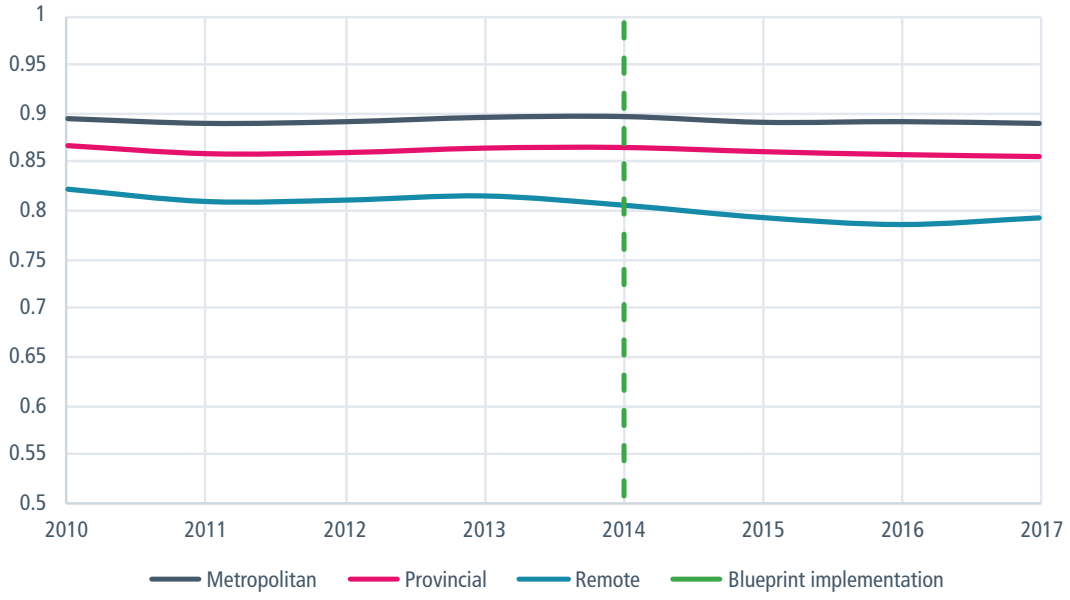


Figure 27:

Mean attendance rate in secondary schools, 2010–2017

Source: Return of absences census, CESE Statistics and Analysis Unit



Appendix 7: *Focus on Learning* survey

The FoL survey asks teachers to self-assess against survey items that are grouped into eight drivers of student learning. These drivers are:

- **inclusive school:** the effort that teachers go to engage with students who have special learning needs
- **leadership:** teachers report that school leaders have had a positive impact
- **parent involvement:** the level of engagement between teachers and parents
- **collaboration:** the extent to which teachers collaborate with each other
- **learning culture:** teachers report developing a strong culture of learning
- **data informs practice:** teacher report using data to inform their teaching
- **teaching strategies:** teachers use and reflect on effective strategies in the classroom
- **technology:** teachers and students have the opportunity to use relevant technology.

We report changes from 2014 to 2017 for each of the above measures for metropolitan, provincial and remote teachers in Figure 28 (primary) and Figure 29 (secondary). Each dot (point estimate) in the figures below indicates the estimated change over that time period (which could be either positive or negative), with zero indicating no change. We standardised the values, so that changes across each measure could be compared; therefore changes represent the standardised mean difference (that is, effect size), with the error bars representing 95 per cent confidence intervals.

Figure 28:

Estimated changes (and 95 per cent confidence intervals) in primary school teachers' self-assessment on eight drivers of student learning from 2014 to 2017

Source: *Focus on Learning* teacher survey

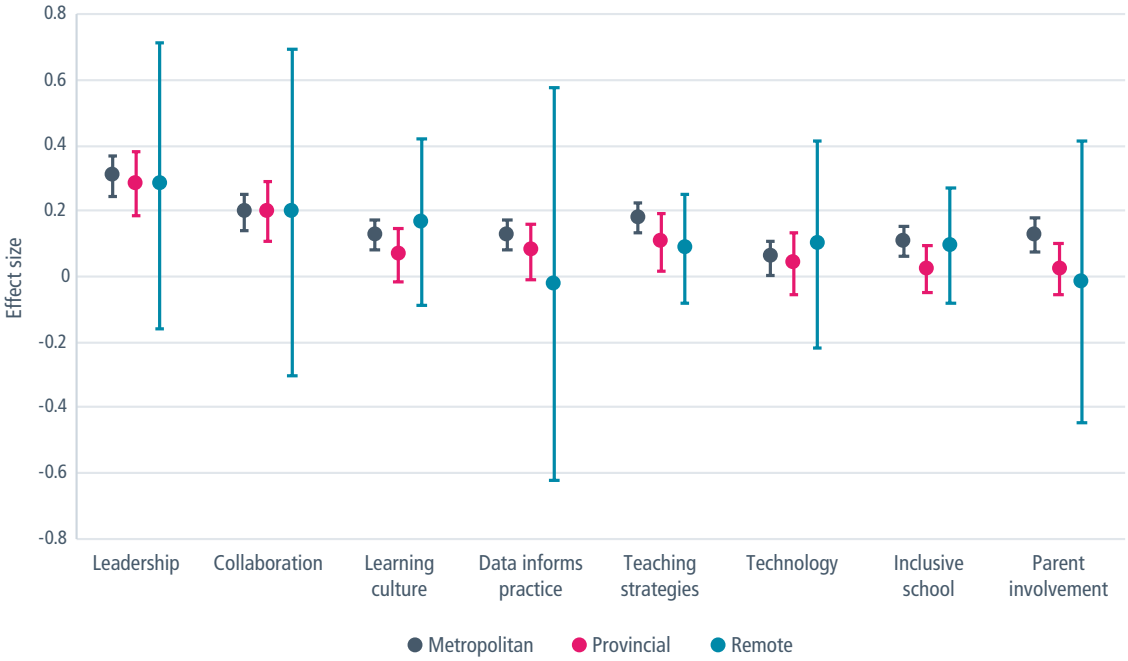
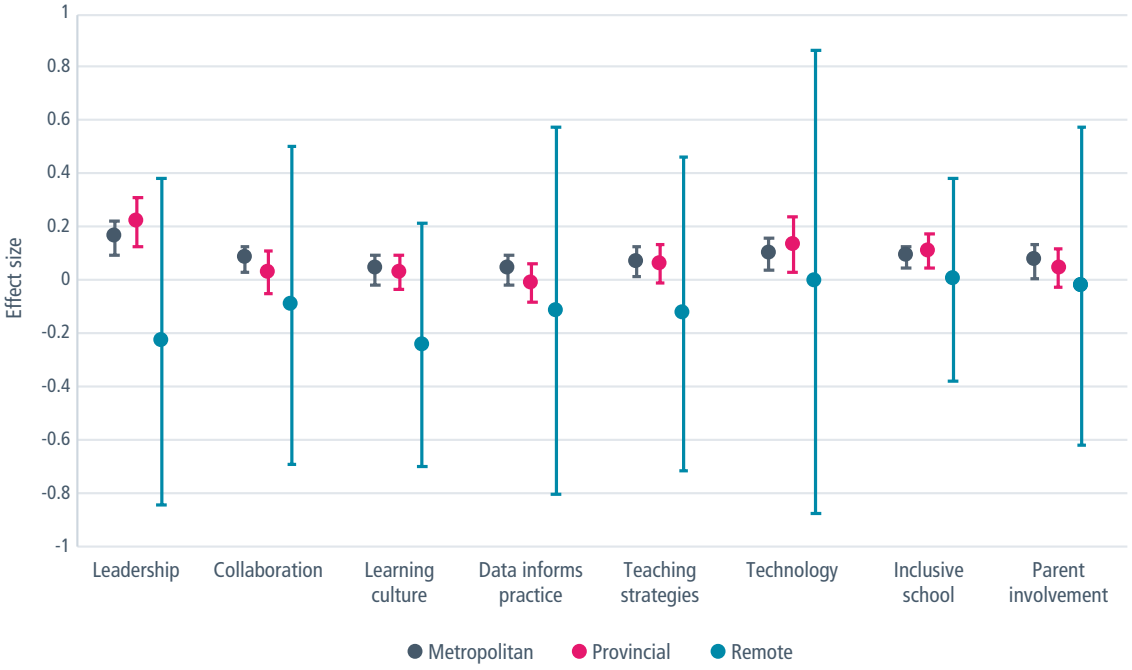


Figure 29:

Estimated changes (and 95 per cent confidence intervals) in secondary school teachers' self-assessment on eight drivers of student learning from 2014 to 2017

Source: *Focus on Learning* teacher survey



Appendix 8: *Tell Them From Me* student survey

The TTFM student survey is part of The Learning Bar's survey package conducted in NSW government schools in each year. We examined the following measures in our analyses:

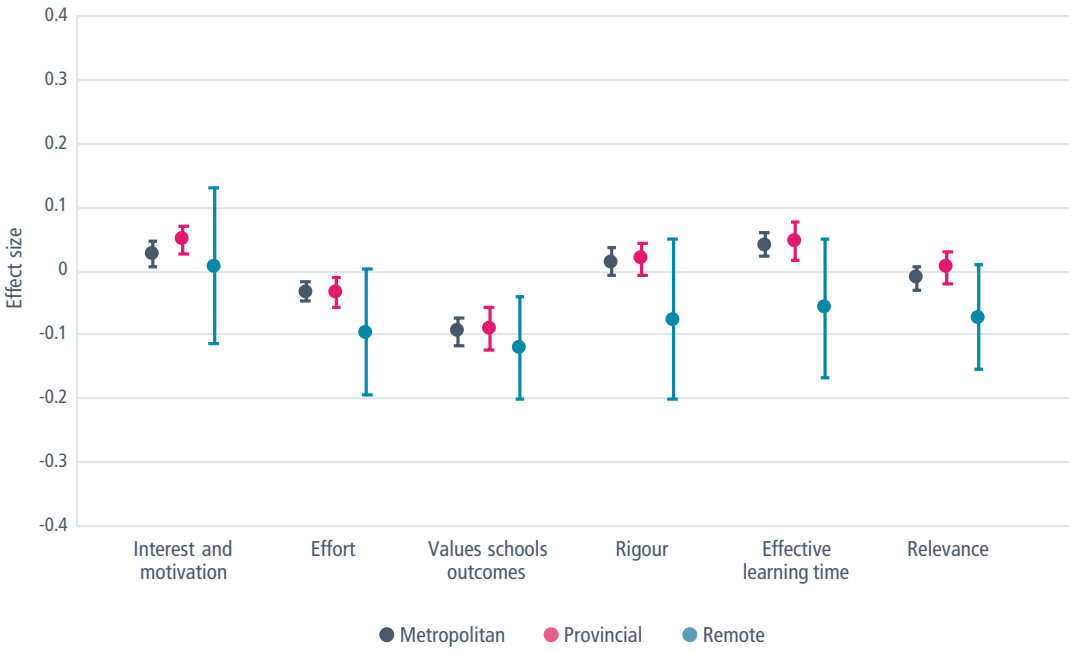
- **Interest and motivation:** The extent to which students are interested and motivated in their learning
- **Values school outcomes:** The extent to which students believe that schooling is useful in their everyday life and will have a strong bearing on their future
- **Effort:** A measure of how hard students report trying to succeed in their learning
- **Rigour:** How rigorous students report their classroom instruction to be
- **Effective learning time:** The extent to which students believe that important concepts are taught well, class time is used efficiently, and homework and evaluations support class objectives
- **Relevance:** How relevant students find the classroom instruction to be to their everyday lives.

We report changes from 2015 to 2017 for each of these measures for metropolitan, provincial, and remote students in Figure 30, calculating effect sizes with 95 per cent confidence intervals.

Figure 30:

Changes in secondary students' attitudes towards the quality of instruction and aspects of school engagement between 2015 and 2017, by location

Source: *Tell Them From Me* student survey



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