Stronger Smarter Institute Research & Impact Footprinting

Reading Review

"Indigenous Primary School Achievement, Productivity Commission Research Paper", June 2016.

Stronger Smarter Meta-Strategy links:

1. Acknowledging, embracing and developing a positive sense of identity in schools → 3. High Expectations Relationships → 4. Innovative and Dynamic School Models →5. Innovative and dynamic school staffing models

This Reading Review links to recent national research in Indigenous Primary School Education conducted by the Productivity Commission (PC). The Commission's research maps school data across the country and provides insights into what is working and how directions might be influenced in future policy development.

This Reading Review focuses on the key elements of the research that connect to the Institute's meta-strategies. The PC's research presents 'Key points' (p.2) in the Introduction which provide good abridged topics that summarize the paper. These abridgments are included as part of the Summary section in this Reading Review. Figures in this Review keep the numbering from the original report. Page numbers refer to the PC Research Paper. The term 'Jarjums' is used as an Aboriginal word for children used in a number of languages on Australia's eastern coast.

Contents of this Review

Why the research – Research Questions and Approach

The PC Research Paper suggests that improving policy to support improvement in Indigenous students' literacy and numeracy requires an understanding of the contributing factors. This needs to be informed by an evidence base and analysis. Previous statistical research has not been specific to Indigenous primary school students. Figure 1.1 below shows the background of previous national Indigenous education reviews and action statements.

Only two sets of data are available to policy makers and researchers in Indigenous education research:

(a) Large-scale datasets constructed from administration records which education providers choose to collect and
(b) small scale purpose specific datasets which cover a broad range of topics but only a sample of the population.

The PC research has focussed on the large scale dataset provided by the Australian Curriculum, Assessment and Reporting Authority (ACARA) for primary school student achievement through the National Assessment Program – Literacy and Numeracy test (NAPLAN) for Year 3 and Year 5. Statistics in the report are mostly 2014 data. In addition to the data provided on the 'My School' database, the researchers have accessed data on Indigenous and non-Indigenous student achievement in individual schools. As this information is not publically available, the school names were not available to the researchers. The researchers undertook a quantitative analysis of the data supplemented with a literature review on what might work best to improve literacy and numeracy among Indigenous students. In particular, the PC research looks at Hattie's work on Meta-analysis and the 138 influences on teaching (p.64).

Explaining variation in student achievement

The PC note that the ACARA data are only a subset of the characteristics thought to be associated with educational achievement (p.43). Figure 2 below shows the groupings:

- Observed characteristics – the characteristics included in the ACARA dataset
- Unobserved characteristics – those data that exist but are not available in the ACARA dataset
- Unobserved characteristics – characteristics thought to be important from the literature, but where data do not exist.

The Productivity Commission have defined two groups of characteristics within their research (p.23):

- School-level characteristics – information about the environment in which a school operates.
- Student-level characteristics – demographic characteristics of the students and their families.

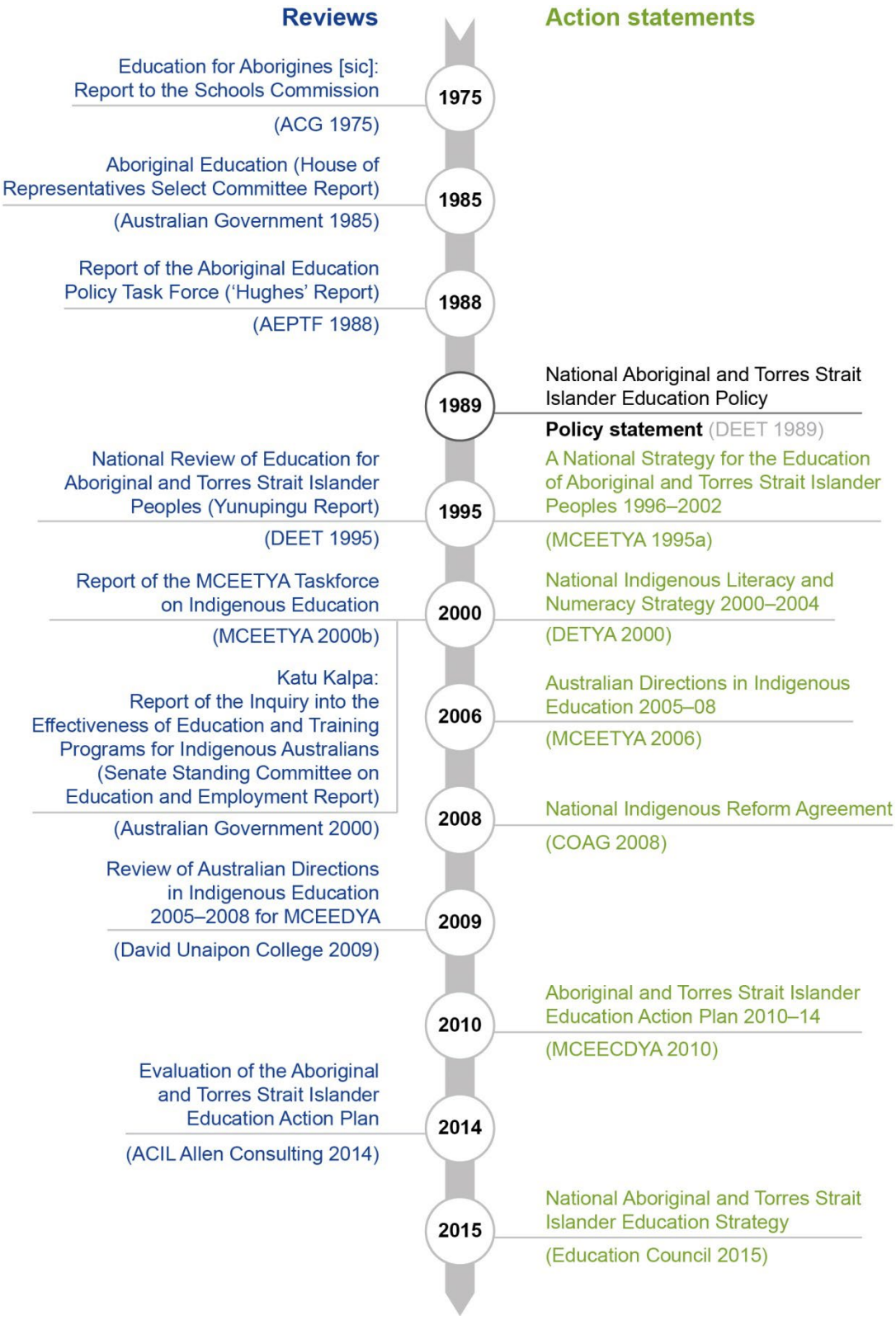
Figure 2 **Many characteristics influence student achievement, but only a subset is available in the ACARA data**[a,b,c]

	Observed in the dataset	Unobserved – data exist but not included in dataset	Unobserved – data do not exist
Social	• Remoteness • State	• Local unemployment rate	• Libraries and educational facilities
School	• School sector • Number of enrolments • Staff numbers • Attendance rate • Finances	• Average satisfaction of teachers • Teacher and principal turnover • Principal characteristics	• School policies • School culture • Educational resources • Extracurricular activities
Peers	• % Indigenous students • % LBOTE students • % parents by education / occupation category	• Health • School satisfaction	• Cognitive abilities • Attitudes • Aspirations
Teacher		• Age • Gender • LBOTE • Experience • Qualifications	• Teaching style • Attitudes
Family	• Parental education • Parental occupation	• Parent LBOTE	• Parent engagement • Home learning activities
Student	• Age • Gender • LBOTE	• Health and disability • Attendance	• Cognitive abilities • Attitudes • Aspirations

Grouping of characteristics in the statistical analysis:
School-level Student-level Unobserved

a The figure provides examples of characteristics. It is not an exhaustive list. **b** The figure categorises unobserved characteristics according to whether relevant information exists at a national level. Unobserved data that exist include data that are believed to be held in administrative records. **c** 'LBOTE' is an acronym for 'language background other than English'.

Figure 1.1: Timeline — national Indigenous education reviews and action statements[a]



[a] Many state and territory reviews have also been conducted over the past 40 years.

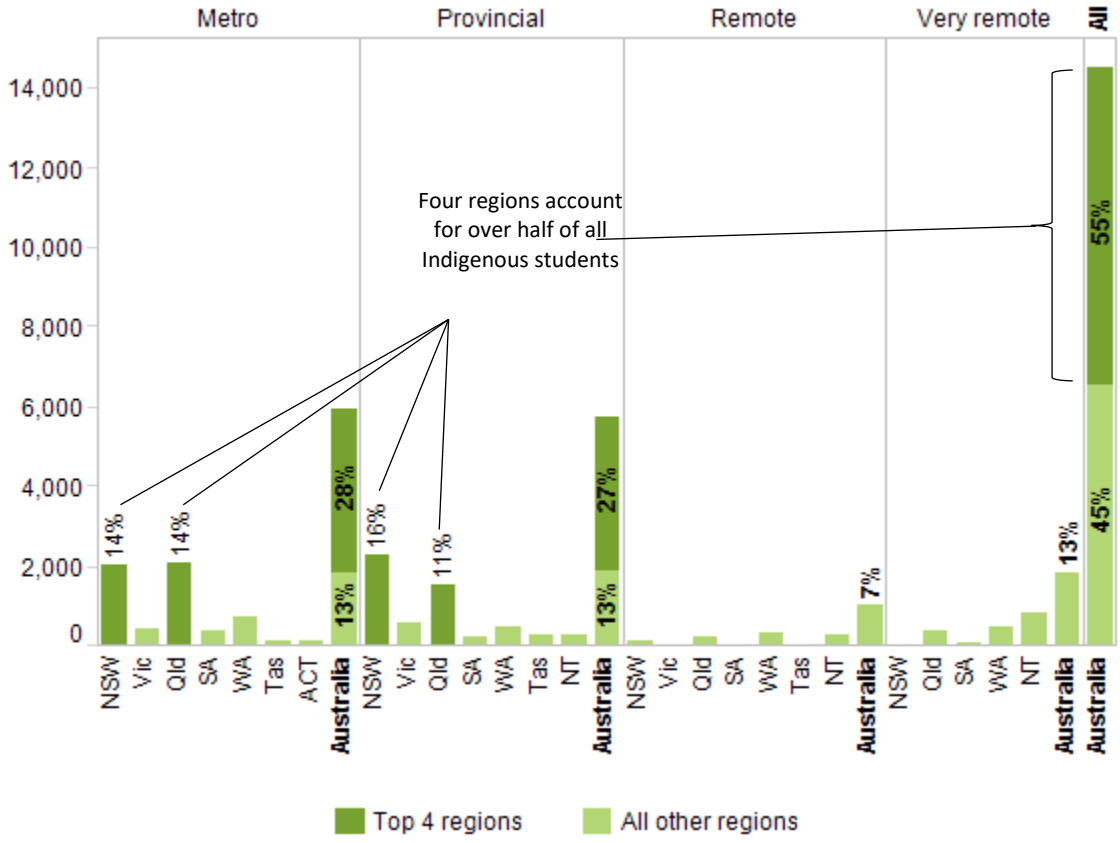
Where do Indigenous students go to school?

Figures 2.1 & 2.2 below show where Indigenous Jarjums attend schools and the percentage of Indigenous students compared to the whole school populations. It is clear from the analysis that Indigenous families are concentrated in provincial and urban environs. For Year 5 students in 2014

- 80% attended school in metropolitan or provincial areas.
- 55% attended school in just four regions: metropolitan and regional Queensland, and metropolitan and regional NSW (p.29).
- Indigenous Jarjums in metropolitan and regional areas are most likely to attend schools where they are not the majority and represent a low percentage of the total school population.
- This is in contrast to remote schools, for example community schools, where Indigenous populations can range from 80 – 100% of the total school population (e.g. very remote NT).

Figure 2.1 Most Indigenous students go to school in just four regions[a]

Indigenous student population by region (Year 5, 2014)

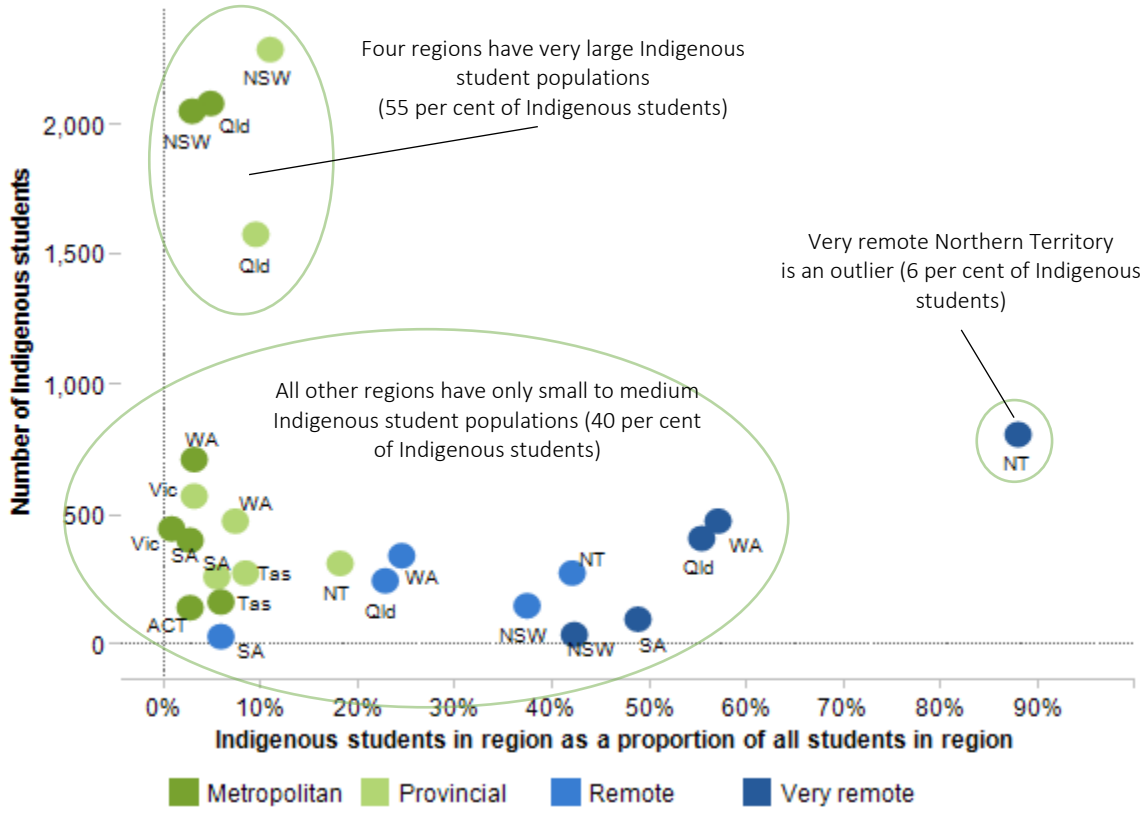


[a] Excludes 77 Indigenous students (1 per cent) who either had no defined region or went to school in a region with less than 30 Indigenous students.

Source: Commission estimates based on ACARA data (unpublished).

Figure 2.2 In regions with large numbers of Indigenous students, Indigenous students are (usually) a low percentage of all students[a]

Year 5, 2014



[a] Excludes 77 Indigenous students (1 per cent) who either had no defined region or were in a region with less than 30 Indigenous students.

Source: Commission estimates based on ACARA data (unpublished).

How are Indigenous students distributed across primary schools?

Although Indigenous students make up just 5% of all primary school students across Australia (p.87).

- 77% of all schools in Australia have at least one Indigenous Jarjum.
- 40% of Indigenous students attend schools where the total student share is less than 15% in a school with generally less than 50 Indigenous Jarjums.
- A minority of Indigenous Jarjums (16%) attend schools with Indigenous student numbers of 100 or more.

Implications for policy approaches

If the majority of students are in metropolitan and regional areas and in schools with small numbers of Indigenous students:

- Remote school contexts are not representative of what might be required to support all Indigenous students.
- A one-size fits all approach is unlikely to be effective
- In schools with low Indigenous student numbers where school-wide support may not be possible, quality teacher-student relationships and understanding Indigenous cultures become even more important.
- Most teachers across Australia are likely to interact with Indigenous students at some time. The PC report suggests that some understanding of Indigenous cultures and how to establish strong relationships with Indigenous students may be important for all teachers (p.87).

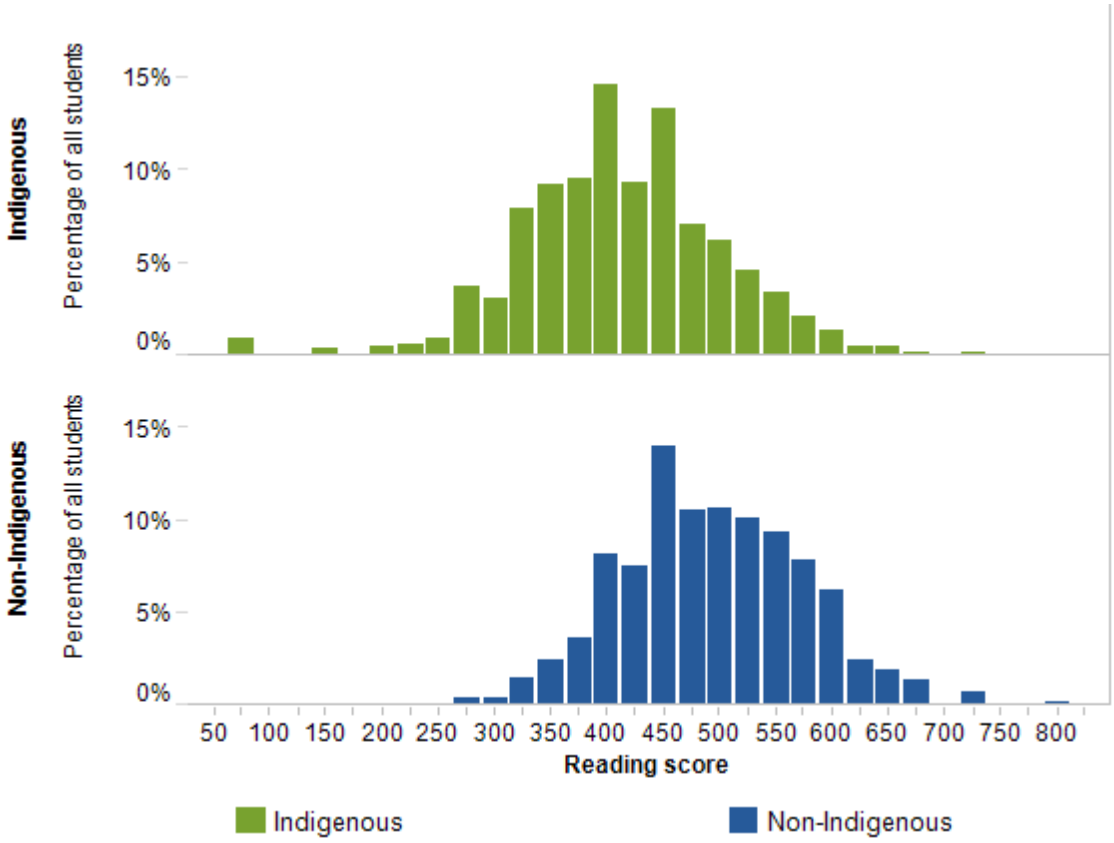
NAPLAN

Indigenous primary students have lower NAPLAN test scores on average than non-Indigenous (see Figure 3.1). Analysis of the 2014 Year 5 reading scores showed that while there was wide variation between Indigenous students, they were much more likely to record lower scores, and less likely to record higher scores than non-Indigenous students. The PC's analysis looked at the following questions, with a view to providing insights into initiatives that could improve outcomes:

- What contributes to this variation?
- Do students who do less well have different demographic characteristics from those who do well?
- Do they come from different socioeconomic backgrounds?
- Do the schools that they attend have different characteristics from those where students do well?

Figure 3.1 **There is wide variation in achievement between all students**

Reading scores for Indigenous and non-Indigenous students (Year 5, 2014)



Source: Commission estimates based on ACARA data (unpublished).

Characteristics related to achievement

In relation to Indigenous student achievement, the PC's analysis found:

- Overall, only 25% of the total variation in Indigenous student achievement is attributable to the observed and unobserved characteristics of the schools they attend (p.45).
- In remote areas, a larger proportion (about 40%) of the variation in achievement among Indigenous students is attributable to schools.
- An estimated 70% of the variation in achievement for Indigenous students is attributed to unobserved student-level characteristics (p.46). In other words, observed characteristics (Figure 2) do not explain much of the variation, and student variation remains largely unexplained.

- Some observed characteristics have a strong relationship on average with achievement (p.47). Examples include;
    - The higher the parent qualification the higher the NAPLAN scores.
    - A relationship between remoteness of the school and student achievement.
    - Achievement reflects the relationship between maternal education and achievement. Children whose mothers have a university qualification have higher test scores on average and children whose fathers work as senior manager have higher test scores.
    - Students attending schools where attendance rates are higher have higher test scores.
    - Changing schools between Year 4 and Year 5 is associated with a positive effect on scores.

***Indigenous specific insights on observable characteristics include*;**

- Indigenous students (and in fact also non-Indigenous students) do less well on average the higher the percentage of Indigenous students at their school (and it's not clear why this is the case) (p50).
- Even after other observed characteristics are taken into account, Indigenous primary school students have lower test scores on average than non-Indigenous students (p. 51/52).
- Indigenous students in regional and metropolitan areas account for 55% of the national gap in reading achievement (p.2).
- When other characteristics are equal, Indigenous students are further behind their non-Indigenous peers the more remote the region in which they attend school (p.52). However, the PC suggest that that there might be other characteristics contributing to this (e.g. parents' level of education) (p.47).
- The state in which a student attends has little relationship to achievement.
- The most important contributor to both Indigenous and non-Indigenous student achievement within the observed data set is the socio-economic background of the students (p.2).
- Other important factors are
    - the general socio-economic background of students attending the school
    - for Indigenous students only – attendance rates at the school and the percentage of Indigenous students within a school.

The data shows that Indigenous students have characteristics that are unobserved in the ACARA data that result in differences in achievement relative to non-Indigenous students. PC state that it is unclear from the analysis what these characteristics might be but suggest the follow explanations from the Indigenous education literature:

- relatively low rates of attendance at a student level
- speaking Aboriginal English

- relatively high rates of hearing loss
- relatively low expectations of Indigenous students (and of their teachers)
- discrimination, and
- a lack of acknowledgment of, and support for, Indigenous culture among teachers and within schools

Implications for policy approaches

- Initiatives to address the effects of socioeconomic disadvantage and improve attendance rates could lift achievement.
- The analysis suggests that the relationships between observed characteristics and achievement are different for Indigenous and non-Indigenous students – in other words, the 'gap' cannot just be attributed to student socio-economic disadvantage.
- The fact that in non-remote schools only 25% of the variation is attributable to schools could be interpreted as meaning that schools, in general, do not have as much influence as they should (p.45).
- Most of the unexplained variation in student achievement for all students relates to difference between students rather than schools – in other words the findings suggest that initiatives to address individual learning needs might be effective in lifting achievement (p.2)
- For Indigenous students, the evidence suggests that high expectations, strong student-teacher and community relationships and support for culture are all important – and need to be underpinned by strong school leadership (pg.2).

What Works best?

Hattie's work on quality teaching frames and visible learning (2012, 2015) is highlighted as the biggest international track of effective teaching for all students and the Centre for Education Services and Evaluation (CESE) is used as it "is recent and discusses seven tractable themes" (p.62). The PC Research Paper links these two bodies of work (CESE and Hattie) through applying four organizing questions (see Figure 4.1 below) (p.65).

- "How can teachers effectively assess what students know and evaluate their impact?"
- "What are the most effective instructional models and teaching interventions?"
- "What are the key contributors to effective delivery of instruction?"
- "How can schools and school systems most effectively support high quality instruction?"

The PC Research Paper does note that Hattie's work is limited to influences for which research exists, and it is possible that influences exist that have not been studied (p.62). They also note that Hattie's work does not obviate the need for more high quality research.

Implications for policy approaches

- Gaps remain in the evidence base and in our understanding (p.14)
- There are outliers of schools who perform considerably better (or worse) than expected (p. 58). A systematic evaluation of schools that do a particularly good job of educating Indigenous students is needed to better inform policy development to reduce the gap in educational achievement. (p.15).
- There is a need for systems to enable teachers to work collaboratively and support each other.

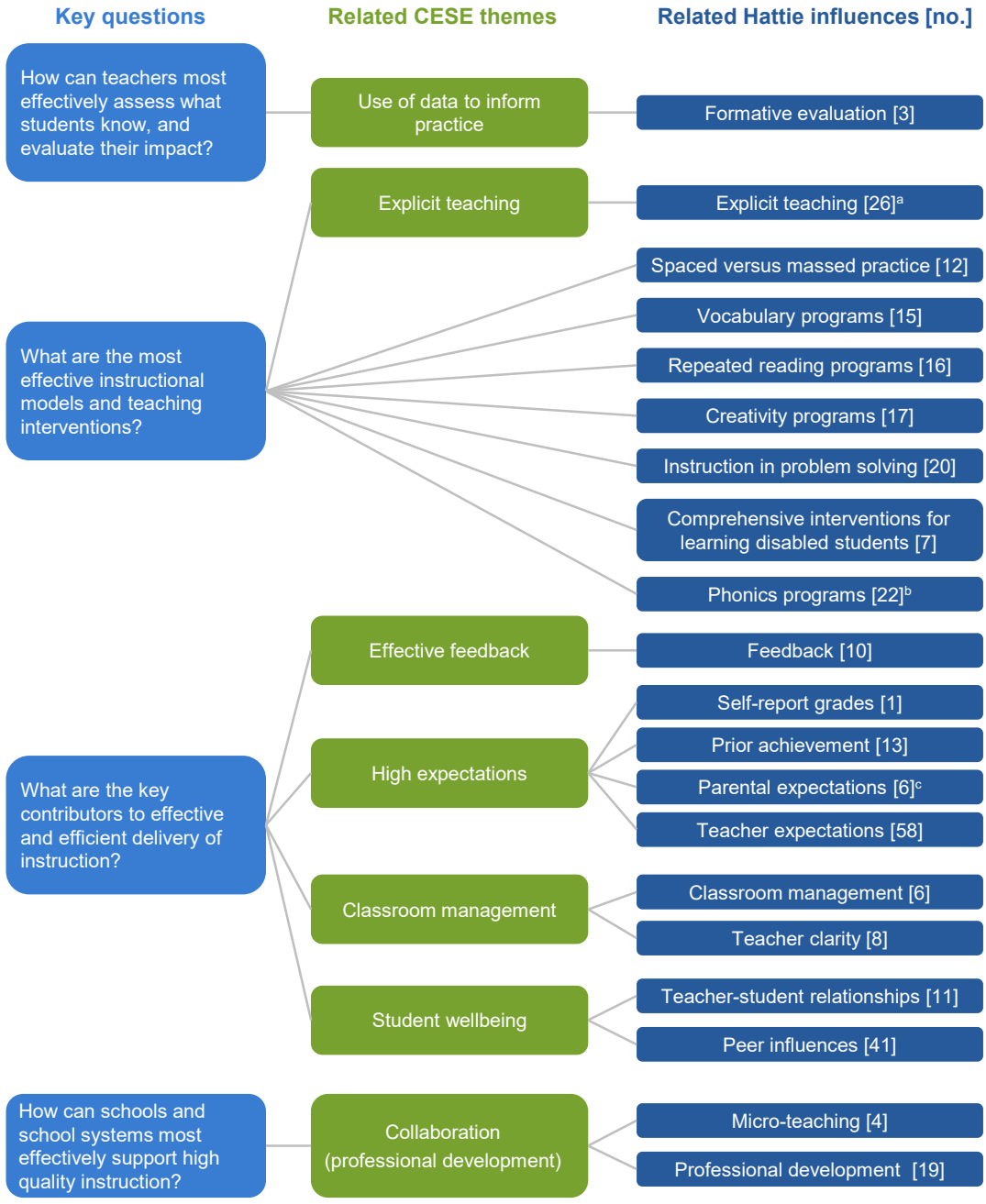
Taking a student's Indigenous background into account at an instructional level

- High expectations of teachers, students and families.
- Positive relationships promoted by teacher understanding.
- Relevance of culture to participation and achievement.
- Desirability of an Indigenous education workforce**.**

Accounts at a school and systems level

- Professional Development linked to professional standards linked to quality teaching.
- Support Community relationships.
- Provide safe Indigenous spaces.
- Focus on embedding Indigenous Knowledge.
- Clear strategic directions, program logic and step developments.

Figure 4.1 Linking the key questions, CESE themes and Hattie's influences on achievement



a Included although not in Hattie's top 20 because it maps directly onto the CESE theme. **b** Included although not in Hattie's top 20 because it is discussed in the section on literacy and numeracy. **c** Hattie presented only an effect size for parental expectations, not a ranking. Given the effect size, parental expectations would sit at about number 6 on his list.

Sources: CESE (2014b); Hattie (2009).

Summary of 'Key Points' from the Research Paper

- The PC Research Paper signals via the NAPLAN data that no consistent improvement has been made in literacy and numeracy for Indigenous Australian Primary school students.

- There is wide variation in literacy and numeracy achievement for Indigenous Jarjums. However Indigenous Jarjums are over-represented among low achievers and under represented among high achievers.

- The PC Research Paper re-asserts well-established research that socioeconomic background explains more of the variation in literacy and numeracy achievement than any other single factor. Other important factors within the observed data set include general socioeconomic background of students attending a school, average attendance rate and the proportion of Indigenous students in a schools' enrolment.

- Most of the unexplained variation according to the PC Research Report is due to differences between students (rather than schools).

- The broader education literature suggests the key to improving achievement is individualised instruction (p.2). No 'one size approach' will suit all contexts, especially within Indigenous and culturally diverse cohorts.

- For Indigenous students, evidence suggests a culture of high expectations in schools, strong high expectations relationships (Rauland & Adams, 2015) and support for culture are particularly important.

- Future policy needs to be informed by context, for example the urban lived reality for the majority of Indigenous Australians and schooling where they attend sites with small numbers of Indigenous students.

- The PC Research Paper analysis (as did the Stronger Smarter Longitudinal Study by Luke et al in 2013) shows that there are outliers in the data sets where schools are 'punching above their weight'. That is to say specific schools could provide insight into the characteristics that impact on high (and low) achievement levels for Indigenous students. Case studies of these schools would have the potential to shed light on the most cost effective ways on "what works best to lift achievement of Indigenous students" (p.2).

Stronger Smarter Recommendations and Provocations

The Stronger Smarter Institute has data about schools that do a particularly good job of educating Indigenous students

- Within the PC's analysis there are provocations around the 'outliers' that exist in the data. There are flags from the ACARA data that there are schools with significant proportions of Indigenous Jarjums doing exceptionally well as well as schools that are struggling. There is common sense in tracking and getting more of the story on 'what works' from these type schools.

- The Institute holds a participant coverage of over 2000 participants in the Stronger Smarter Leadership Program (SSLP) across 600 schools. Of these, over 400 schools are Primary spaces. Our SSLP participants undertake Workplace Challenges to implement aspects of the Stronger Smarter Meta-strategies in their schools. The Stronger Smarter Institute is in the process of gathering data about schools that do a particularly good job of educating Indigenous students as Case Studies and Field Notes.

- The 2013 longitudinal study of 'Stronger Smarter Learning Communities' (Luke et.al, 2013) was the biggest study on Indigenous Education of its time. Although the study was unable to show significant data trends in relation to transferring Stronger Smarter Leadership training into sustained student outcomes within the timeframe of the study, there were significant key Case Studies that were stories of success, the 'outliers' defined in the PC report.

- There is the opportunity now for the Institute's Research and Impact team to track and share deeper research insights from the schools who are working with the Stronger Smarter Approach. We believe there are comprehensive research links and insights that the PC could gain from deeper dialogue and collaboration with the Stronger Smarter Institute.

The Stronger Smarter metastrategies support the Research Paper's recommendations

- This study is important to highlight on two fronts. It comes as a provocation from our field of Stronger Smarter alumni and it directly talks to the gaps of Hattie's research especially in relation to equity and benefit of culturally located teaching practices (Lewthwaite et al., 2015). The PC research study shows how pedagogy needs to shift into the realm of Cultural Competency (Gorringe & Spillman, 2008) and weave in ways that focus on High-Expectation Relationships and responds to issues of Indigenous gap data and discourse through the development of culturally responsive pedagogies (Lewthwaite et al., 2015 and Muhammad & Hollie, 2012).

- The recommendations in the PC Research Paper (p.59) have clear connections to four of the five Stronger Smarter Meta-strategies. These all fall into the unobserved data categories within the PC Research Study. In particular,
    - *Meta-strategy 1: Acknowledging, embracing and developing a positive sense of identity in schools* – supports the PC Research Paper's recommendations of the need for high expectations, positive student well-being and cultural recognition, acknowledgement and support.
    - *Meta-strategy 3: 'High expectations' leadership to ensure 'high expectations' classrooms, with 'high expectations' teacher/student relationships* – supports the PC Research Paper's recommendations that strong student-teacher relationships are essential for high quality instruction.
    - *Meta-strategy 4: Innovative and dynamic school models in complex social and cultural contexts* – supports the recommendations that a one-size fits all approach will not work for Indigenous students.
    - *Meta-strategy 5: Innovative and dynamic school staffing models in complex social and cultural contexts* – supports the recommendations for individualized instruction that includes assessment of each child's learning needs and the need to invest in building a well-qualified Indigenous education workforce (p.82).

Supported by other research

- The PC Research Paper's findings are supported by recent research in far north Queensland by Lewthwaite et al (2015) which covers provincial and remote areas. The Lewthwaite research follows Craven's earlier work on Aboriginal student aspiration (Craven et al., 2007). It draws on from the research of Perso (2012) and develops a research response directly in relation to Indigenous student and Indigenous families' understandings of what makes effective teaching.
- For further tracking of this latest field data see the Institute's Reading Review on "Seeking a Pedagogy of difference: What for Aboriginal Students and Their Parents in North Queensland Say About Teaching and Their Learning" (Lewthwaite et al., 2015).

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