The Use of NAPLAN Data

in Catholic Schools

Submitted by

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Statement of Sources

This thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma. No other person's work has been used without due acknowledgement in the main text of the thesis. The thesis has not been submitted for the award of any degree or diploma in any other tertiary institution. All research procedures reported in this thesis received the approval of the Australian Catholic University Human Research Ethics Committee.

Signature

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Date

Abstract

This research was conducted within the context of Australia's recent 'Education Revolution', initiated by the Rudd Labor Government after the Australian federal election in November 2007. Key to this revolution was the National Assessment Programme for Literacy and Numeracy (NAPLAN), which commenced in 2008. For the first time in Australia's history, a large amount of student performance data have been generated from these tests nationwide, for various uses by governments and education sectors. Associated with NAPLAN has been the development of the *My School* website, which has made public (for the first time) details of individual schools and their students' performance in Years 3, 5, 7 and 9. The 'Education Revolution' also encompassed the provision of computers and internet connectivity for schools, which coupled with the powerful NAPLAN SMART data software package, has presented school leaders and teachers with new challenges and opportunities relating to the use of centralised testing data.

This research explores how school leaders and teachers use NAPLAN data to improve student learning outcomes, as measured by NAPLAN performance, in selected Catholic schools in the inner western region of the Sydney Archdiocese in New South Wales (NSW). Using a mixed methods design within the paradigm of pragmatism, the research was conducted in three phases: collecting and analysing quantitative data through document analysis of NAPLAN performance data, case study involving interviews with 35 participants across five sites and analysis of all data. The participants were school leaders and teachers.

Central to the research is the meaning school leaders and teachers create from NAPLAN data, and how they apply or interpret this to improve student learning outcomes, as measured by NAPLAN performance. The research has significance from the perspective of school-based educational practitioners who are presented with the challenge of using NAPLAN data effectively for their students. This research is also significant for politicians, educational bureaucrats and the public in determining legitimate uses for NAPLAN data.

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List of Abbreviations

ACARA	Australian Curriculum, Assessment and Reporting Authority
ACT	Australian Capital Territory
AEU	Australian Education Union
BER	Building Education Revolution
BST	Basic Skills Test
CCD	Census Collection District
CEO	Catholic Education Office
COAG	Council of Australian Governments
DER	Digital Education Revolution
EMSAD	Educational Measurement and School Accountability Directorate
ESL	English as a Second Language
HIGS	'How am I Going?' Report
HSC	Higher School Certificate
ICSEA	Index of Community Socio-Educational Advantage
ICT	Information and Communication Technology
IDEAS	Innovative Designs for Enhancing Achievement in Schools
IEU	Independent Education Union
ITR	Item Response Theory
LFTT	Language Features of Text Types
MCEETYA	Ministerial Council for Education, Employment and Youth Affairs
NAPLAN	National Assessment Programme for Literacy and Numeracy
NSW	New South Wales
NPA	National Partnership Agreement
OECD	Organization for Economic Cooperation and Development
PISA	Programme for International Student Assessment (PISA).
PLC	Professional Learning Community
SES	Socio-Economic Status
SMART	School Measurement, Assessment, and Reporting Toolkit
SPP	Specific Purpose Payments
SSSB	Students from Statistically Similar Backgrounds
SSNP	Smarter School National Partnership
SSSS	Students with the Same Starting Scores
TAFE	Technical and Further Education
UBD	Understanding by Design
WA	Western Australia

Chapter 1 Introduction and Research Context

1.1 Introduction

In today's data-rich educational environment, the extent to which creative and effective teachers capture, integrate and use student performance data to support student learning has been of particular interest. It is central to educational progress in the developed world, and particularly in member countries of the Organization for Economic Cooperation and Development (OECD) (Fullan, 2009; Hargreaves & Shirley, 2009). Since the Australian Federal Labor Government's 'Education Revolution' commenced in 2008, the wealth and accessibility of educational testing data has increased to levels never before experienced in this country. The key elements of the 'Education Revolution' are described in the following sections, which provide a relevant context to assist describing the research problem.

1.2 Context of the Study

1.2.1 About the researcher.

The researcher is a leader in Catholic education, a Regional Director for Marist Schools Australia in New South Wales (NSW) and the Australian Capital Territory (ACT). This role involves matters of governance with schools owned by the Marist Brothers, and quality assurance from an educational perspective. The researcher commenced in this role in January 2012.

The researcher was previously a secondary school principal for ten years, and the Director of the Inner Western Region of the Sydney Archdiocese for four years. This role involved leadership and support of 10 Secondary Colleges and 38 Primary Schools.

As such, the use of 'data' by schools to inform and shape the learning relationships between students and teachers is of particular interest.

Between 1998 and 2011, the amount of data and the subsequent degree of analysis increased markedly for secondary schools, particularly in regard to the NSW Higher School Certificate, which is the exit credential for students after 13 years of education. The nature of the analysis of HSC results in the Catholic sector since the beginning of the 21st Century has included a focus on the learning gain achieved by students in their final two years in all subjects. DeCourcy (2005) pioneered this approach and maintains that such a focus has enabled school leaders and teachers to utilise high stakes external testing data as a tool "to monitor and improve pedagogy and student performance" (p. 93). The researcher's experience as a secondary Principal and Regional Director was consistent with DeCourcy's observations, evident in sustained improvement in HSC results for secondary schools in the Region based on measures of competitiveness and learning gain.

Whilst cognisant of various political and economic ideologies and debate associated with large cohort testing, engagement in NAPLAN is mandatory for all Australian schools, and the core motives for this research were improved pedagogy and improved learning outcomes for Primary school students within the recent legislated reality of NAPLAN testing. Reported measures of learning gain based on performance in NAPLAN tests, spiked interest and questions as to possible corrolaries with the successful use of HSC data, in the Catholic sector in NSW.

1.2.2 NAPLAN and the national curriculum.

These are significant times for Australian education. From the first settlement by the British, the country developed as a collection of colonies. The independence of these

separate colonies and the fierce rivalry for pre-eminence saw an often (and sometimes wilful) uncoordinated approach to development, public policy, infrastructure and planning. A classic example of this disjointed development was the differing railway line gauges of the various colonies, which thwarted the economical movement of freight and people for decades. From a national education perspective, national assessment and a national curriculum can be considered analogous to the standardisation of the country's rail network (Reid, 2005). NAPLAN has been referred to as the first step in 'aligning the gauges', some 107 years after Federation in 1901. Fuelling further debate is the fact that NAPLAN preceded the development, agreement and publication of a national curriculum. In May 2009, the Australian Curriculum, Assessment and Reporting Authority (ACARA) was established. ACARA has engaged in a nationwide consultation to design the K–10 national curriculum, which commenced (in part) at the beginning of 2012. Reid argues that the rail gauge metaphor is too simplistic to represent the real imperatives of a national education agenda, which is inextricably linked to the country's economic future (Reid, 2005). From an educational perspective, NAPLAN assesses student performance nationwide, drawing on the national statements of learning in english and mathematics. Direct links to a national curriculum have been publicly forecast once the national curriculum is finalised. In the meantime, each school in Australia is required to continue following the relevant state or territory statutes for registration and accreditation; this includes adherence to a state- or territory-approved curriculum and syllabus. NAPLAN is currently disconnected from curriculum specificity, and this has generated confusion and credibility issues among educators, evidenced in the Australian Federal Government's *Senate Standing References Committee on Education, Employment and Workplace Relations Inquiry* into the

administration and reporting of NAPLAN testing (Senate References Committee on Education, 2010, p. 1). The absence of a direct link between NAPLAN and the national curriculum will be explored in this research as a possible factor influencing the attitude of school leaders and teachers in their use of NAPLAN data to improve student learning outcomes, as measured by NAPLAN performance.

1.2.3 *My School* website.

Reporting of NAPLAN results on the national *My School* website, which was launched in January 2010 for each individual school, was accompanied by comparative performance with other schools (geographical neighbours or statistical neighbours) and has created much public debate, interstate rivalry, political point scoring and intensified focus on government funding for education. Fundamental to the debate is the reality that Australia performs comparatively strongly in reading, mathematics and problem solving with member countries of the OECD in their Progress for International Students Assessment (PISA). Deeper analysis of these results highlights a disparity in achievement among Australian students, linked to their socio-economic status (SES), which does not compare favourably with other OECD nations (McGaw, 2002, 2006). Correcting this inequality is a foundational goal for Australian education, as written in the 2008 *Melbourne Declaration on Educational Goals for Young Australians* (MCEETYA, 2008). The manner in which teachers address this challenge with the analytical tools and methods at their disposal is central to the research problem. NAPLAN, as a common assessment tool, has the potential to produce data, which will aid in identifying schools where student performance is below that of students in like schools. Exploring the potential of the NAPLAN data to constructively and specifically support teachers' work with individual students through analysis in addressing learning

is directly linked to the research problem. The possible influence of the *My School* website on the attitudes of the teaching profession to NAPLAN, and the use of data to improve student learning outcomes (as measured by NAPLAN) is relevant in the context of this research.

To provide some background to public interest in NAPLAN results, on Thursday 28 January 28 2010, the *My School* website was launched. Within nine hours the site had recorded 4.5 million hits (Munro, 2010). On Friday 29 January 29 2010, in defiance of the NSW State Government's law banning print media from publishing comparisons of school results, the *Sydney Morning Herald* (one of Australia's oldest and most respected quality broadsheet newspapers) produced a comprehensive list of NSW schools and ranked them from one to 1100, according to their NAPLAN results. For this misdemeanour, the *Sydney Morning Herald* owners—Fairfax Media—were fined AUD$55,000.00. Aspects of the NAPLAN results were the subject of comment in the *Sydney Morning Herald* for each week in February, March and April of 2010, with 84 individual articles and letters published (http://www.smh.com.au, 2010). Reflected in these facts is the intense public interest in education and the resultant pressure on politicians to best serve and please their constituents. In 2011, the level of public interest was similar, with a particular emphasis on school finances, which were reported for the first time.

The Australian Education Union (AEU)—which represents teachers and allied educators in public sector schools, TAFE colleges and early childhood centres—has been a vocal opponent of the *My School* website, due to the manner in which the website publishes comparative information about each school's NAPLAN results. On 12 April 12 2010, the AEU voted unanimously to impose a moratorium on the 2010 NAPLAN

tests, and expressed their concern about the misuse of student NAPLAN performance data to 'name and shame' schools. The AEU demanded that the federal government address these concerns (Gavrielatos, 2010).

The Independent Education Union (IEU), which represents teachers and allied educators in non-government schools, declared it would support the NAPLAN tests in 2010, while formally requesting ACARA make 18 specific changes to the *My School* website (Watt, 2010). These changes included similar concerns to those expressed by the AEU regarding the comparative nature of information presented on the website.

The emphases evident in the views of the education unions concerning the *My School* website, when juxtaposed to views of successive Australian governments, present an ideological and pragmatic difference in the philosophy associated with the use of NAPLAN data. The tension resides in the associated reason and purpose of the tests. From one government perspective, NAPLAN and the *My School* website produce a means of analysis in which inequity of educational opportunity between schools can be identified and addressed through additional funding and targeted measures, including chosen teachers and leaders (Jensen, 2010a). Educators, represented by their unions, are concerned that NAPLAN data, isolated from a lived context can be misleading and publicly diminish the work and reputation of teachers and schools in particular circumstances, when used primarily as an instrument to address deficit (Gavrielatos, 2010).

Some education commentators make the disingenuous claim that NAPLAN can only be used as a broad diagnostic instrument on a school-by-school basis, yet the development of the SMART data analysis package is designed to facilitate individual student analysis. In the inner western region, many school leaders and teachers also use

NAPLAN data to evaluate the progress of specific classes and performance by teachers. Educational experts are cognisant of this reality hence, alignment exists among practice in inner western region schools, the ideals stated in the *Melbourne Declaration on Educational Goals for Young Australians* (MCEETYA, 2008) and the SSNP funding initiative. These realities provide a rich context in which this research is situated.

These factors in relation to the *My School* website are noted to inform the context in which the research problem is to be explored.

1.2.4 National partnership agreements.

Government funding for schools in Australia is facilitated through two main avenues. Government schools receive funding from state governments, which receive the majority of their overall funding annually from the federal government after the annual premiers' conference. Non-government schools receive the majority of their funds directly from the federal government, with additional state government financial support. With a record mandate from the Australian electorate after the 2007 federal elections, the new Labor government—faced with the challenge of addressing the inequity in educational achievement highlighted in the OECD PISA performance data of Australian students (McGaw, 2002, 2006)—devised a new funding arrangement with the state governments. In 2009, the Council of Australian Governments (COAG) announced a new intergovernmental agreement (IGA) on federal financial relations, whereby the previous specific purpose payments (SPP) to state governments would be reduced from 90 to five, and new NPAs would be established, as detailed in Table 1.1. (http://www.coag.gov.au).

Table 1.1

COAG NPAs.

Funding amount in billions	**SPP**
$60.5	National healthcare
$18	National schools
$6.7	National skills and workforce development
$5.3	National disability services
$6.2	National affordable housing

For Australian schools, these new IGA arrangements were designed to enable the federal government to inject additional funds directly to schools and school systems where the need was greatest, over a seven-year period (http://ministers.deewr.gov.au/gillard/mceetyamcvte). The new NPAs were designed to target additional Australian government funding more directly, according to need, circumventing the complexities of various sector funding arrangements. Similar targeted funding arrangements were implemented for health, housing, disability services and skills development for the workforce. The funding amounts are presented in Table 1.1.

In the education NPA, the areas for reform were teacher quality, literacy and numeracy, and low SES school Communities (Smarter Schools National Partnerships of the Australian and New South Wales governments [SSNP], 2009). Within the low SES school communities NPA, there were six reform priorities nominated. Priorities 2, 3, 5 and 6 included options to allow school communities to tailor funds to their needs. Reform 1 was mandatory; and required schools to introduce incentives to attract high

performing teachers and principals. Reform 4, which was also mandatory, required 'professional development for school executives and teachers to use and analyse student data (e.g. NAPLAN) to cater for student needs'.

The inner western region of Sydney (at the core of this research) had ten schools involved in the low SES school communities NPA, representing AUD$10 million of funding, with strict accountabilities. The NPA funding arrangement required schools and systems to demonstrate fulfilment of the reforms: NAPLAN data analysis was identified specifically in Mandatory Reform 4, underscoring the government's intention for NAPLAN to be used by school leaders and teachers to support student learning outcomes.

The Australian government's purposes for using NAPLAN data emerged in the stated intention to identify poor-performing schools through the *My School* website (Jensen, 2010a) and to support student learning through the NPA initiatives. From an educational perspective, the government added two more funding sources to assist school leaders and teachers in using NAPLAN data. These are detailed in the next section.

1.2.5 The DER and BER.

In 2008 and 2009, the Rudd Labor government announced and implemented two major initiatives that had a dramatic impact on the educational landscape in Australia. The Digital Education Revolution (DER) directed AUD$2.2 billion to all Australian secondary schools, with the ultimate aim of addressing access equity to computers for students in Years 9 to12, with a stated goal of a 1:1 ratio by 2012. In 2009, in the wake of the global financial crisis, AUD$16.2 billion was provided to Australian schools through the Building the Education Revolution (BER) programme for new halls, libraries and classroom

refurbishments, (retrieved from http://www.deewr.gov.au). While the economic imperative for the BER stimulus to enliven a slowing national economy was clear, this funding represented a simultaneous financial windfall for schools that was without precedent. In the Sydney Archdiocese, this combined funding amounted to approximately $300 million, which was spent in 24 months. This amount is equivalent to 60 per cent of the total capital works spent on schools in the Archdiocese in the previous 20 years.

In the Sydney Archdiocese, the decision was made to use DER funds to supplement the purchase of laptops for students in secondary schools. As a consequence, schools also purchased laptops for all teachers. Never before in the Archdiocese's secondary schools had teachers had this degree of access to computers, nor had they taught students with individual access to a computer across all subject areas. These circumstances were realised due to DER funding.

In regard to BER funding, the Archdiocese negotiated with all primary schools and parishes an amount of their entitlement to be quarantined for providing broadband internet access and wireless operating environments. This decision enabled all schools to have ready internet access, school-based and Archdiocesan-linked standard operating environments, and the ability to use technology in every room in a school.

These two funding initiatives provided new opportunities for school leaders, teachers and Catholic Education Office staff to analyse student performance data from external testing and school-based assessments. Access to computers also broadened the opportunity for teachers in NSW schools to use the SMART data analysis package, which is directly linked to NAPLAN tests. This SMART software provides a range of analyses, as well as teaching and learning strategies, that are designed to build a level of competence in relation to each concept or skill addressed in individual NAPLAN test

items. Growth patterns and other performance measures are included in the package for schools, regions and sectors. Individual student performance by test item can also be isolated readily. The role technology plays in the use and analysis of centralised testing data is another contextual feature that has a bearing on the development of the research problem and purpose in this study.

1.3 Identification of the Research Problem

With the advent in 2008 of NAPLAN for students in Years 3, 5, 7 and 9, educators were confronted with a host of complex issues in the public domain and an array of data to be interpreted meaningfully in the classroom. The degree of emphasis placed on NAPLAN data is a matter of on-going debate. Statistical anomalies present in the NAPLAN test results are identified by Wu (2010), who cautions against using these results in a comparative manner between schools. Wu also questions the authenticity of measuring learning growth for an individual student from 40-item tests administered two years apart. Issues surrounding the performance of students on a test item according to its placement in the exam booklet are considered. Wu's observations underscore the need to consider carefully the appropriate purposes for which NAPLAN results should be used. Educators in Australia have the right to question the appropriateness of NAPLAN data application, despite claims from some commentators that the collaborative design of NAPLAN by educationalists negates such a necessity. Hargreaves and Shirley (2009) and Hattie (2005) argue from an international perspective, that in the face of an unprecedented avalanche of data made possible through technology, along with overzealous ministers, ministries, educational bureaucrats and centralist public servants, education professionals need to make

informed professional judgements regarding the use of data in their work with students. In the NSW context, the use of centralised testing data in the classroom is a priority of the Department of Education and Training (Wasson, 2009).

Experiences in the United Kingdom (UK) and the United States of America (USA) with large-cohort testing are not characterised by sophisticated diagnostic software packages developed by teachers for teachers. Hargreaves and Shirley (2009) and Alexander (2010) provide informed critiques of these countries' initiatives and the subsequent consequences of their large-cohort testing regimes. Alexander visited Australia in March 2010 and spoke publicly about his experience as a member of the independent Cambridge Primary Review (Alexander, & Armstrong, 2010). This was the first review of primary education in the UK for 40 years, and it examined in detail the effects of the Blair government's education reforms. Alexander (2010) wrote:

> Thus the Cambridge Review was forced to conclude that far from raising standards of teaching this approach may actually have depressed standards by constraining the work of the country's most talented teachers—even assuming the prescribed teaching strategies to be well-founded empirically, which in the case of national teaching standards and the national literacy strategy they are not. It's a framework which may work tolerably well for novices. (Alexander, 2010, p. 7)

In the USA, the 2001 *No Child Left Behind* legislation has been identified as the cause of many of the worst traits and outcomes of high-stakes testing. Similar to Alexander's criticism of the UK experience, Hargreaves and Shirley (2009), Lorrie A Shepard (2008) and Fullan (2009a) describe the detrimental effects of high-stakes large-

cohort testing on the learning environment in US schools, and the subsequent lack of evidence regarding progress in improved student learning outcomes.

In the current educational debate in Australia, much energy and comment has been expended by educators on the politics and philosophy of the *My School* website and NAPLAN (Redden & Low, 2012), rather than concentrating on whether or not there is any observable diagnostic or formative assessment value in data from NAPLAN tests for individual students, groups of students and schools. The SMART software package continues to be developed with NAPLAN tests by the Educational Measurement and School Accountability Directorate (EMSAD), to assist schools with diagnostic information for teachers about their students. Indeed, the design of the SMART data package enables individual student analysis by each test item, so the teacher in the classroom does have access to NAPLAN data from a diagnostic perspective for each individual student. In the current climate, and with the negative reports from overseas experiences of centralised testing, the diagnostic possibilities and purposes of NAPLAN have been overshadowed.

Wasson (2009) identifies the focus on diagnostics and the accompanying quality of support for teachers through the SMART package as the reason for widespread support for large-cohort testing in NSW (in the initial state-based Basic Skills Test (BST)), and now the nationwide NAPLAN tests. The current controversy surrounds the use and presentation of NAPLAN results in the public domain, as well as issues surrounding the tests' diagnostic elements. Craig (2005) identifies similar diagnostic benefits from the Western Australian perspective in relation to their state-based tests (which preceded NAPLAN). From the Victorian perspective, Holmes-Smith (2005) identified the formative assessment value of large-cohort testing and the role of teachers

in interpreting data for diagnostic purposes. In the Australian context and experience of school leaders and teachers with centralised data from large-cohort testing, there is a degree of acceptance stemming from successful state-based testing regimes that preceded NAPLAN. To draw untested parallels from overseas experiences of centralised testing in the US and UK is problematic (Hill, 2010). Research in Australia is required to explore the influence, if any, of NAPLAN data to improve learning outcomes for students as measured in NAPLAN performance.

1.4 Defining the Research Problem

Elements of the NAPLAN debate stem from the use of the word ‘diagnostic’. It is a word closely aligned to medicine, where a disease is identified through symptoms. Education is a formative exercise, where the individual is given opportunities to develop intellect and reason. Terms such as ‘diagnostic tests’ or ‘analysis’ can, in an educational sense, be understood as motivated by a learner’s perceived deficit. Consistent with the formative and developmental nature of learning, educators more often examine assessment data from a formative or summative perspective. In this paper, the term ‘diagnostic’ is interchangeable with ‘formative assessment’. The reason for this is that much of the broader political discourse and research around centralised testing data uses both these terms in reference to the same assessment processes.

A further element of the debate, as alluded to in Section 1.3, is whether or not NAPLAN data can be considered a diagnostic tool or formative assessment instrument for an individual student. The capacity for NAPLAN data to be used for categorising and identifying schools in light of learning growth and comparative performance against national, state and sector averages, is clear. The capacity for NAPLAN to be used by

teachers to assist individual students is less clear, despite the millions of dollars spent by the federal government on developing the SMART data analysis package that provides test item feedback on individual student performance. The development of the SMART data analysis package aligns closely with the goals of NAPLAN data as stated in the *Melbourne Declaration on Educational Goals for Young Australians* (MCEETYA, 2008).

The dissonance existing in the NAPLAN debate in Australia is highlighted by the recorded comments from the Senate Committee Hearing on 29 October 2010. In response to concerns about the timing of the NAPLAN tests and the data provided, Dr Peter Hill (2010), CEO of ACARA, provided the following explanation:

> NAPLAN will never work as a diagnostic test. A diagnostic test should be administered by the teacher so that they can take action the next day. No national survey can return all of that the next day very easily. There are ways in which we can provide resources—for example, in computer adaptive tests that can provide feedback instantly. Perhaps in the future those sorts of resources can be made available. There is a lot of interest in doing that, but that is not a part of NAPLAN at this stage. (Hill, 2010, p. 78)

In the very same hearing, government senators' views were noted, which endorsed the diagnostic value and further potential of NAPLAN as a diagnostic learning tool:

> Government senators note the committee majority recommendation to expand NAPLAN testing. Government senators disagree with this proposal as increased large-scale cohort testing is not the next step that needs to be taken. The next step

> is providing teachers with better diagnostic tools to address the needs of individual students. Government senators note that the government has committed to developing a national online assessment and learning bank for students, parents and teachers to provide a sophisticated diagnostic assessment of each student's strengths and learning needs. (Senate References Committee on Education, 2010 Report on NAPLAN)

As represented in these statements, at the highest level of governance in Australia, varying views exist as to the diagnostic benefits of NAPLAN data for individual students. Significant time is being invested by education professionals in learning new ways of analysing data from NAPLAN, but the question of the benefits such analysis can bring to student learning in the classroom is yet to be determined. Herein lies the problem, which is the subject of this research.

The phenomena of centralised measurement and large-cohort standardised testing are not unique to Australia. However rapid changes in the educational landscape in Australia with the advent of the DER, BER, *My School* website, and the Australian curriculum acting as accelerants, has created a unique opportunity to support learning in a digital environment. As previously outlined, the attendant publicity and politics surrounding these changes have created a dissonance for Australian educators: the intended purpose of NAPLAN—as identified in the 2008 *Melbourne Declaration on Educational Goals for Young Australians*—is to support the education of young Australians. Within the *Melbourne Declaration*, aspirations for successful learning are based in part on a comprehensive assessment of student progress that incorporates the professional judgement of teachers, testing in general and involvement in national

testing. The requisite enabling of teachers to use information from national testing regarding student progress (to inform their teaching) is also highlighted (MCEETYA, 2008, p. 14).

The purpose of this research is to explore how school leaders and teachers are facing the challenges inherent in these goals through their interaction with NAPLAN tests and data provided by the tests, in the context of the federal government's 'Education Revolution'. Most important is the nature of the interaction school leaders and teachers have with NAPLAN data to improve student learning outcomes, as measured in NAPLAN performance.

1.5 The Research Purpose

The purpose of this research is to explore how school leaders and teachers use NAPLAN data to improve student learning.

1.6 The Major RQ and Sub-Questions

The major research question (RQ) is: **how do teachers and school leaders working within the large-cohort centralised testing regime of NAPLAN in Australia use NAPLAN data to improve student learning outcomes as measured in NAPLAN performance?**

To facilitate this research, and based upon a review of the scholarly literature, the following research sub-questions were designed to gather specific information for analysis. In the first question, the perceptions of school leaders and teachers about NAPLAN data will be explored in relation to any influence on classroom practice. This question is fundamental to the research, as it explores understandings of the attitudinal context among teachers and school leaders regarding the use of NAPLAN data. The

question is: *how do school leaders and teachers perceive the influence of NAPLAN data on classroom practice for the improvement of learning?*

The second question seeks to discover the ways in which NAPLAN data is spoken about and used from a professional perspective among teachers and school leaders. NAPLAN data provides information on student performance from new perspectives. A central focus of this research is to discover whether structured and unstructured professional discourse in the life of a school is influenced by NAPLAN data. This led to the question: *what role does professional dialogue play in the utilisation of NAPLAN data to improve student learning?*

NAPLAN data is the result of testing students across the country in literacy and numeracy. Literacy and numeracy are among the core purposes of all schools in Australia. The next issue for analysis is the ways in which school leaders and teachers may have established relationships and alignments between NAPLAN data and their school-based assessment in literacy and numeracy. Consequently the third question asks: *how is NAPLAN data integrated with other forms of school assessment for the improvement of student learning?*

Much of the scholarly literature provides empirical evidence supporting the importance of rich feedback to students to promote learning. Analysing the influence of results from an external test, such as NAPLAN, on feedback given to students to promote learning led to the fourth question: *what influence has the use of NAPLAN data had on student feedback for the purposes of improving student learning?*

NAPLAN provides an array of data for school leaders and teachers and multiple forms of analyses. The next question seeks to explore and identify approaches, processes and practices employed with NAPLAN data by school leaders and teachers that

contribute to improved learning outcomes for students. The fifth question asks: *what elements in the use of NAPLAN data contribute to the improvement of learning as measured by growth in NAPLAN performance?*

1.7 Significance of the Research

This study is important as it will add to the body of research relating to large-cohort testing in Australia in three main ways. Firstly, the research has significance from the perspective of school-based educational practitioners who are faced with the challenge of discerning the appropriate use of centralised testing data to support their students' learning. Secondly, the research has significance from the perspective of parents whose children now have NAPLAN tests as milestones in their school life, and possibly their learning journey. Thirdly, the research has significance from a political and public interest perspective. The government has invested billions of dollars and thousands of hours in centralised testing construction, data collection tools and reporting capabilities. There is little data available to determine whether this investment makes any difference to practice or outcomes in schools.

In the next chapter, the research problem will be contextualised within the relevant and contemporary scholarly literature.

Chapter 2 Literature Review

2.1 Introduction

The research problem—how do teachers and school leaders working within the large-cohort centralised testing regime of NAPLAN in Australia utilise NAPLAN data to improve student learning outcomes as measured in NAPLAN performance?—necessitates a comprehensive critique of associated themes in education. This is particularly relevant to large-cohort testing and the centralisation of Australian education since the development of NAPLAN and the emerging Australian curriculum. As mentioned, the phenomena of centralised measurement and large-cohort standardised testing are not unique to Australia. Rapid changes in the educational landscape in Australia with the advent of the DER, BER, *My School* website and the Australian curriculum have created new opportunities for teachers to support learning in an increasingly digital learning environment. NAPLAN testing, and analysis of its data, is situated in this context.

This section establishes the conceptual framework for the research and reviews the academic literature from which the themes emerged. The first theme that emerged in the literature was the dichotomy of attitudes and perspectives to the phenomenon of centralised measurement in school education in developed countries, with associated large-cohort standardised testing regimes. The second theme to emerge from the literature was the use of data from large scale standardised testing in mentoring, monitoring and developing teachers professionally. The third theme to emerge from the literature was the role of data from large scale, standardised testing in the assessment of

student achievement. These themes are discussed throughout this section. It is from these themes that the Research sub questions (RQs), have been formulated.

2.2 Conceptual Framework

The purpose of the literature review is to generate a theoretical foundation within which the research problem can be established. Primarily concerned with identifying empirical literature, this section describes relevant studies and research that inform the RQs. Contextual influences that provide coherency to these themes are: school leadership, teacher practice and the concept of data literacy, as well as the current educational landscape in Australia in regard to large-cohort standardised testing.

The relationships of these themes and contextual influences are illustrated in Figure 2.1. The themes that emerged from the literature, giving direction to this research and being represented in the conceptual framework are:

- attitudes and perspectives to the phenomena of centralised measurement and large-cohort standardised testing
- teacher mentoring, monitoring and professional development
- assessment of student achievement and the use of data.

Evident in the scholarly literature was the interrelatedness of these themes and their connections; in Figure 2.1, they are represented diagrammatically by arrows indicating a degree of reciprocity. Within the conceptual framework in this figure, the relevant research questions that emerged from the literature and that have assisted in directing this research are listed in the centre of the themes, which provide an identified influence.

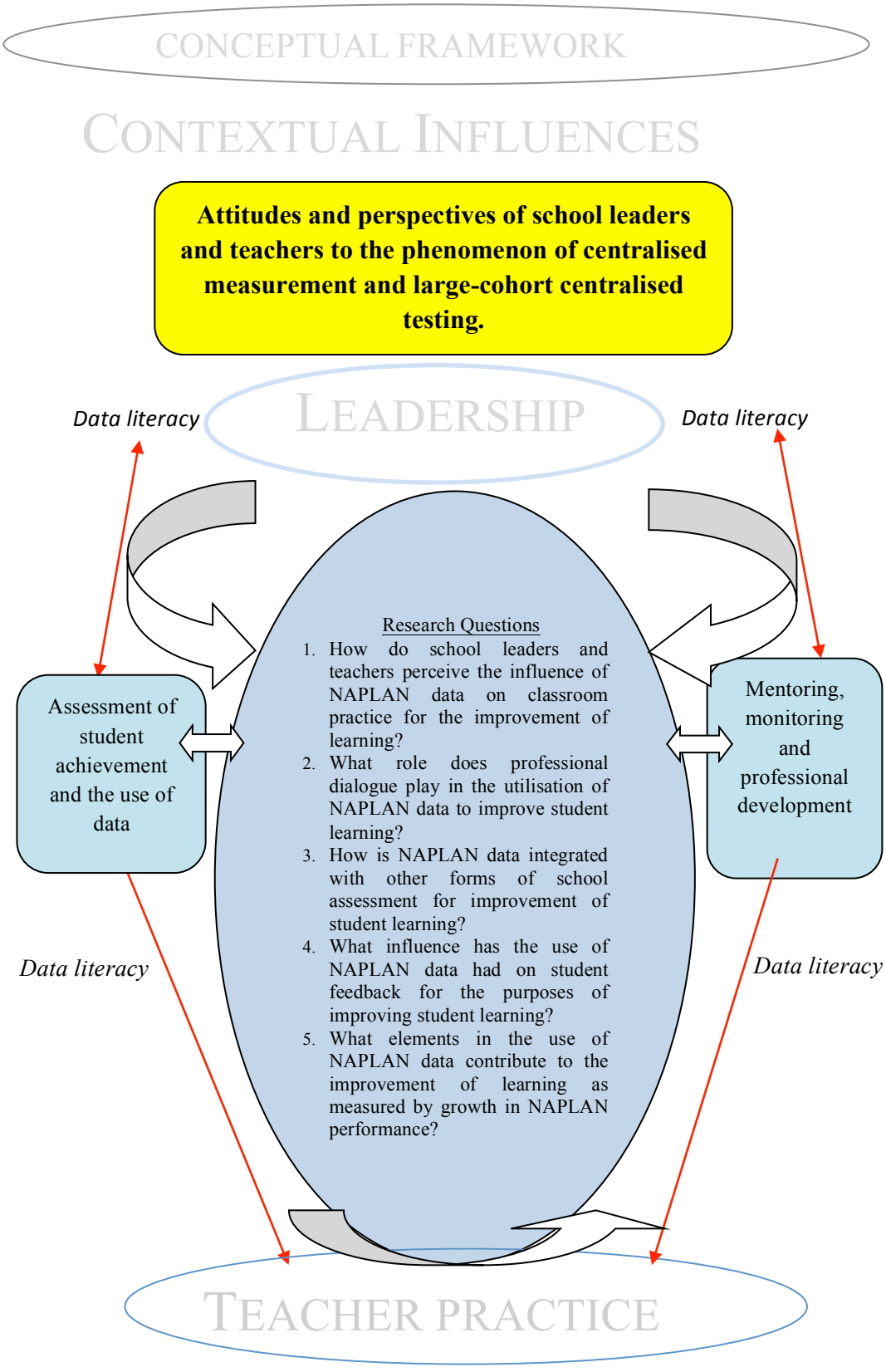


Figure 2.1. Conceptual framework.

2.3 Attitudes and Perspectives to the Phenomena of Centralised Measurement and Large-Cohort Standardised Testing

The attitudes and perspectives of school leaders and teachers to the phenomena of centralised measurement and large-cohort testing are represented in the scholarly literature. This theme from the literature is critical to this research, as the use of centralised testing data by school leaders and teachers in overseas settings has been reportedly influenced by their understanding of the purposes of centralised testing (Timperley, 2009). The attitudes and perspectives of school leaders and teachers to the phenomena of centralised measurement and large-cohort standardised testing are forged within a particular sociological dynamic, and not in an idealised utopian educational 'dreamland'. In Australia, and other developed countries with democratically-elected governments, school education is made possible by government funding. Government influence and intervention in education is manifested in a variety of ways, some of which are peripheral and utilitarian, while others address the core moral purpose of teaching. The following two sections identify influences of government policy in education and the growth of large scale testing in the developed nations of the world.

2.3.1 The influence and responsibility of government and the OECD in education.

The attitude of school leaders and teachers to externally-imposed state, national or international large-cohort testing is a theme well represented in the scholarly literature. Discussion of this theme will commence with the conception and development of the OECD PISA tests. The OECD PISA exams, in which Australia participates, have a direct and indirect influence on the Australian educational landscape through

government policy. From an international perspective, the reasons for PISA are best understood by the following statement, taken from the 2010 OECD report: 'Responding to member countries' demands for regular and reliable data on the knowledge and skills of their students and the performance of their education systems, the OECD began work on PISA in the mid-1990s' (OECD, 2010).

It is clear that democratically-elected governments in developed and developing nations are turning their attention to the economic benefits and costs of publicly-funded education. As it represents a major expenditure line in the annual budget, there is a legitimate concern from governments and their constituents that costly education systems are not delivering adequate learning outcomes for students. Hanushek (2006) completed an empirical analysis of spending on US education over the past 40 years. Hanushek concluded that, despite a four-fold funding increase in real terms, the average level of attainment in US schools (according to their National Assessment of Educational Progress (NAEP) results), represent modest yet inconsistent gains in maths and reading and a decline in science and writing.

The growing government influence on education in the developed world through various accountability measures, including large scale centralised testing, has been described as a clear manisfestation of the neo-liberal economic agenda, which grew during the 1980s under the US Regan and UK Thatcher governments (Hursh, 2000; Hill 2002). Lingard (2010) identifies NAPLAN and the My School website as possible expressions of a neo-liberal agenda. Lingard acknowledges the Australian political leaders responsible for the introduction of NAPLAN, purposefully promoted it as evidence of a newly energised social democratic approach, rather than a neo-liberal approach, to education in Australia. Quite clearly, a highly centralised, nationally

standardised, school-by-school analysed and publically reported testing regime is open to interpretations of a neo-liberalist agenda. Lingard observes the tension existing with NAPLAN testing and argues that for it to contribute authentically to an educational approach, which is socially democratic; certain emphases need be evident in government policy, sector leadership and educational practice in schools. Most notable in the context of this research is the promotion of "rich and intelligent forms of educational accountability" which include recognition of "the centrality of informed teacher judgement and quality of pedagogies to achieving better learning outcomes for all students" (p. 144). Lingard's observations of the Australian context are consistent with critical analysis of the centralised testing regimes of the US (Apple, 2010: Bartlett et al, 2002) and the UK (Hill, 2004; Alexander 2010), which identify a number of negative outcomes for education due to neo-liberal government policy and influence. The purpose of this research is to focus on the educational outcomes for students and experiences of educators in classrooms and schools situated in the context of NAPLAN testing, reporting and analysis. The central focus of this research is learning outcomes for students. This research is not concerned with the political purposes of the education policies of the Australian government in relation to NAPLAN testing. However, where data or experiences from the perspectives of participants regarding the purpose and politics of NAPLAN testing or the My School website arose during the research, these have been noted. Smeed (2012) suggests that whether educators agree philosophically with external testing, in the Australian context it is a reality, and argued "it is essential that teachers understand accountability and possess the specific skills to interpret and use test data beneficially" (p.1).

Preferencing a socially democratic approach rather than a neo-liberalist economic approach, to the educational challenges facing Australia is evident in the critical analysis of the performance by Australian students in international assessments. The OECD PISA tests in 2000, 2003, 2006 and 2009 highlighted the disparity existing in Australian schools, which is largely aligned to students' SES. The SES is based on the income of families, the education level of parents and other factors, such as location, particularly remoteness and Indigenous influence or identity (McGaw, 2006). Correcting this inequality is a foundational goal for Australian education, as stated in the *Melbourne Declaration* (MCEETYA, 2008). The manner in which teachers address this challenge with the analytical tools and methods at their disposal is central to the research problem. The attitude and understanding of educators of large-cohort testing regimes in the US and UK has reportedly shaped teacher behaviour. This will be discussed in the next section. Empirical evidence in an Australian context of teacher and school leader understanding of the nature and purpose of centralised testing data is growing, and this research will add new knowledge from an Australian context. Smeed et al. (2011), suggest that Australia is a case study in the making in regard to centralised testing, particularly if educators learn from the experiences of other countries where centralised testing has existed for some time. As NAPLAN is a key strategy of COAG as explained in the *Melbourne Declaration on Educational Goals for Young Australians* (MCEETYA, 2008), understanding of NAPLAN data by school leaders and teachers and its possible influence on classroom practice are yet to be comprehensively explored through research. This is an important element of this research as it will directly reflect on the effectiveness of these policies from an educational perspective.

2.3.2 Growth in large-cohort standardised testing.

From the 1990s onwards, in various states across the US and in education sectors throughout the developed world, there has been growth in large-cohort testing in basic literacy and numeracy. In the 2007 McKinsey report (Barber & Mourshed, 2007) of findings from a comprehensive study of effective school systems, testing was one of the two mechanisms found which effectively monitored the quality of teaching and learning, and performance drives of a system. In the US, 48 out of 50 states have established large-cohort standardised testing programmes that are being used to determine whether students have mastered state standards in literacy and numeracy (Bourque, 2005, 2009; Phelps, 2005). In the UK, national curriculum assessments are a series of standardised educational assessments, colloquially known as 'S-A-Ts' These tests are designed to assess the educational attainment of students. The tests were introduced for seven-year-old children in 1991 and for 11-year-olds in 1995. Similar tests were introduced for 14-year-olds in 1998, but these were abolished in 2009 (see http://www.direct.gov.uk).

In Australia during this same period, five states developed their own large-cohort standardised testing regime. NSW and Victoria had BSTs, the WA literacy and numeracy assessments were implemented, Queensland's school curriculum council developed the state-wide literacy and numeracy programmes, while SA conducted state literacy and numeracy tests for students at four different stages of schooling. This recent history of state-based centralised testing richly informs the context of the research problem.

The phenomenon of large-cohort testing is reported to have had an influence on teachers' behaviour in the USA (Cizek, 2001, 2006, 2009; Shepard, 2008). Cizek

acknowledges the dissonance existing with the broader community's embracing of large-cohort or high-stakes testing, and the philosophical resistance to such testing by a significant proportion of the teaching profession in the USA (Cizek, 2001, p.19). Much of this opposition and comment has been captured in critique of the neo-liberal political influence on education in the United States. Apple, (2009) and Bartlett, Frederick, Gulbrandsen, and Murillo (2002) identify trends toward greater inequity in educational opportunity, as a result of approaches by State educational leaders across America which involve analysis of cost benefits of education, using ever narrowing measures, including results in large cohort testing in basic literacy and numeracy skills. The phenomena of high-stakes large-cohort testing was accentuated in 2001, when the *No Child Left Behind* legislation was passed and the NAEP was introduced. However, Cizek emphasises ten positive consequences of large-cohort testing. He nominates:

1. an increase in the professional development for teachers in regard to pedagogy
2. better-informed inclusion of students with special needs
3. increased knowledge among teachers and educational leaders in relation to testing
4 increased ability to collect information
5. increased ability to use information
6. increased information for parents concerning educational options for their children
7. establishing transparency systems for educators and governments
8. increased intimacy with teaching disciplines by teachers
9. improved quality of tests in schools

10. increased achievement levels among students.

These positive consequences, identified by Cizek (2001), are relevant to this research as attitudes and perspectives of school leaders and teachers to the phenomenon of centralised measurement and large-cohort centralised testing will be investigated in the Australian context.

In contrast to the findings of Cizek are those of Shepard and Dougherty (1991), also based on a study with US teachers. Key findings from the Shepard and Dougherty study relevant to this research include a number of negative perceptions that have some relationship to teaching and learning within the classroom. For example, the large-cohort high-stakes testing was correlated with measurement-driven instructional practices and an acknowledgement that teachers believed there was too much teaching to test content and format. As a result, the majority of teachers in this research believed important non-tested content was clearly suffering because of the focus on standardised large-cohort testing. Associated with this finding was the erosion of learning time due to specific preparation for, and conducting of, tests. Of particular relevance to the research problem addressed in this paper is the degree to which controversial testing practices were highlighted by teachers. Eight per cent of teachers disclosed they had encouraged poorly performing students to be absent on testing days and six per cent changed answers on student scripts to correct responses. Rephrasing questions for students, giving hints for correct answers and allowing students more time to complete answers were practices reported by approximately 20 per cent of teachers (Lorrie A Shepard & Dougherty, 1991, p. 14).

Teachers reported in Shepard's 1991 study that a greater use of data from external large-cohort standardised tests by external bodies such as education districts,

regions or government, for purposes of accountability linked to performance appraisal of schools, teachers and principals, led to a greater incidence of controversial teaching practices and measurement-driven instruction. Teachers and school leaders in this study altered their professional behaviour and, in some cases, marginalised their integrity in the context of accountability characteristics of large-cohort standardised testing regimes. A more recent study undertaken in Arizona (USA), involving 3000 teachers made disturbing findings. The study reported that 50 per cent of respondents knew colleagues who had cheated, and 50 per cent of respondents indicated their own engagement in such practices (Amrein-Beardsley, Berliner, & Rideau, 2010). In April 2015, eight educators in the State of Atlanta were convicted of racketeering and sentenced to prison terms for up to seven years. According to Fausset and Blinder (2015), the convicted were involved in an elaborate and widespread conspiracy to inflate school students' standardised test scores. The motivation for this behaviour was to give the false impression that under performing schools were improving within an education precinct that was driven by ambitious targets established by its Director.

In Australia, incidents of cheating by teachers and school leaders in the 2010 NAPLAN tests have been reported (Lim, 2010). These NAPLAN tests were conducted in May 2010 and were the first NAPLAN undertaken since the launch of the *My School* website in January 2010. There were 51 reported incidents of cheating or failing to follow protocols, which gave individuals and groups of students an advantage. A Queensland principal was stood down from his position following allegations of cheating. Three Adelaide teachers, who allegedly gave out advanced notice of NAPLAN topics, doctored answer papers and inappropriately assisted students during exams, were also placed under investigation. The 51 cases of teacher misconduct are from a national

teaching workforce of approximately 270,000 people (http://www.abs.gov.au). Such attitudes and behaviour provide possible insights and lines of enquiry in regard to the research problem in the Australian context.

Pettit's (2009) research on the use of external testing data in a sample of Catholic schools in the Canberra Goulburn Diocese of NSW demonstrated inconsistency in regard to the leadership and analyses of such data by school leaders and teachers (Pettit, 2009, p. 214). While principals, assistant principals and senior middle managers (mainly in schools with over 500 students) were identified by teachers as having some role in leadership, the majority of teachers were unable to describe the nature and extent of this leadership confidently. Pettit's research reported that 84.9 per cent of principals commented favourably on the usefulness of the tests. In comparison, coordinators and teachers were less convinced, with only 73 per cent commenting favourably (Pettit, 2009, p. 210). Pettit identified influences on the attitudes of teachers and leaders associated with the intended use of test data, in which diagnostic elements of the data were valued. In contrast, the accountability possibilities and emerging reality of between-school comparisons elicited both positive and negative responses. Pettit's findings have importance for this research and the development of the research questions.

From the UK experience of large-cohort testing, as noted in Section 2, the Cambridge Primary Review (Alexander & Armstrong, 2010) provided findings relevant to the research problem. Alexander (2010) emphasised the importance of this review, as it is the first of its kind in 40 years in the UK. Alexander is highly critical of the exaggerated claims by successive British governments and ministers on the positive role large-cohort testing has played in raising standards in the country's primary schools.

Alexander aligns the simplistic language of politics against the deeper understanding of education. Alexander (2010) notes the following findings from the review:

> The Cambridge Review's evidence shows how the pursuit of a narrow concept of standards at the primary stage, in which test scores in literacy have been treated as proxies for the quality of primary education as a whole, has over the past 13 years seriously compromised children's legal entitlement to a broad and balanced curriculum. We also consider it possible that because standards in the basics and the availability of a broad and balanced curriculum have been shown empirically to be linked, the narrowing of the curriculum in pursuit of standards in the 'the basics' may have had the opposite result to that intended, *depressing* standards in 'the basics' rather than raising them. As collateral damage goes, that's pretty spectacular. (Alexander, 2010, p. 6)

The comments by Alexander and the findings of the Cambridge Review are relevant to this research, as the experiences of the British large-cohort standardised testing model received considerable academic interest from Australian educators.

Mansell (2009) also provides a critique of the British large-cohort testing regime. Both Alexander and Mansell support the need for large-cohort standardised tests, but provide empirically based arguments for the need to be clear regarding the educational purpose of these tests. Mansell's work examines the perversion of the tests' integrity by the overt demands placed upon them by the politicians and policy makers, who are invariably serving other purposes disassociated with the dynamics of the classroom. Mansell (2009) presents the following argument:

> In the 2009 elect committee inquiry into exams, the government was the only one of 52 respondents to defend the current system. Ranged against it in recent years have been the select committee itself, the Children's Society, the Royal Society and a host of other scientific organisations, the Cambridge University-based primary Review, at least one major exam board, teachers' unions and many others. Even Ofsted and the Qualifications and Curriculum Authority have highlighted problems. The central argument is that holding teachers to account for their pupils' performance through a series of narrowly-focused, often predictable, tests has damaged children's deeper understanding (Mansell, 2009).

Anderson & Hatcher (2005) reported similar concerns voiced by representatives from the UK National Teacher Union and the University of Central England. Observations were that the large-scale testing regime in England has swamped the primary school curriculum and transformed it from a creative child-centred learning environment to a rigidly prescribed focus on the basics of literacy and numeracy. In the Australia context, the Whitlam Institute has enlisted high profile political leaders and academics to raise concerns (Polesel, Dulfer, & Turnbull, 2012; Polesel, Rice & Dulfer, 2013) regarding large-scale testing and strongly recommends further research into the impact of NAPLAN on teaching practice, childrens' learning experiences and well-being, and the curriculum. This position is consistent with that of researchers from the Queensland University of Technology (Klenowski & Wyatt-Smith, 2012).

The critiques provided by Cizek, Sheppard, Alexander, Mansell, Anderson and Hatcher in regard to large-cohort standardised testing are relevant to the Australian context in these initial years of national testing, particularly in exploring how centralised

testing data is used by school leaders and teachers: it is clear that the attitudes and perspectives of these key stakeholders influence their actions. Pettit (2009) recommends from his research that 'qualitative research should be undertaken to explore the factors influencing the perceptions of principals and teachers about the value of external testing of literacy and numeracy' (p. 244). This theme is an important element in forming the first RQ.

In considering the growth of large-cohort standardised testing, the use and public reporting of results has been a feature consistently represented in the literature as influencing the attitudes and perspectives of school leaders and teachers. For testing data to make a positive impact on teaching practice, Timperley (2009) reports that teachers must be convinced the data will inform teaching and learning. Summative performance, categorisation or credentialing purposes are reported as having less influence in motivating teachers and school leaders to use assessment data. The experience of New York City schools has particular familiarity with the Australian education agenda, following the election in 2007 of the Federal Labor government. In 2008, the then Deputy Prime Minister Julia Gillard, referred to Australia learning from the New York schools experience when addressing the Australian Council for Educational Research conference in Brisbane (Gillard, 2008). Ms Gillard pointed to the New York model as one from which Australia could learn and said she was inspired after meeting New York City's schools Chancellor Joel Klein:

> We can learn from Klein's methodology of comparing like schools with like schools and then measuring the differences in school results in order to spread best practice. Something Joel Klein is personally and passionately committed to is the identification of school need, the comparison of like schools and the

> identification of best practice. The answer is not league tables and it's not A to F reporting, but it's making sure we have this rich performance information available, school by school' (Ferrari & Bita, 2008).

In commenting on the progress of New York City schools between 2002 and 2008, the then New York City schools Chancellor Joel Klein (2008) identified school and student focus on results in large-cohort standardised testing as the most influential transformative change factor. Alignment of successful school results and principal contracts were identified as a major strategy, influencing and motivating improvements in student learning outcomes. Klein explains that although the New York experience made teachers accountable using state test results, principals and staff members were removed from schools in extreme cases of underperformance. Between 2002 and 2008, Klein closed 70 schools and reopened new and smaller schools in the same buildings. Graduation rates in the new schools rose in some cases from 30 to 80 per cent. Schools reported student and school performance according to social advantage factors. Klein identified the strength of such public accountability for teachers, claiming that such transparency focused the mind of teachers and was a catalyst for action.

Klein advocated setting broad targets for schools and systems, and investing autonomy and trust in the people in the schools to ensure targets were met. Klein identified the need for schools and educators to become confident in the use of complex data management systems that are intimately related to the learning process with each child.

The 2010 student performance of the New York City schools in federal US NAEP tests came under intense scrutiny, due to poor performance in comparison with

student performance in state tests. This resulted in questions regarding the rigour of that state's testing (Otterman, 2010). Klein resigned as Chancellor and questions regarding the degree of success of the New York Schools initiatives were relevant to this research, as the Australian Federal Labor government's chosen model had credibility issues, as shown in comments by some school leaders and teachers who questioned the centralised testing regime in Australia (as discussed in Section 1.4).

In reviewing the literature associated with large-cohort standardised testing, differing views are represented in regard to the benefits and shortcomings of such tests in Australia and overseas. Wu (2010), Watt (2010) and Gavrielatos (2010) are united in their criticisms regarding the uses to which test data is being put in Australia. This stance is also expressed in varying degrees by the unions representing government and independent school teachers. Reservations regarding the likelihood of NAPLAN raising literacy standards in particular are expressed in the literature that reflects on the experiences of large-scale assessment in the UK and US (Lobascher, 2011; Mills, 2008). In this research, the degree to which teachers' and school leaders' existing attitudes to NAPLAN influence their inclination and capacity to use the associated data to support student learning will be explored. RQ 1 emanates from this theme:

> how do school leaders and teachers perceive the influence of NAPLAN data on classroom practice for the improvement of learning?

2.4 Mentoring, Monitoring and Professional Development

The major research question concentrates on the ways in which school leaders and teachers utilise NAPLAN data to improve student learning outcomes. In reviewing

the literature, the importance of educating and supporting school leaders and teachers in the use of data to support student learning was evident. The first theme to be addressed in this section, which clearly emerged from the literature, was the importance and nature of effective leadership in relation to data. Successful models of leadership identified in the literature involved a clear focus at the classroom level, using data with complementary links to aligned school leadership and systems or sector leadership. The second theme to be addressed in this section (that became apparent in the literature) was the way in which data can inform professional discourse, reflection and decision making not only of leaders but also of teachers. The relevance of these themes inform RQ 2.

2.4.1 Models of leadership.

School leadership is consistently identified as a major contributing factor to the success of learners in the academic literature. In regard to the research problem, leadership is a prominent contextual coherent and function, which ties the literature review themes together. Hattie (2008) and Leithwood, Day, Sammons, Harris, and Hopkins (2006) found that among all areas of leadership, the most apparent influence school leaders had in their role was on teachers. In turn, teachers most influence learning in the classroom. In reviewing the literature, a host of school improvement models are proposed, in which leadership plays a central role. Fullan (2009) and Fullan, Hill, and Crévola (2006) promote data-driven decision making in a paradigm described as 'breakthrough'. Here, elements of learning and the role of data—its nature and appropriateness for informing assessment for learning—are discussed as essential elements of leadership in education. Other important elements of the breakthrough paradigm involve a tri-level approach to leadership, in which government

representatives, educational district or sector leaders and school leaders coordinate their leadership with a set of common goals for improvement. Levin, Glaze, and Fullan (2008) identify indicators of success in Ontario Canada, where much of Fullan's work has been accomplished between 2005 and 2008. These include a seven per cent increase in graduation rates from high schools, a 75 per cent reduction in government classified underperforming schools, and a 22 per cent increase in primary-aged students reaching basic literacy levels, as well as increases in retention rates of high school students and new teachers in the profession. From an economic and political perspective, these improvements coincided with a 30 per cent increase in government funding for public schools in Ontario between 2003 and 2008. The democratically elected government during this period was re-elected in 2008, with education as a leading platform.

These experiences are relevant to the research problem within this theme, as Michael Fullan (2006) identifies teachers as interactive expert learners and as such, educational leaders (p. 95). This concept is applicable to the research problem in that the efficacy of the interplay—as suggested in the conceptual framework between the mentor and mentored—is a focus of the research to be undertaken. Research conducted by Walker and Ko (2011), indicated an absence of strong instructional leadership among a sample of secondary school principals in the highly accountable context of Hong Kong, was detrimental to support for students in their learning. Evident in that research was strong policy alignment between government, sector and school leaders but not with practice among teachers. Further research by Bain, Walker and Chan (2011) in the same educational context over a 10-year period, clearly demonstrated the benefit to student learning in a case study where a school built capacity among leaders and teachers for sustainable change, using a holistic collaborative model based on self-organising theory.

Gurr, Drysdale, Ylimaki and Moos (2011), in their research on instructional leadership, cite in support of their own findings Robinson's (2007) synthesis of research that indicates empirically, a link between school leadership and improved student outcomes. The most important dimensions of leadership identified included: establishment of an orderly and supportive environment; strategic resourcing; clearly defined goals and expectations; planned, coordinated, and evaluated teaching and curriculum; and planned teacher learning and development. In a major review of school leadership development programmes in 11 different countries, Hallinger (2003) identified seven global issues critical for the preparation of school leaders. Relevant to this research was the identified need to prepare school leaders in determining the appropriate role and tools for using performance standards. In regard to NAPLAN and the effective use of generated data, models of leadership need to be explored.

Crowther, Ferguson & Hann (2009) have done extensive work with Australian schools in the area of leadership. The Innovative Designs for Enhancing Achievement in Schools (IDEAS) framework focuses on parallel leadership that initiates, discovers, envisions, actions and sustains. Crowther also promotes the concept of capacity building in schools through six key dynamics, which include the exploration by teachers of lofty ambitions, embedding successes, seeking school-wide coherence, deepening understandings of pedagogy, a commitment to professional revitalisation and sharing insights (Crowther, Andrews, Morgan, & O'Neill, 2012; Crowther, Ferguson & Hann, 2009, p. 152). Other collaborative pedagogical approaches evident in the literature, which assist school leaders and teachers in their use of data include Language Features of Text Types (LFTT) (Canavan, 2004); Understanding by Design (UBD) (Wiggins & McTighe, 2005); Inquiry-based learning (Savery, 2006; Dana & Yendol-Hoppey,

2014); the synthetic phonics approach (Johnston & Watson, 2005); and problem based learning (Hung, Tan, & Koh, 2006; Nicaise, Gibney, & Crane, 2000). The relevance and importance of these approaches will be interrogated in the light of this research.

Pettit identified in his research on school leadership (within the context of external testing in the Canberra Goulbourn Diocese in NSW) the need for greater collaboration at the school level in regard to data analysis and leadership. Pettit's research is highly relevant to this research problem, as it is situated within the same external testing regime, albeit at a different point historically. Crowther's IDEAS model requires school leaders to become confident in promoting the use of data within a parallel leadership model, which is an imperative of the current NPA reforms for low SES school communities (SSNP, 2009), which were discussed in the last section. Pettit's findings concerning leadership and Crowther's theories provided direction in formulating the second RQ, which concentrates on the role of professional dialogue and learning among leaders and teachers in relation to the use of NAPLAN data.

Hargreaves and Shirley (2009) have developed a model of educational change, named 'The Fourth Way', which is also relevant to this research. In this model, student performance data plays an important role, informing leadership at government, sector, regional and school levels. The proposed model is derived from extensive research analysing past practice in OECD countries, focusing on school education since the end of the Second World War. Capturing successful elements of different phases in education during this period, Hargreaves and Shirley identify inhibiting characteristics in previous ways of learning and organisation. Hargreaves and Shirley (2009) promote 'The Fourth Way' as a guide for school educators. They assert:

> The Fourth Way is a democratic and professional path to improvement that builds from the bottom, steers from the top and provides support and pressure from the sides. Through high quality teachers committed to and capable of creating deep and broad teaching and learning, it builds powerful, responsible, and lively professional communities in an increasingly self-regulating but not self-absorbed or self-seeking profession. Here teachers define and pursue high standards and shared targets, and improve by learning continuously through networks, from evidence, and from each other (Hargreaves and Shirley, 2009 p.107).

This model is based upon interpretive analysis of historical evidence and is relevant to the major research problem. The integrated use of external data and school-based assessment data to inform decision making by students, teachers and leaders is a foundational philosophy of the model. The model is relevant to this research, as elements identified by Hargreaves and Shirley exist in the context of the inner western region, as described in Section 1.2. Hargreaves and Shirley's assertions align with the reflections of Lingard (2010) in the Australian context as previously outlined. The influence and relationship of these elements will be explored through RQs 2 and 3, which concentrate on the role of professional discourse among leaders and teachers in the effective use and integration of NAPLAN data with other forms of assessment data in ways that support student-learning outcomes.

Evident in the literature is the necessity for leadership at all levels to foster communication and professional conversation in regard to the meaning, purpose and

potential use of data. The next section deals with the role data can play in shaping professional discourse and its place in this research.

2.4.2 Data informed professional discourse.

In the context of the research problem, mentoring and professional development are interrelated influences that receive attention in the scholarly literature. With the understanding that teachers have the greatest influence on a child's learning (Hattie 2003), the importance of professional learning and development in regard to student performance data is clearly identified as essential in research undertaken by Timperley (2009), Bernhardt (2009), Fullan (2009), Hargreaves and Shirley (2009) and Hattie (2005). Teachers working collaboratively within structured professional learning communities (DuFour, 2004, 2007) have observed improved student achievement when assessment data was used to direct their reflection and refinement of teaching practice. A strong emphasis on continuous professional development in information rich environments has been found to benefit student achievement in schools in socially disadvantaged areas in the UK and USA (Muijs, Harris, Chapman, Stoll, & Russ, 2004).

Findings from research in NSW Catholic secondary schools indicate that data can only act as a positive change factor if the school principal perceives data as an authentic lever to achieve desired outcomes (DeCourcy, 2005). Using ten years of data from the NSW Catholic Education Commission, DeCourcy has analysed NSW HSC student performance data in a systematic and accessible manner. Each year, the process has become more refined and expert professional development opportunities have been provided for hundreds of school leaders and middle managers. Sophisticated software has also been developed to enable data analysis and interrogation.

The analysis provides school principals with clear data relating to teacher effectiveness and as DeCourcy suggests, provides a clear, objective basis for professional discussion and sharing. In regard to the research issue, DeCourcy's analysis is relevant as it has established openness to analysis of student performance data among school principals in the region.

DeCourcy's research identified four key questions for principals to ask teachers in this analysis. These questions are simply:

1. What have you been doing and why?
2. How it is going?
3. How do you know?
4. What do you plan to do next?

DeCourcy (2005) explains the methodology:

> The third question demands that the teacher engage with the analysis in order to substantiate their answer to the second question. The fourth question becomes the answer; the following year to the first question. There is not room in this sort of analysis for blame-the-students responses, unless the teacher can hypothesis a distinctive characteristic of the particular group of students. If she/he can, then dealing with it becomes the answer to the fourth questions. (DeCourcy, 2005, p.4)

Relevant to this research is the potential use of NAPLAN data and associated diagnostic software for teacher monitoring and self-monitoring, similar to DeCourcy's approach with the NSW Higher School Certificate data. Large-cohort testing in the past 15 years has been well received from an educational perspective by teachers in NSW

(Wasson, 2009). Despite this, the reporting of NAPLAN results on the *My School* website has provoked considerable controversy and unrest within the profession (Gavrielatos, 2010; Watt, 2010). The constructive manner in which DeCourcy presents the possibilities of leverage for principals in regard to teacher performance does not address how such accountability measures can engender negative sentiments and erode teacher morale, as reported in the UK and USA (Alexander, 2010; Cizek, 2006; Shepard & Dougherty, 1991). Interestingly in the Australian context, the 2010 Grattan Institute Report (Jensen, 2010b) identifies—through an OECD-designed survey of teachers across Australia in all education sectors, the finding that 91 per cent of respondents considered that their school principal did not take steps to address persistently underperforming teachers. Jensen also discusses the importance of aligned school improvement and evaluation processes with teacher evaluation processes. Jensen's evidence demonstrates more successful student outcomes where this alignment exists. RQ 2 will explore this issue of alignment in professional discourse, with specific reference to using data from NAPLAN. Utilisation of diagnostic software, specifically designed for NAPLAN analysis by teachers and school leaders with requisite skills and data literacy to enable informed dialogue will also be explored as part of this research especially within RQ 2.

This second RQ will test the parallels identified in the literature in a non-prescriptive or pre-emptive manner in the Australian and regional context. In addition, by phrasing an open and inclusive question of this nature, influences such as teacher performance in relation to data will not be an implied expectation. This research is concerned with the constructive use of NAPLAN data and participants need to be

assured through the nature of the questions of this intent. In response to these issues identified in the literature, RQ 2 will be:

> what role does professional dialogue play in the use of NAPLAN data to improve student learning?

2.5 Assessment of Student Achievement and the Use of Data

In considering the purpose of the research, an investigation of the professional literature related to three key and relevant sub-themes, which are detailed below:

- systemising and managing the wealth of readily accessible school education data
- data informing rich feedback to students, to enhance learning
- data to inform teachers' effective pedagogy.

Each of these sub-themes will be explored, and inform RQs 3, 4 and 5.

2.5.1 Systematising and managing the wealth of readily accessible school education data.

With the advent of computer-aided technology and the phenomenon of large-cohort testing throughout countries in the developed world, teachers and educational leaders are confronted with an array of data in regard to all facets of school life (Earl & Fullan, 2003; Earle 2005; Love 2009).

The challenges in interpreting the data and ensuring its relevance in informing school improvement on a range of fronts are sophisticated, often competing and potentially confusing, to the point of overwhelming stakeholders. The challenges faced by the teachers and school leaders involved in this research are relevant to the research problem. Bernhardt (2009) suggests a broad view of school data, and emphasises the

interrelatedness of the data's multiple measures. Bernhardt's multiple measures of data include four main points of enquiry: demographics, perceptions, student learning and school processes.

Within Bernhardt's conceptual framework of data, the measure of 'student learning' is most relevant to this research, with informed reference to demographics, school processes and perception data. While this theoretical framework attempts to capture the breadth and interrelatedness of school data, a school's demonstrable capacity for competent data use in fields ranging from data literacy and associated collaborative inquiry, to highly developed leadership and facilitation skills by school principals and leadership teams is critical (Earl & Fullan, 2003; Earl & Katz, 2002; Love, 2009).

Love identifies the success of data teams in schools, which have worked to identify and address student learning problems (Love, 2009, p. 13), while Pettit (2009) advocates similar structures from his research. In the vastness of student performance data, Love (2009) has conceived a pyramid of data sources that highlight the frequency and location of data measurement in a manner that emphasises the primacy of classroom learning experiences. Love (2009) emphasises the need for schools to build a high performing data culture. Love's insistence on teachers 'drilling down' into data is associated with this thesis's research problem.

In Australia, the Victorian state government conducted research into how schools have improved student performance. This research identified the practice of using student data as a key behaviour (Hartnell-Young, 2009). In this research, schools reported that data supported improved teaching and learning by facilitating accurate measurement of student achievement, and diagnosing strengths and weaknesses in key subject areas. Other associated activities included performance-related assessments of

teachers, allocation of resources, monitoring strategy effectiveness and setting priorities and targets. Masters (2012), Cuttance (2005), Hopkins (2005), and Turkington (2004) have identified similar advantages of using data for school improvement purposes in the Australian and overseas contexts.

The research problem is embedded in the context of an increasingly rich information, communications and technology (ICT) environment. The increased accessibility of computer technology for teachers is a feature of data management that has the potential for agile and dynamic analysis.

In 1998, the British government established the British Educational Communications and Technology Agency (Becta, 2009). This government-sponsored body ceased its work after the 2010 British elections. The 2009 Becta report, *Harnessing Technology Review—Role of Technology in Education and Skills*, analyses the role of technology in personalised learning experiences. Relevant findings from the research conducted across schools in the UK include the following:

1. 50 per cent of colleges believed technology was strengthening personalised learning
2. 53 per cent of teachers reported that technology led to more effective assessment of learning
3. 60 per cent of teachers believed technology saved time in reporting on a student's progress
4. 74 per cent of teachers felt effective when using ICT for assessment
5. 56 per cent of teachers felt effective when using ICT for personalised learning

6. 70 per cent of colleges expressed confidence regarding the impact technology was having on learning
7. 90 per cent of colleges used technology for assessments
8. 75 per cent of colleges were confident that technology added value to a learner's assessment (retrieved from www.becta.org.uk).

The report is rare in its evaluation of teacher attitudes in a high-stakes, large-cohort testing regime such as the UK. The Becta report underscores the readiness and confidence of teachers to embrace technology if it can efficiently enable their core purpose of improving student outcomes.

Within this theme of systematising and managing data, the role of technology needs to be considered. In an analysis of the NSW HSC and NAPLAN, DeCourcy (2005) and Wasson (2009) respectively identify and utilise computer aided technology. DeCourcy (2005) states 'What is effective is valid analysis of data, presenting the results of the analysis in an engaging way, targeting professional development to support use of the analysis and then engaging teachers in professional development to support changes in pedagogy' (DeCourcy, 2005, p. 7).

Wasson (2009) is one of the chief architects of the SMART data analysis package that was initially a tool for NSW teachers to analyse the state-based BST, English Language and Literacy assessment (ELLA) and Secondary Numeracy Assessment Program (SNAP) assessments. In 2011, working with ACARA, Wasson developed SMART 2 for NAPLAN to be used across Australia. Wasson (2009) asserted that large-cohort testing such as NAPLAN could have a positive impact on student outcomes as measured by NAPLAN , when 'assisted by sophisticated diagnostic tools for the analysis of individual, group, school and system performance' (Wasson, 2009, p.

2). Wasson cited the sustained improvement of results in the NSW BSTs over a 12-year period. The percentage of students in Years 3 and 5 who scored in the bottom bands reduced from 17 to 11 per cent. Conversely, a five per cent increase in representation in the top bands was achieved over the same period (Wasson, 2009, p. 3).

The use of technology is a vital element to be explored in regard to the research problem. As discussed in Sections 1.5 and 1.2, school leaders and teachers in the inner western region have access to the necessary computer hardware and software to enable interaction with centralised testing data from NAPLAN. As Bernhardt and Love assert, effective integration of all relevant data to help build a rich picture of each learner is the ultimate aim for schools. How schools can include NAPLAN data to effectively inform a student's learning and assessment profile is to be explored in RQ 3.

Managing the various forms of assessment data in a manner that supports student learning is an area of study in the Australian and Hong Kong contexts, relevant to this research. Mok (2013) suggests a self-directed learning oriented assessment model, which includes assessment *of* learning, assessment *for* learning and assessment *as* learning. Large-scale assessment data is categorised as assessment *of* learning, which informs the main feature of the model, assessment *for* learning. The benefits of integrating large-scale assessment data with formative classroom-based assessment is promoted in the American context by Reeves (2001, 2007), who argues that all assessment needs to be clearly directed to the fundamental purpose of improving student achievement, teaching practice and leadership decision making.

Fullan et al. (2006) and and Nicol & Macfarlane-Dick (2006) cite studies that have supported the importance of formative assessment. Fullan et al contend that:

> the case for making assessment for learning or formative assessment the centrepiece in the design of instructional systems was made by Sadler (1989) many years ago. Paul Black and Dylan Wiliams (1998) have demonstrated that powerful evidence has existed for many years regarding the effectiveness of improved formative assessment as a means of raising standards. (Fullan et al., 2006, p. 48)

The relevance of these findings to experiences by participants in this research in the context of NAPLAN testing and data will be investigated. The capacity for teachers to use large-scale assessment data to complement formative classroom-based assessments is challenged by some educators, due to the lack of alignment between many large-scale tests that exist throughout the USA and the established school curriculum in each state (Sloane & Kelly, 2003).

Focus on the individual student, their learning journey and social context can be overlooked in the breadth and scope of information reported in the assessment data from large-scale testing (Caldas & Bankston, 1997; Sirin, 2005; White, 1982; Levin et al., 2008; Masters, 2012). Integrating large-scale assessment data with school-based assessment data in ways that strengthen the personalisation of learning has been explored in Ontario, Canada with reported improvement in student achievement in an education district serving 115,000 students (Sharratt & Fullan, 2012).

These studies regarding the use of data by teachers will be addressed in this research by exploring if and how teachers integrate NAPLAN data with other assessment data to inform their teaching .The manner in which teachers integrate

NAPLAN data with other assessment data to inform learning will be an important element of this research.

This context, when aligned with the relevant professional literature discussed, informs RQ 3: how is NAPLAN data integrated with other forms of school assessment for improvement of student learning?

2.5.2 Feedback for student learning.

Within the data-rich, educational context of the twenty-first century, the relationship between student performance data and constructive feedback, for each student's learning, is an issue receiving comment in the professional literature internationally and at state and national levels, (Axworthy, 2005; Fullan et al., 2006, Fullan 2009; Hargreaves & Shirley, 2009; Hattie, 2005; Kirkup, Sizmur, Sturman, & Lewis, 2005; Love, 2009; Marzano, 2004, 2007). It is clear that in the context of NAPLAN testing, possible influence of the data on student feedback needs exploration, especially considereing the body of research presented below which outlines the importance of quality feedback for effective learning.

Fullan, (2009) identifies the importance of precision when using data to provide clear, relevant and constructive feedback to the individual student. Sadler (1989) argues for the importance in the learning process of an objective, external formulation of successful performance by the student, which can stand apart from the teacher, while also being enriched by the teacher's judgement and variously contextualised assessments (as cited in Fullan et al., 2006). This finding would suggest support for the use of NAPLAN data in constructive feedback to students. Critical though is the nature, and quality of the feedback to students. Kluger and DeNisi (as cited in Marzano, 2004),

conducted 607 experimental control comparisons with 23,000 students involving teacher feedback to students on assessments. In 33 per cent of the studies examined, teacher feedback had a negative impact on student achievement. In cases when discouraging feedback was provided to a student, their achievement decreased by 5.5 percentile points (Marzano, 2004, p. 3).

The intelligible manner in which teachers choose and use relevant data from NAPLAN in feedback to promote learning with students and how this is communicated to their parents will be investigated in this research. Parent engagement with their child's schooling, has been demonstrated through empirical evidence by Childs, Fantuzzo, McWayne, & Perry, (2004), to promote learning outcomes for students. Hargreaves and Shirley (2009) focus on this issue from a variety of perspectives throughout their book *The Fourth Way*. In regard to the role of data and student feedback, Hargreaves and Shirley (2009) discuss the subtlety and dexterity required by educational leaders and teachers in using performance data with students, stating that student performance data must be used 'intelligently, invitationally and inclusively' (p. 38). Teacher intuition in regard to feedback and judgement of student performance, can be enhanced when referenced with the objectivity inherent in external testing data (Hargreaves & Shirley, 2009; Stenhouse, 1984). The possible potential for NAPLAN data to provide objective information for students and teachers about learning is to be explored through data gathered by RQ 4.

Fullan et al. (2006) identified from their research four factors closely associated with data and feedback for student learning, which provide a constructive perspective to the research problem. These factors are listed below:

1. A set of powerful and aligned assessment tools tied to the learning objectives of each lesson, which give the teacher access to accurate and comprehensive information on the progress of each student on a daily basis and which can be administered without unduly interrupting normal classroom routines.
2. A method of allowing the formative assessment data to be captured in a way that is not time consuming, to analyse the data automatically and to convert it into information powerful enough to drive immediate instructional decisions.
3. A means of using the assessment information on each student to design and implement personalised instruction; assessment for learning being a strategy for improving instruction in precise ways.
4. A built-in means of monitoring and managing learning, of testing what works, and of systematically improving the effectiveness of classroom instruction so that it more precisely responds to the learning needs of each student in the class (Fullan et al., 2006, p. 48).

In the Australian context, Axworthy (2005) emphasises the use of data from large-cohort standardised testing as an important reference source in the development of appropriate questions by teachers and school leaders, regarding school pedagogy and student achievement. Axworthy indicates that external testing data will only make sense when it is analysed in conjunction with school-based assessments and teacher professional judgement, with a triangulation of assessment evidence. Axworthy (2005) identifies learning from teachers' experience in WA with the WALNA assessment data, which is relevant to the research problem. Axworthy (2005) states that 'creating a dichotomy between test results and teacher judgements that privileges one over the other

is counterproductive. Assisting teachers to see how test results can refine and sharpen their judgements is very powerful' (p. 4).

Axworthy emphasises the importance of the purpose teachers bring to the analysis of external data. His research indicates success when this purpose is closely associated with teachers gaining insight from external test data regarding specific learning outcomes contained in the curriculum. Similar approaches have been suggested in Australia for literacy and thinking skills associated with NAPLAN in the numeracy domain (Anderson, 2009). In the USA, the potential for educators to use data from the large-scale standardised tests that exist in almost all states has been explored and successfully modelled (Ainsworth & Viegut, 2006).

In England, Kirkup et al. (2005) conducted a large-scale study designed to investigate how data was used to promote learning in schools. The findings of this study are closely linked to the research problem and emanate from a more established national testing regime. The study sought to identify good practice in the effective use of data to improve learning. An important observation from the study was that good practice emerged from the use to which the data was put, rather than specific systems or tools. A recurrent theme was that data only became effective if it stimulates in the classroom context.

The motivational element of feedback using assessment data has been explored in various contexts across the world (Csikszentmihalyi,1997; Davies, 2007). The importance of accuracy in assessment data and its motivational influence on the learner has been researched in the USA. Stiggins, (2007), and Stiggins & Chappuis, (2005) present the case for using large-scale assessment data and school-based assessment data as motivational tools to better engage learners and promote achievement. Other US

research identifies the unintended consequences of large-scale assessment, referred to as 'high-stakes testing'. Negative effects on the quality of instruction, were evident in the research of Jones (2007), and included demotivation of students and teachers, and increased failure rates of students at risk.

In New Zealand, research conducted by Rubie-Davies, Hattie & Hamilton, (2006) in the context of multicultural student groups, demonstrated the influence of teacher expectations on academic outcomes. Teacher expectations and the nature of feedback to students has been examined extensively by Hattie (2005), who gives significant insight to this strand of the data management theme, in relation to the research problem. Hattie's empirical work on determining the strong influences on student learning readily applies to using data for feedback questions directed to actual learning. Hattie insists that the discussion about using data needs to be set clearly on student learning. Of all the influences published in his 2003 research, instructional teacher feedback and teacher feedback specific to assessment are identified as the strongest. Supporting this assertion, Rowe (2006) linked Hattie's findings to further research he completed on styles of pedagogy, which leads to the next theme in the research problem, informing pedagogy. The manner in which NAPLAN data might influence teacher expectations of student performance and achievement is to be explored in different ways through RQ 4, which is:

> what influence has the use of NAPLAN data had on student feedback for the purposes of improving student learning?

2.5.3 Informing pedagogy.

As discussed in the previous section, the literature has identified the importance of data in providing precise feedback within the framework of formative assessment. The third strand of the data management theme concerns the manner in which data from large-scale testing can successfully inform decisions regarding the pedagogy employed by classroom teachers, and encouraged or developed by educational leaders. This emphasis is key to the research problem.

The influence of data from large-scale testing on the pedagogical practice of teachers has been reported in the US context. Aligning pedagogy with knowledge or skills to be included in a large-scale test is considered effective when clearly linked with the curriculum content. Popham (2001) found that pedagogy concentrated on specific tests items divorced from the curriculum context provided little opportunity for learning. The challenge facing schools in the US has been described as finding the balance between preparing adequately for large-scale testing, while not detracting from real learning by integrating appropriate test preparation measures into regular classroom instruction (Gulek, 2003; McTighe and Brown, 2005). Large-scale assessment data in the US experience has been a rich source of information for both students and teachers to inform learning, when aligned school based assessment is followed with high quality corrective instruction and second chances for students to demonstrate success (Guskey, 2007).

The distinction between pedagogy and student feedback provides two lenses for the research, which are consistent with the emphases identified in the literature. Providing informed and constructive feedback to students is essential in successful teaching, as identified by Hattie (2003) and Rowe (2006). Reflection upon discussing

and designing pedagogy or instructional approaches is another legitimate lens supported by Hattie and Rowe. They isolate and report empirically that instructional quality and direct instruction are the third and fourth highest ranked influences on student learning. In taking this approach, the definition of pedagogy in contemporary education is adopted with a nuance on the teacher's activity in the instructional phases of the learning process.

Timperley (2005, 2009) addresses the issue of using data for improving teacher practice, and her work is valuable in relation to the major research question. Based on international research and extensive work in New Zealand schools, Timperley (2009) has designed a professional development programme that is 'focused on the interpretation and use of assessment information, building relevant pedagogical content knowledge in literacy and developing leadership for the change management process' (p. 2).

Timperley indicates that this programme has delivered student achievement gains in reading and writing at twice the expected rate, with even greater gains among low-achieving students. Timperley (2009) observes that educators have 'known more about the potential for using assessment data to improve teaching practice and student learning than how to do it' (p. 1).

Timperley (2009) asserts that in the twenty-first century, a number of identifiable conditions are essential to enable assessment data to affect teaching practice in a positive and authentic manner:

1. Teachers need sufficient knowledge of the meaning of the assessment data to make appropriate adjustments to practice.
2. Data needs to provide teachers with curriculum-relevant information.

3. Information needs to be seen by teachers as something that informs teaching and learning, rather than as a reflection of individual students' capabilitites and should be used for sorting, labelling and credentialing.
4. School leaders need to know how to lead the kinds of change in thinking and practice that are required for teachers to use the data.
5. Teachers need improved pedagogical content knowledge to make relevant adjustments to classroom practice in response to the assessment information.
6. All within the school need to engage in systematic evidence-informed cycles of enquiry that build the relevant knowledge and skills identified above.
7. School leaders need to have conversations with teachers to unpack this meaning (Timperley, 2009, p. 1).

Timperley's work has involved close engagement with the New Zealand Ministry of Education-designed 'Assessment Tools for Teaching and Learning', which are mapped to the New Zealand curriculum and provide normative data about expected rates of student progress in each curriculum area. A key finding by Timperley is that teachers need explicit professional development in relation to the use of this particular tool. This experience is applicable to the research problem, as NAPLAN in the NSW setting is linked to the SMART data package developed by EMSAD. Timperley (2009) suggests that previous assumptions about teachers' capacity to constructively use assessment data were not optimistic. Timperley notes the immense challenge confronting teachers with traditional ideas in relation to assessment data, and notes the need for teachers to acquire not only the mechanical skills in using data, but also—and more importantly—a deeper knowledge of pedagogy. Teachers are then empowered to investigate data and its relationships to the success or otherwise of learning that happens

in their classrooms. In the discussion, Timperely emphasises the importance of existing conditions for such professional deepening of knowledge and skill acquisition to occur. Hargreaves and Shirley (2009, p. 34) nominate the need for schools to use data in a holistic sense and discuss the analogy of data associated with sports teams and medicine. Central to their argument is the need for data to be used as a component of teacher decision making and reflection. How this is being reflected in the professional experiences of teachers in this study will be the focus of RQ5.

Hargreaves and Shirley (2009) discuss the importance of evidence and experience in relation to problem solving. Hargraves and Shirley promote an interactive and inclusive approach to data that informs rather than dictates decision-making and teacher planning. The reflections of these authors are pertinent to the research problem. They warn against the successful use of data by skilled teachers becoming a template or prescriptive model for all teachers to follow, regardless of subject discipline or the preferred learning style associated with a particular topic or learning experience. A summary statement of their position in regard to this theme of data management is captured below:

> Educational Performance data deserve intelligent interpretation, indeed sustainable improvement depends on it. When statistical data provide one source of information among many, when educators approach the data in a spirit of curiosity and enquiry rather than in a climate of panic and fear, and when teachers have the professional discretion to use data to justify trying innovative approaches without anxiety and intimidation, then data can play a powerful role in improving learning and increasing achievement. But data that are misleading

> or misinterpreted only distract us from this purpose – as do data that are misused (Hargreaves & Shirley, 2009, p. 39).

Hargreaves and Shirley (2009) discuss the shortfalls of an over-reliance on data and the pitfalls of using data without relating it to other important elements of the teaching and learning process. Teacher judgement based on experience is nominated as a key factor that must be included in any data analysis. A further danger identified by Hargraves and Shirley is narrowing of curriculum and learning experience. This is due to the perceived imperative for schools and school communities to achieve in large-cohort tests that focus solely on narrow measures of literacy and numeracy. Practices detrimental to learning, described as 'teaching to the test' have been detailed in research conducted in Canadian schools (Volante, 2004). As has been discussed, Lingard (2010) and Smeed (2012) suggest these are practices Australian educators should be encouraged to avoid in their use of NAPLAN data, and the reality of this position will be investigated in the experiences of the participating educators in their responses to RQ5.

Fullan et al. (2006) discuss using data to drive instruction and observe that many teachers in today's classrooms remain daunted by the degree of assessment data available to them. They advocate the creation of student learning profiles to enable teachers to summarise the range of assessment data gathered. The student learning profile is the elementary tool in sifting data, identifying strengths and weaknesses and determining each student's stage of development. As a result it is argued that 'Teachers can effectively group their students to tailor the instruction in whole class and small group learning settings' (Fullan et al., 2006, p. 71). In other Canadian research into differentiating instruction (Tomlinson et al., 2003), successful performance by students

in large-scale standardised tests was reported to have been influenced by class groupings that facilitated differentiation of learning for students.

> Effective differentiation employs flexible use of small teaching-learning groups in the classroom. A meta-analysis of 165 effect sizes from studies of effects of within-class grouping on student achievement and other outcomes (Lou et al., 1996) found that students in small within-classroom learning groups (generally three to four in size) achieved significantly more than students not learning in small groups. In addition, students in grouped classes had more positive attitudes about learning and stronger self-concept measures than those in ungrouped classes (p. 132).

Fullan et al (2006), assert individualised student learning profiles provide teachers with the type of information and direction that makes personalised learning less daunting. They promote the building of critical learning instruction paths that enable the personalisation and precision required to better serve each student's learning needs. Central to their argument is the need for data to become a part of the daily professional learning process. The locus of the data dynamic is the classroom, led by the teacher whose capacity and quality are major influences on the effectiveness of the interpretation and resultant action. They insist that a quality teacher is a learning teacher, who is engaged in a constant reflection and renewal of their teaching methods. Tomlinson et al., (2003), assert that by transforming information into knowledge 'through sustained interaction, teachers thus become experts over time but only under these conditions' (p. 87).

The possible influence of NAPLAN data on approaches to pedagogy by teachers is to be explored as stated in RQ 5:

> What elements in the use of NAPLAN data contribute to the improvement of learning as measured by growth in NAPLAN performance?

In concluding the discussion of the third theme emerging from the literature—assessment of student achievement and the use of data—three strands emerged. These involve the management of student achievement data, the use of this data to enhance learning, and the potential for student performance data to inform effective pedagogy.

2.6 Conclusion to the Literature Review

In reviewing the academic literature associated with the research problem, three main themes emerged; these were interconnected. The stated research question—how do teachers and school leaders working within the large-cohort centralised testing regime of NAPLAN in Australia utilise NAPLAN data to improve student learning outcomes as measured in NAPLAN performance?—is better addressed with the understandings represented in this section. As illustrated in the concept diagram in Figure 2.1, the themes that emerged from the literature (giving direction to this research) are:

- attitudes and perspectives of school leaders and teachers to the phenomena of centralised measurement and large-cohort standardised testing
- teacher mentoring, monitoring and professional development
- assessment of student achievement and the use of data.

Providing coherence to these themes throughout the literature were four strands or connections, which were consistent in the reported research. Firstly, the context of large-cohort standardised external testing has been identified in the US and UK in

particular as having some influence on the attitudes and behaviours of teachers and school leaders in their work with students. In Australia, there is early evidence of influence on teacher behaviour and attitudes, due to the advent of the relatively new NAPLAN tests. This is an area that needs further attention, as described by RQ 1: how do school leaders and teachers perceive the influence of NAPLAN data on classroom practice for the improvement of learning?

The second strand, or connection, evident in the literature between the three main themes was leadership. Leadership was consistently highlighted, and broadly reported beyond school principals, assistant principals or other people with designated leadership roles within the school community. The literature referred to leadership in the use of student performance data exercised by the designated leaders, and exercised and developed among teachers. Leadership is closely connected to all three themes that emerged from the literature, as represented in Figure 2.1. In the literature reviewed, this emphasis helped form RQ 2: what role does professional dialogue play in the utilisation of NAPLAN data to improve student learning?

The third strand or connection of the themes that emerged from this literature review (also represented in the conceptual framework in Figure 2.1) was the stated and inferred reality of a requisite degree of data literacy among school leaders and teachers. In the context described, the SMART data package is a key instrument in investigating student data from NAPLAN. Flowing from these themes and connections is RQ 3: how is NAPLAN data integrated with other forms of school assessment for improvement of student learning?

The fourth strand or connection between the themes was teacher practice. Attitudes and perspectives of school leaders and teachers to the phenomena of

centralised measurement and large-cohort standardised testing were reported to have an effect on teaching practice. Teacher mentoring, monitoring and professional development associated with using data from large-cohort standardised testing were emphasised in the literature, and were reported to have a potential affect on teacher practice. Assessment of student achievement and the use of data were also linked in the literature to teacher practice, particularly in providing feedback to students and in shaping pedagogy. The need to explore these factors led to RQ 4: what influence has the use of NAPLAN data had on student feedback for the purposes of improving student learning and RQ 5: what elements in the use of NAPLAN data contribute to the improvement of learning as measured by growth in NAPLAN performance?

The literature reviewed in this section has provided a firm empirical and academic basis upon which to build the research to be undertaken and reported in this work.

Chapter 3 Research Design

3.1 Introduction

This chapter situates this study within a theoretical framework that forms the foundation for the research design. The phases and strategies involved in data collection are explained. Processes used to verify the data are detailed and relevant ethical issues are assessed.

3.2 Theoretical Framework

The theoretical framework provides a philosophical foundation, upon which the direction and structure of the research design is established. The theoretical framework is presented to assist the reader understand the belief set the researcher brings to the research (Creswell & Plano Clark, 2007).

Epistemology is the study of the search for knowledge, and how that knowledge is gained (Crotty, 1998). In addition, epistemology seeks to explain the nature of the relationship that exists between the knower or enquirer and the known or knowable (Gough, 2002). As can be seen from the RQs generated by the literature review, this research concentrated on exploring ways in which, teachers and school leaders used NAPLAN data to improve student-learning outcomes, as measured in NAPLAN performance. This emphasis on seeking practical solutions to a real life problem (Creswell & Plano Clark, 2007), grounds this research within pragmatism. Mounce (1997) traces the philosophical worldview of pragmatism in academic research to Charles Peirce in the late 19th Century, through to William James, John Dewey and GH

Mead in the mid 20th Century. Based upon the work of Rorty (1990), Murphy (1990), Patton (1990) and Cherryholmes (1992), Creswell (2009) identifies the main characteristics of research conducted with a pragmatic worldview as being problem centred, pluralistic and oriented to real world practice. Pragmatism is a research worldview, which rejects the singularity of method associated with both postpositivism and constructivism approaches. Research that adopts a postpositivism worldview, relies on empirical observation and measurement to verify theory and is characterised by quantitative data and analysis. Research that adopts a constructivism worldview relies on multiple participant meanings and understandings within a social and historical construction, which leads to the generation of a theory and is characterised by qualitative data and analysis (Creswell, 2009).

The Pragmatic worldview is open to collection and analysis of both quantitative and qualitative data and analysis. Rorty (1999) suggests Pragmatists are in fact "anti-dualists", who do not see the need for research to be strictly grounded in either a post positivist or constructivist approach. Gage (1989) refers to the debates between researchers as to the most appropriate research worldview as "The Paradigm Wars." In discussing the historical antipathy between advoctates of one approach over another, in relation to educational research he wrote,

> In short, it was finally understood that nothing about objective-quantitative research precluded the description and analysis of classroom processes with interpretive-qualitative methods. Classroom processes need not be described solely in terms of behaviors or actions; they could also be described in terms of meaning-perspectives. No calamity whatever befell those who studied teaching in the same investigation with both objective-quantitative and interpretive-

> qualitative methods. Indeed, most of these investigations with both kinds of methods turned out to be more fruitful of insights, understandings, predictive power, and control resulting in improvements of teaching, (Gage, 1989, p.7).

Gage's observations were instructive in conceptualising the design for this research, situated in an educational context. The inclusivity in this research of both quantitative and qualitative data and analysis is consistent with the pragmatic worldview as highlighted by Creswell (2009), Teddlie, and Tashakkori (2009). Openness to the collection and analysis of quantitative and qualitative data is described as mixed methods approach.

3.3 Research Design

Mixed methods research design has evolved as a distinct method of inquiry, described in detail by Cresswell and Plano Clark (2007), who identify the evolution of the approach through the work of many researchers including Campbell and Fiske (1959), Jick (1979), Rossman and Wilson (1985), Greene, Caracelli,and Graham (1989), Miles and Huberman (1994) and Tashakkori and Teddie (1998). Central to the choice for this design is that both types of data can add strength to the rigour of the research, and provide greater insight to the research problem. Johnson and Onwuegbuzie (2004) suggest various strengths of quantitative research and qualitative research applicable to this study. Quantitative research can provide precise numerical data, based upon study of large numbers of people, which is independent of the researcher and has high credibility with important stakeholders such as parents, teachers, school leaders, educational administrators, and politicians. Qualitative research provides "data based

upon participants' own categories of meaning" and "can describe, in rich detail, phenomena as they are situated and embedded in local contexts", (Johnson and Onwuegbuzie 2004, p.20).

This research employed a mixed-methods approach, combining quantitative and qualitative data and procedures (Tashakkori & Teddlie, 1998) in an attempt to better understand and explain 'how do teachers and school leaders working within the large-cohort centralised testing regime of NAPLAN in Australia utilise NAPLAN data to improve student learning outcomes as measured in NAPLAN performance?' The quantitative data provided information relating to levels of student performance in NAPLAN tests. The purposes of the quantitative analysis using NAPLAN data reported on the *My School* website, were firstly to determine the most appropriate measures that indicated improved student learning outcomes, and secondly to identify the actual schools for the research. The qualitative data provided information about the nature of the activity within schools perceived to improve student learning outcomes, as measured by performance in NAPLAN.

In designing this research, three main phases were identified. These phases reflect Creswell's (2009) sequential explanatory strategy, as represented in Figure 3.1 below.

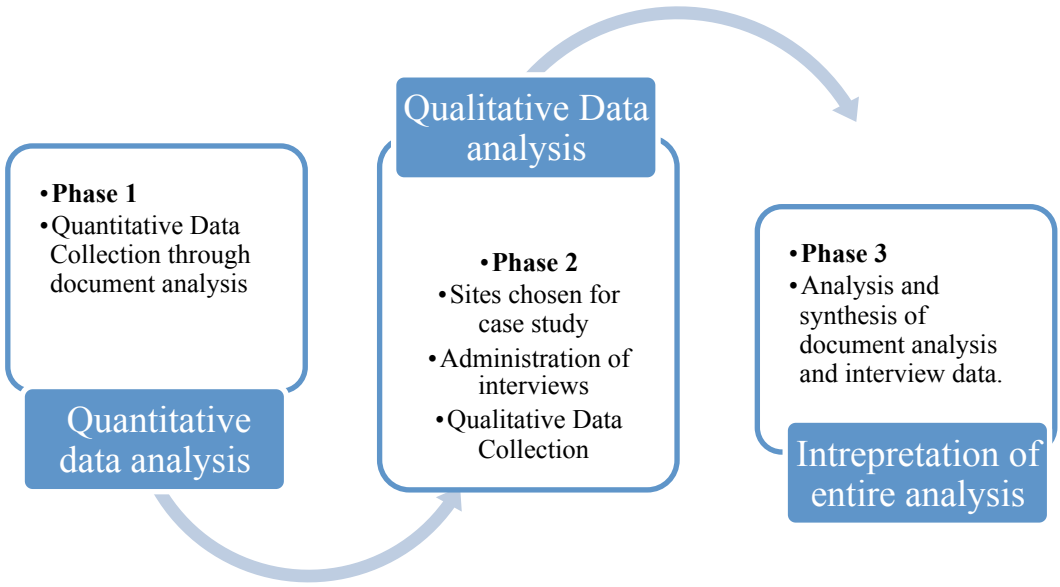


Figure 3.1. The sequential explanatory research design (Cresswell 2009).

An advantage in employing such a strategy was that the qualitative process assisted in understanding findings from the quantitative enquiry.

3.3.1 Phase 1 Quantitative data and analysis

Following the conception of the research problem, the research design was gradually refined through the review of the scholarly literature, and was intensified through analysis of NAPLAN results, as reported on the *My School* website (www.myschool.edu.au). The data collected from the document analysis during this initial phase was organised carefully, as it was to form the basis for the next phase of enquiry.

In this three-phase approach, first quantitative data was gathered and analysed. Results from NAPLAN 2008—2012, as reported on the *My School* website for the 38 primary schools in the inner western region were interrogated and analysed. The *My School* website was a rich source of data for this research. Advantages of this type of data (Cresswell, 2009) include it being in the language of the participants, and being

readily analysable for common themes and central phenomena. NAPLAN results reported by ACARA, used a single scale for all students from Year 3 to Year 9 for the domains of reading and numeracy, so that results were able to be compared across year levels and over time (ACARA, 2013). Different measures reported on *My School* were investigated. Further explanation of these measures is made in Sections 3.8 and 3.9 of this chapter, which is a comprehensive and necessary overview of the *My School* website.

As a result of this initial analysis, three measures were judged the most appropriate indicators of improved student learning outcomes as measured by NAPLAN. Firstly*, average student gain* data between years 3 and 5 reported for each primary school in the region in reading and numeracy was chosen, as they presented the change in results for students who took consecutive NAPLAN tests at the same school. Only matched students are included in the calculations to determine student gain (ACARA, 2013). The second measure chosen for analysis as reported on the *My School* website was average student gain compared with *students from statistically similar backgrounds*. The third measure chosen for analysis was average student gain compared with *students with the same starting scores*.

The results from the quantatative research and analysis are presented in Chapter 4. The purpose of this analysis was to determine a range of student achievement as reported from NAPLAN testing. As Johnson and Onwuegbuzie (2004) emphasise, such quantative data has high credibility. In the case of NAPLAN, the data gathered is from a large number of people, independent of the researcher, and presented in a variety of ways, which invites diverse lines of enquiry. For educators, there is a familiarity with the

purpose, language and reporting of NAPLAN data, which provided a sound basis upon which to conduct phase 2 of the research.

3.3.2 Phase 2 Qualitative data and analysis

In evaluating the most appropriate method for the qualitative research conducted in phase 2, the depth and complexity of the phenomenon to be explored required careful consideration (Guba & Lincoln, 2005). Case study was the chosen methodology for the second phase of the research as it provided the means to investigate contemporary phenomena within real life contexts by seeking to convey in-depth understandings of interpretations and meanings that participants brought to various situations, and processes (Campbell & Ahrens, 1998). Case study provides opportunity to make sense of elements and trends associated with a research problem through an explicit recognition of their interrelated nature, and how they come together to form a complete and whole picture (Merriam, 1998). More specifically, the methodology used in this second phase is recognised as a 'collective case study' (Stake, 1995, p.4), as it involved a single case study approach across five chosen sites.

Advantages of a case study include the descriptive, narrative style required to explore a phenomenon within a complex context (Bassey, 1999a). In this phase of the research, the story told within the case study, is likely to appeal to a broader range of readers (Shuttleworth, 2008). Critics of case study cite the difficulties faced in generalising from a single case and the resultant or perceived lack of rigour (Yin, 2003). Case studies are also criticised for producing thickly descriptive, unreadable documents (Merriam, 1998; Yin, 2003). Despite this, the discursive style of case study analysis in

phase 2, coupled with the quantitative analysis from phase 1, provided a rich picture of the use of data from the relatively recent phenomenon of NAPLAN testing in Australia.

Case study research does have particular qualities that enhance research (Punch, 1998). Firstly, a case study enables learning from a particular case in its own right. Cases that are unique or perhaps unusual, but little understood can provide new meaning and valuable knowledge. In designing this study, the case study approach enabled learning about using data from the centralised NAPLAN testing regime. Secondly, when studying a research area, which has proven problematic over time, an in-depth case study can reveal new understandings. The use of data from large-cohort centralised testing by school leaders and teachers has been problematic for a long time in a number of national and international contexts. Thirdly, a case study can complement and enhance other research approaches. With the advent of NAPLAN in Australia and the publication nationwide of the results, research activity has increased in this area from a range of perspectives.

The data gathering strategy employed in this phase of the research was interviews. After receiving permission from the Executive Director of the Sydney Catholic Education Office, principals of schools fitting the different profiles were invited to consider their involvement, and that of their assistant principal and colleagues teaching years 3, 4, 5 and 6. Once agreement was given by the principals, letters of invitation were distributed to potential participants. The letters stated the voluntary nature of involvement. Participants registered their willingness to be involved in the research by signing the consent form provided by the researcher. This process was undertaken with the full approval and endorsement of the Australian Catholic University Human Ethics Committee, in accordance with the Australian government's regulations

in this regard. The associated documentation is included in Appendices A – E, and is referred to in detail in sections 3.8 and 3.9.

Interviews were conducted face-to-face in a one-on-one situation in the second phase of data gathering. Participants were asked the same questions, which are included in Appendix H. Interviews are a conversation with a purpose (Kahn & Cannell, 1957) and as such, allowed participants to describe their perspectives and meanings in regard to using NAPLAN data. Emphasis on participant perspective and meaning is central to qualitative research, and interviews provide a forum for these to be expressed (Marshall & Rossman, 1999).

Advantages of interviews in research, as identified by the British Educational Research Association (http://www.bera.ac.uk), include the facility interviews provide to enable a researcher to give a clear explanation of the purpose of the research and answer questions about it, to motivate interviewees. In addition, an interview provides the researcher with opportunities to probe responses and seek further information. Similarly, participants have the opportunity to ask for clarification if they do not understand a question. Interviews enable the researcher to explore people's reasons for behaving in certain ways, or their interpretations of events. Research participants can experience interviews as a highly rewarding experience.

Disadvantages of interviews have been considered in regard to this research. While all participants were trained educators, there was some variance in the ability of participants to verbalise their thoughts and understandings. Not all people are equally perceptive or articulate (Cresswell, 2009).

The British Educational Research Association (http://www.bera.ac.uk) highlights some drawbacks with interviews. Interviewees can exhibit a desire to please the

interviewer, create a good impression and say what they think the interviewer wants to hear, rather than give their personal view.

3.3.3 Phase 3 Interpretation of entire analysis

Analysing data can be seen as organic, in that it is a constant activity throughout the research process phases, and requires agility and organisation from the researcher (Cresswell, 2009; Stake, 1995). The main phases of the data gathering and analysis process are identified in Figure 3.3. Consistent with the sequential explanatory research design discussed in the previous section and illustrated in Figure 3.1, a variety of analyses and inferences were employed in keeping with the mixed-method approach, (Caracelli & Greene, 1993; Tashakkori & Teddlie, 1998). The sequential explanatory research design enables quantitative data to be collected in exploring phenomena, and then collecting qualitative data to explain relationships and explore meanings found in the quantitative data. In applying this method, the qualitative research data was emphasised more than the quantitative research data. Once the data was organised, it was coded and presented in a manner that enabled conclusions to be drawn and patterns to be investigated. Selective coding processes (Strauss & Corbin, 1998) were used in examining the data to discern patterns and questions for clarification in phase 2. Within this analysis, the data was broken down, compared and categorised. Connections were established between various data categories and relationships were validated between core categories. This process of data reduction (Onwuegbuzie & Teddlie, 2003) assisted in identifying key elements, which informed the findings from the research.

In this phase of the research process, ‘the story’, the analysis presents the culmination of the preceding work. The meanings derived from the analysis emerged

through an iterative process, where the quantitative and qualitative data were considered, compared, reviewed, associated and aligned in a range of ways and in a variety of relationships. The researcher sought new understandings, through direct interpretation of individual instances and through aggregation of instances, until something could be said about them as a group (Stake, 1995).

New understandings were discovered through patterns emerging in the data. Where consistency was evident in the patterns, correspondence was established. Analysis of both quantitative and qualitative data was used in this search for new understandings. Case study research provided the opportunity for naturalistic generalisations that were informative, educative and illuminating (Stake, 1995). Balanced with these attributes was the necessity to acknowledge and consider local particulars at different sites within the case study. Agility and the flexibility to move between quantitative and qualitative modes of analysis in a non-linear fashion was essential in this type of analysis. The nature of the analysis and interpretation used in this study is depicted in Figure 3.2.

In this model of analysis, quantitative and qualitative data was integrated coherently to enable legitimate and verifiable inferences to be made with the most reasonable explanation of the phenomena described (Onwuegbuzie & Teddlie, 2003).

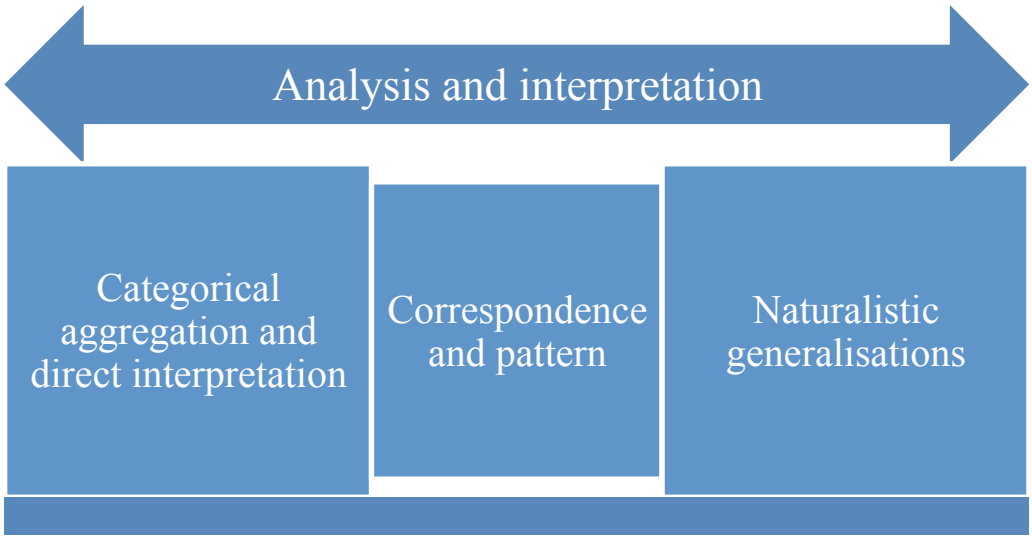


Figure 3.2. Analysis and interpretation (adapted from Stake, 1995).

In summarising the theoretical framework, the epistemology was pragmatism, and the research design was mixed methods. Quantitative methods were used in the first phase, which involved document analysis. Qualitative methods were used in the second phase, which involved interviews with participants in a collective case study. In the analysis and interpretation of results, the qualitative analysis was preferenced.

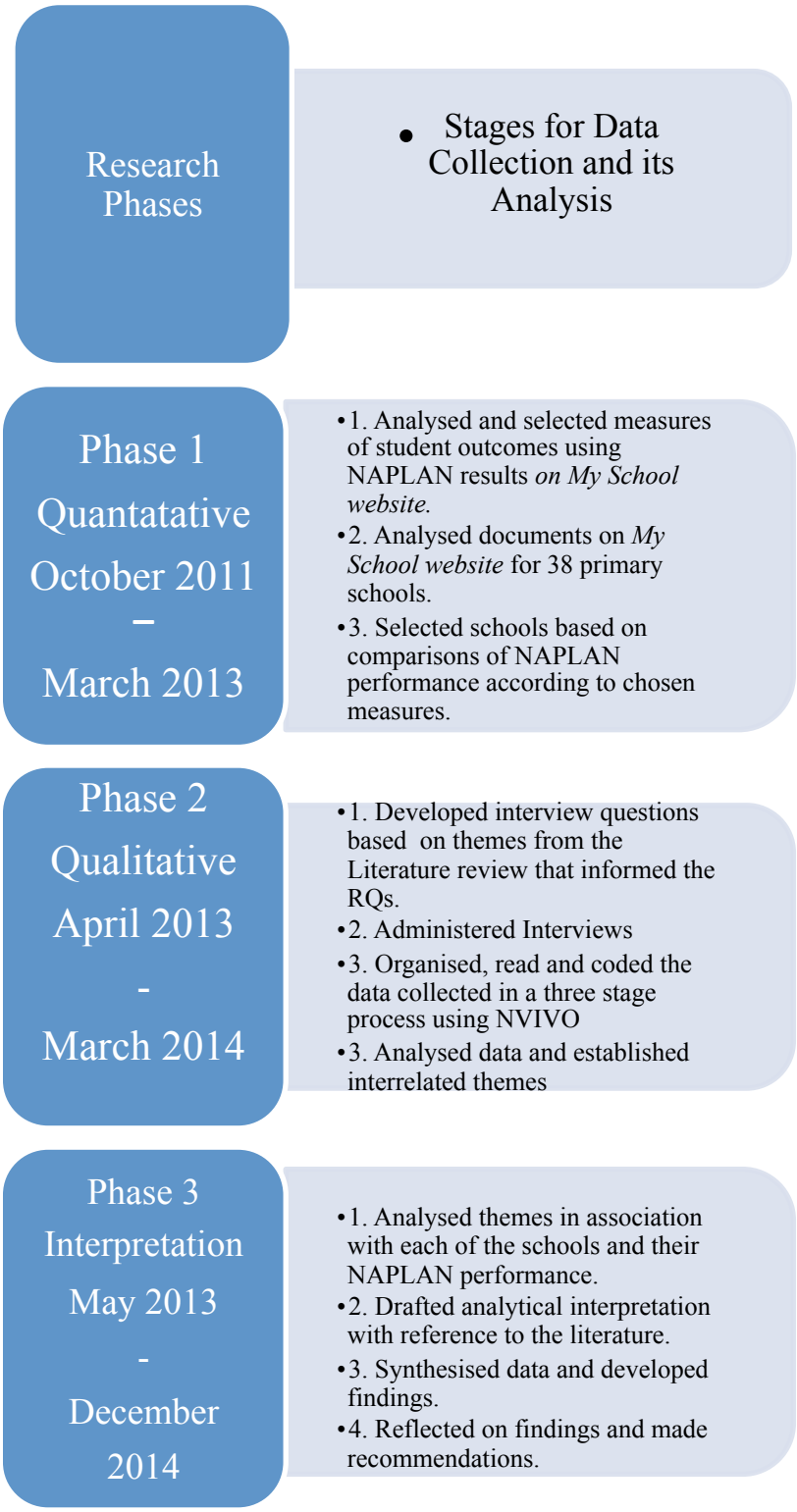


Figure 3.3. Stages of data collection and analysis.

3.4 Participants

In considering the subject and purpose of this research, the question 'whom will you study' (Cresswell, 2009) was (for this research) school leaders and teachers. In making the research manageable, a representative group was chosen. In understanding the boundaries around this chosen group, some descriptive information is provided to assist understandings of the chosen group.

The Sydney Archdiocese Catholic Education Office is responsible (on behalf of the Trustees of the Roman Catholic Church) for 150 schools, divided across the eastern, southern and inner western regions of the Sydney metropolitan area. There are 38 secondary colleges and 112 primary schools. The inner western region has 38 primary schools and ten secondary schools, serving approximately 18000 students. As Catholic schools within NSW, these schools receive funding from both federal and state governments, and have accountabilities in regard to curriculum, financial reporting and management, which ensures legislative compliance with state and federal governments. Parents pay school fees costing between AUD$1200 and $2500 per year. No family is denied a Catholic education due to inability to pay fees, which underscores the inclusive nature of these schools from a financial perspective within the non-government sector.

In regard to this research, the boundaries were defined in three ways. Firstly, the research focused on 38 primary schools, from which 5 were selected. Secondly, the research included principals and assistant principals from the participating primary schools. Thirdly, the research included teachers from the participating schools of students in years 3, 4, 5 and 6. To more clearly define the sample for the research, the next section describes the sampling techniques employed.

3.4.1 Sampling techniques.

Critical-purposeful sampling (Cresswell, 2009) was employed in phase 1, when selecting the sites for the collective case study, which will be referred to as schools rather than sites. This approach enabled selection of particular school leaders and teachers who used data from large-cohort external testing in the school-learning environment, and from whom a detailed understanding could be provided.

The sampling was based upon document analysis of NAPLAN results, as presented on the ACARA public *My School* website (www.myschool.edu.au). In this study, average student gain between years 3 and 5 reported for each primary school in the region in reading and numeracy were compared. Writing was not included, due to a change in genre in 2011, from narrative to persuasive writing. Results in writing from 2009 cannot be compared with results from 2011, and 2010 results cannot be compared to 2012 (ACARA, 2013b).

The sample of schools was selected after an analysis of average student gain data for students in the 38 schools of the inner western region of the Sydney Archdiocese. Five schools were invited to participate in the research, based upon the reported measures of average student gain.

3.4.2 Teachers and school leaders.

The second sampling type to be employed before the data was gathered in phase 2 was stratified purposeful sampling (Miles & Huberman, 1994). This involves the identification of sub-groups and provides for comparisons. This is relevant in this research, as the teachers and school leaders automatically identify as sub-groups, as do

the individual schools. The teachers of Years 3, 4, 5 and 6 were interviewed, as well as the principals and assistant principals.

3.5 Trustworthiness

In this research, reliability and trustworthiness were established through the mixed methods of data gathering and analysis (Stake, 2005; Tashakkori & Teddlie, 2003). The elements that strengthened reliability and trustworthiness are: analysis of documents presenting results from national testing in reading and numeracy for three cohorts of students between 2008 and 2012 and 35 interviews with participants from five schools, demonstrating a range of results. These processes of data gathering and the resultant analysis facilitated strengthening of findings (Cresswell, 2009). The selection of educators as participants in the research also provided credibility within the context of the research problem, in that agreement was sought from competent individuals (Eisner, 1991).

Four elements that apply to research involving case study when verifying findings, are represented in Figure 3.4 (Lincoln & Guba, 1985). Firstly, credibility is required, which involves establishing that the research results are credible or believable 'from' or 'to' the research participants. Secondly, the researcher needs to invite transferability by thoroughly describing the research context and the assumptions that were central to the research. Thirdly, the idea of dependability emphasises that the researcher needs to account for the ever-changing context within which the research occurs. Transferability and dependability are interrelated, as depicted by the double-ended arrow in Figure 3.4. Both are necessary in enabling inferential 'trustworthiness'

(Bassey, 1999b, p. 75) and 'inference transferability' (Onwuegbuzie & Teddlie, 2003, p. 37).

The fourth element in verifying the research is confirmability (Glesne & Peshkin, 1992; Miles & Huberman, 1994). Analysis of themes and interpretations from the various data collection methods were employed, which assisted in verifying the research findings and their generalisability (Stake, 2005).

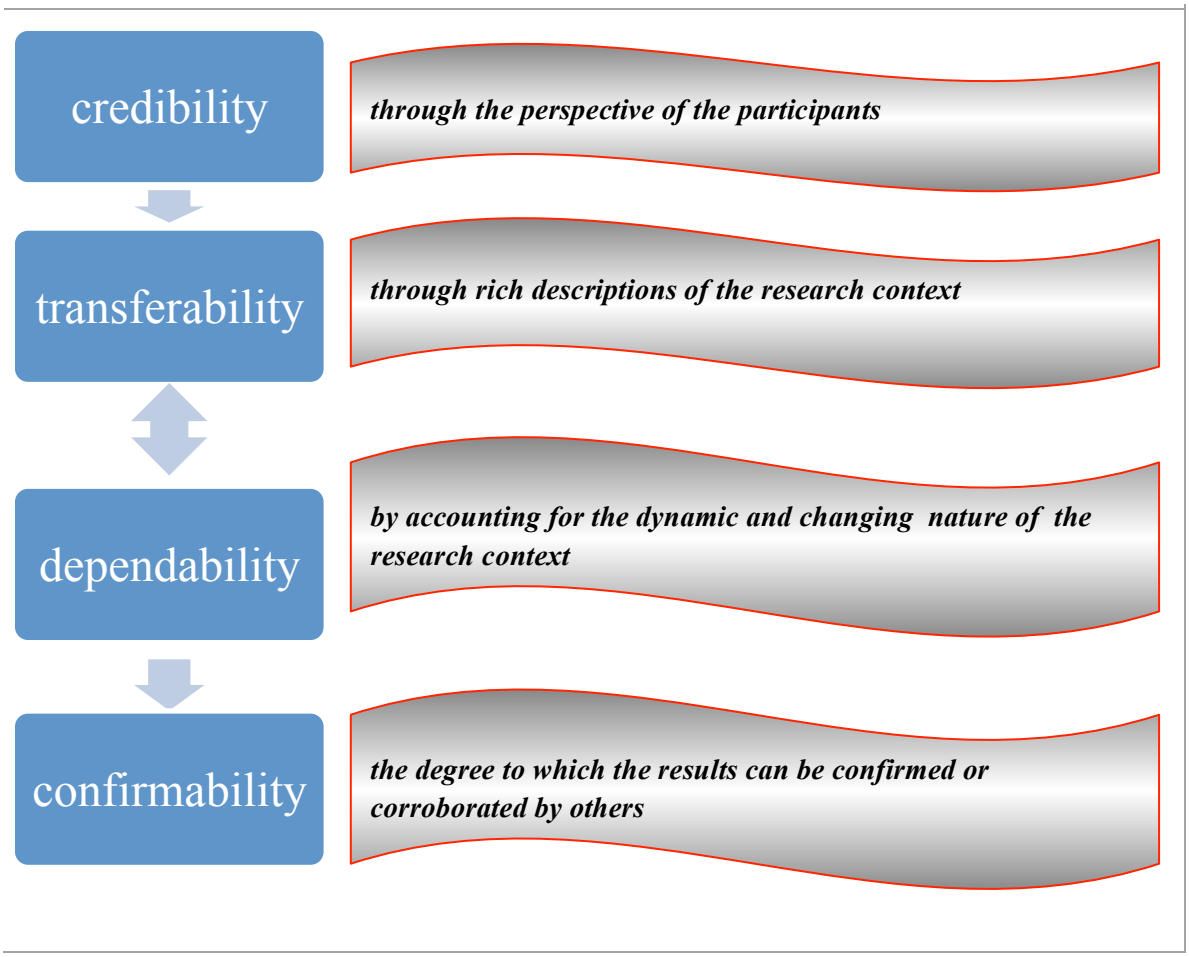


Figure 3.4. Elements for verification (adapted from Lincoln & Guba, 1985).

3.6 Ethical Issues

The research conformed with all requirements as set out in the Australian Catholic University's Human Research Ethics Committee Policy. Written approval for the research, from the Executive Director of Sydney Catholic Schools, was obtained (see Appendix A, CEO Ref: Research Application 820, 8 October 2012). The Australian Catholic University's Human Research Ethics Committee approved the research on 13 May 2013 (see Appendix B, Ethics Register Number: 2013 109N). The invitation to volunteer was initially made verbally to the primary principals of the chosen schools (see Appendix C). Principals indicating possible interest in volunteering were issued with letters of invitation, addressed to principals, assistant principals and teachers of years 3, 4, 5 and 6 (see Appendix D). Participants indicated their willingness to be involved in the research by signing the consent form provided (see Appendix E).

For phase 1 of the research, all schools were de-identified and numbered 1 to 38.

Phase 2 of the research involved conducting interviews across the five school sites. Participants were interviewed for 45 minutes each, as advertised in the letters of invitation.

In regard to participants' identities, anonymity and confidentiality was assured through de-identification processes necessary for privacy, as well as the research's integrity. De-identified participants were identified as belonging to their de-identified school.

Interviews and discussions were transcribed personally to guarantee confidentiality. Participants were informed that all data gathered would be stored using methods to ensure their identities remained confidential. Security measures were also

put in place to ensure gathered data were kept safe and confidential to the researcher for the purposes of this research. Participants were given the opportunity to withdraw from the research process at any stage.

3.7 Limitations and Delimitations

The limitations of the research relate to the research methodology and data collection processes. In the process of document analysis, the limitations of the information provided on the *My School* website were considered. To explain the nature of the *My School* website and the data it contains, a discussion in section 3.8 is presented. This provides a more coherent context.

In phase 2, interviews were conducted with participants chosen not at random, but as representing different contexts within the school setting. This method of purposive sampling (Cresswell, 2008) can be seen as delimiting the research, in that school leaders and teachers from a range of schools (based on performance in NAPLAN) were included. Such a multi-site case study can be seen as limited in how representative it is of the broader reality in schools across the country. As the schools in the research were all urban Catholic primary schools, there will be a vulnerability regarding questions of generalisability (Yin, 2003), possibly with primary schools in rural areas, non-Catholic primary schools and secondary schools from all sectors. The choice of comparisons in average student gain, used to select the schools, (being schools serving students from statistically similar backgrounds (SSSB) and students with the same starting scores (SSSS) nationally), minimises this limitation. Data gathered using interviews can also have inherent limitations, due to interpretation of questions,

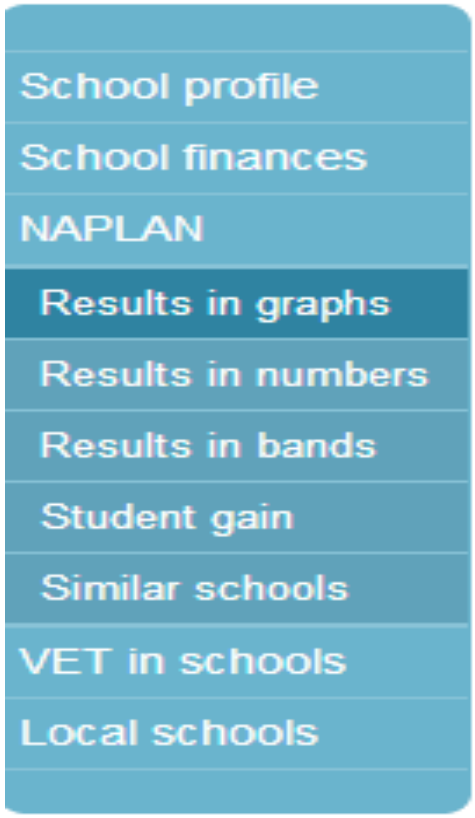
perceived bias of the interviewer or simply the respondent's reaction to the interviewer's personality (Burns, 1990).

That the chosen schools were relatively successful in comparison with all the schools in the Region on the measure of average learning gain, limits the study. Particular consideration should be given to the levels of negativity by participants toward large scale testing, which were similar to reports in the literature under the broadly defined neo-liberal economic agenda. For such sentiments to be evident among participants in this study, emphasises its limitation and points to possibilities for future research.

3.8 Overview of the *My School* Website

The *My School* website, first launched in 2010, includes new features of analysis with each iteration and these have been applied to the data collected since 2008 by ACARA, (ACARA, 2013e). The *My School* website presents information for each of the 10,013 schools in Australia. Contextual and statistical information, as well as results from NAPLAN, are provided. Information on the website can be searched by five main categories: school profile, school finances, NAPLAN, vocational education and local schools, as illustrated in Figure 3.5.

For the purposes of this research, the main focus will be on NAPLAN results. *My School* presents the average NAPLAN scores for reading, persuasive writing, narrative writing, spelling, grammar and punctuation and numeracy.



(ACARA, 2012)

Figure 3.5. My School website broad search categories.

The results for each school are presented in graphs, numbers, performance bands, as a measure of student gain in comparison with schools serving SSSB, SSSS and students in all Australian schools.

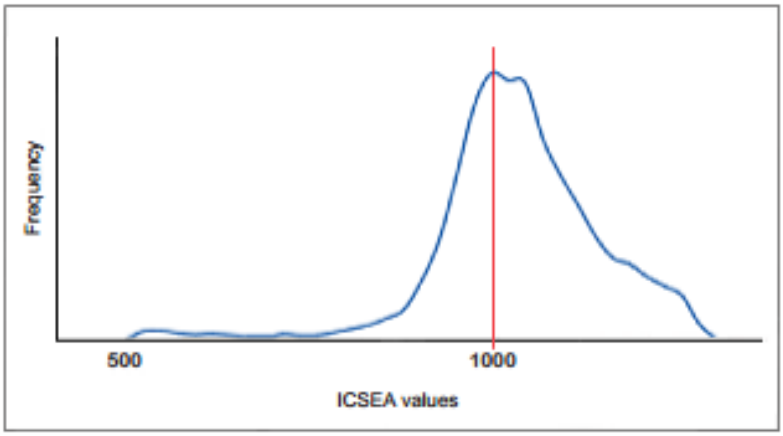
3.8.1 Index of community socio-educational advantage and statistically similar schools.

On the *My School* website, schools are identified by ACARA as serving SSSB through the calculation of the Index of Community Socio-educational Advantage (ICSEA), which is a scale that represents the levels of educational advantage for each school. The category of schools serving SSSB gives the capacity to present an individual

school's results within a set of up to 60 schools for the purpose of analysis. As these 60 schools are described as serving statistically similar students, the *My School* website encourages comparisons of school performance within this group (ACARA, 2013c). This approach is based upon the relationship that research has found between socio-economic advantage and student achievement, (Caldas & Bankston, 1997; Sirin, 2005; White, 1982). The factors included in the calculation of ICSEA are parent occupation, parent level of educational attainment, geographical location of a school, the percentage of Indigenous students and the percentage of students from a Language Backgound other than English whose parents have attained an education of Year 9 equivalent or below, (Disadvantaged Language Background Other than English). ACARA calculates the ICSEA for each school on a scale with a median of 1000 and a standard deviation of 100, as presented in Figure 3.6. The range of ICSEA values is from approximately 500 (representing schools serving students from backgrounds of extreme educational disadvantage) to approximatley 1300 (representing schools serving students from backgrounds of extreme educational advantage) (ACARA, 2013a). The distribution of schools according to the ICSEA is illustrated in Figure 3.6.

The construction of the socio–educational advantage (SEA) factor used for ICSEA involves information gained directly from parents at each school, or information gained indirectly through the national census data gathered by the Australian Bureau of Statistics (ABS). In the case of small schools, or schools with significant missing data, the indirect measure of SEA is often used to provide a better estimate than the direct measure. The indirect method involves matching data from ABS Census Collection Districts (CCDs) with de-identified addresses from a school's enrolment records. CCDs cover on average 225 households. The relevant SEA characteristics of the CCD in which

each student at the school lives (known from ABS census data) are aggregated to the school level.



Source: ACARA, 2013

Figure 3.6. The general distribution curve of ICSEA values for Australian schools.

The school's ICSEA information is presented on the profile page of the *My School* website, as shown in Figure 3.7. The distribution of students in the school is listed as percentages within quartiles of the ICSEA values, as is the distribution of students in all Australian schools.

Student background 2010

Index of Community Socio-Educational Advantage (ICSEA)

School ICSEA value	1116
Average ICSEA value	1000
Data source	Parent information

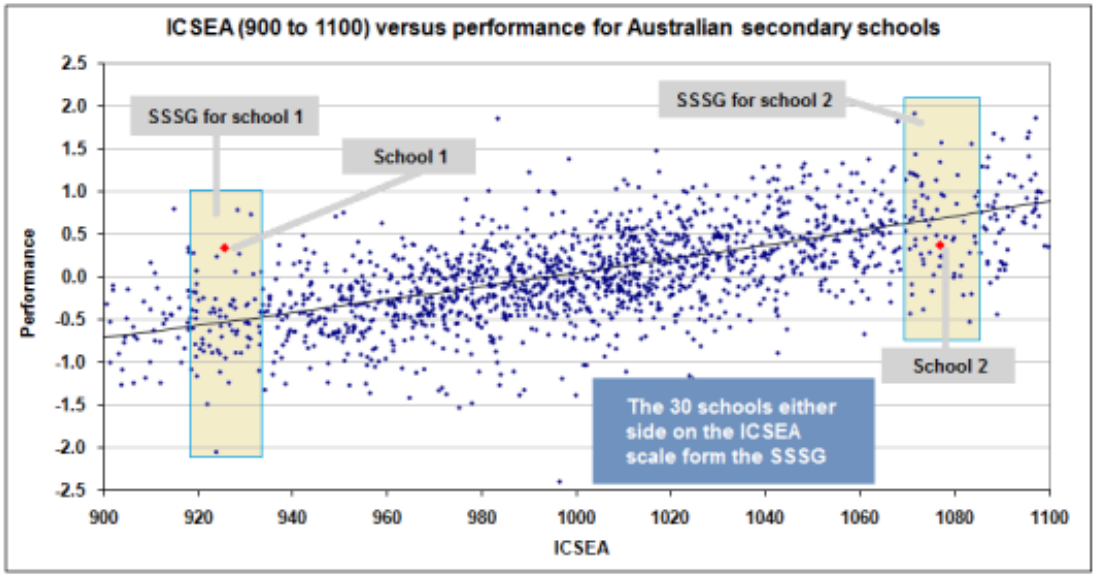
Distribution of students	Bottom quarter	Middle quarters		Top quarter
School distribution	7%	10%	31%	53%
Australian distribution	25%	25%	25%	25%

Percentages are rounded and may not add up to 100

Source: (ACARA, 2013a)

Figure 3.7. Student background data on the school profile page.

A value on the scale assigned to a school is the averaged level of SEA for all students in the particular school. The selection process for schools serving statistically similar students is illustrated in Figure 3.8. In this example, School 1 is serving students from socio-educational disadvantaged backgounds and School 2 is serving students from socio-educational advantaged backgrounds. The 30 schools on either side of the chosen school's ICSEA value form the group of schools serving statistically similar students. In the graph shown in Figure 3.8, ICSEA versus NAPLAN performance is illustrated for Australian secondary schools.



Source: (ACARA, 2013a)

Figure 3.8. Creating a statistically similar schools group.

The calculation of each school's ICSEA is a feature of the data provided on the *My School* website, which addresses to some degree a common criticism made of large-cohort educational testing in many contexts throughout the world (Levin et al., 2008;

Masters, 2012; Sirin, 2005). Creating groups of schools serving statistically similar students provides for comparisons among schools with some similar characteristics, as described in this section. While each school in Australia is unique, the ICSEA provides a methodology based on transparent and measureable variables that enable constructive comparisons and reflections by governments, school systems and individual schools.

3.8.2 The common scale and the equating process between test years.

To understand the documents that present NAPLAN results on the *My School* website, key features of student performance data require explanation. Figure 3.9 provides a helpful visual introduction to key features of the NAPLAN data.The chart in Figure 3.9 shows the average results for a sample school in numeracy for students in Year 5, compared with Year 5 students in statistically similar schools. The details of this chart are explained on the same screen on the website, and are presented in Figure 3.10. On the x or vertical axis, scores ranging from 374 to 530 are represented. NAPLAN results for each domain are reported across Years 3, 5, 7, and 9 on a common scale from 0 to 1000, with a mean score of 500. The results presented in this example for Year 5 students show average scores between the range of 426 and 478 on the common scale. The use of common scales for each domain allows the capacity to map a student's achievement at different stages of their schooling.

(ACARA, 2012)

Figure 3.9. Equated results for 2008—2012, yr 5 numeracy.

On the y or horizontal axis, the Year 5 cohorts between 2008 and 2012 are presented, as is the average performance of the school for that time, in comparison with schools serving statistically similar students. The *My School* website presents the data for each school in a way that facilitates the identification of trends and levels of performance by cohorts over each year of NAPLAN testing. To allow test performance from different years to be compared and averaged with confidence, a rigorous equating process is employed by ACARA, so that the difficulty of the current year's test items, can be measured against the difficulty of previous years' items, to produce in any year a

scale of results for the test, which is aligned to that for the tests administered in the previous years. Known as Rasch modelling (Rasch, 1960), this process will be described in more detail later in this chapter in section 3.8.3. This process then allows current NAPLAN tests to be read on the same scale as preceding years' tests within a domain.

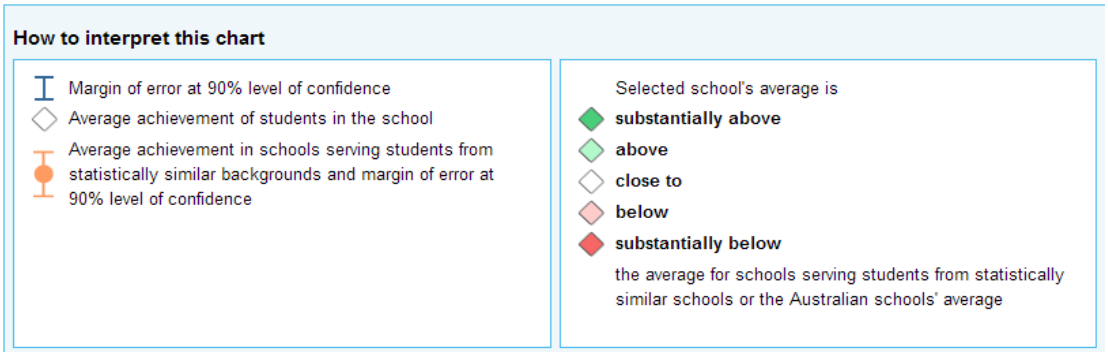
The process involves a sample of students from each year, covering all states and territories and school sectors, sitting the secure equating tests as well as the current year's tests. Using a combination of methods, the equating tests and current year's tests are placed on the same scales as previous years' tests.

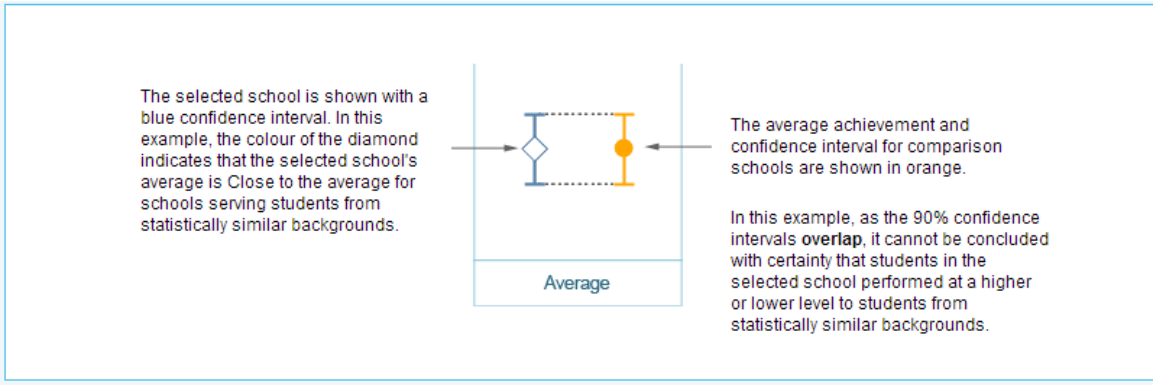
As stated on the *My School* website:

> Equating tests are delivered by specially trained, independent test administrators. This ensures that the security of the equating tests can be preserved.
>
> The equating process for NAPLAN was developed following expert advice. Great care is taken to provide a high level of assurance as to the reliability of comparisons between years. The equating process enables us to say with confidence that any test difference has been taken into account before making statements about one year's results compared to the next (ACARA, 2013d).

The common scale, which provides capacity to compare results within a domain across years will be used in this research.

In Figure 3.10, an explanation is provided to interpret the chart presented in Figure 3.9. Colour codes representing the level of a chosen school's average achievement, in comparison to schools serving statistically similar students is presented.





Students	2008	2009	2010	2011	2012	Average 2010 – 2012
Assessed	98%	100%	100%	100%	100%	100%
Exempt	0%	0%	0%	0%	0%	0%
Participation	98%	100%	100%	100%	100%	100%
Absent	2%	0%	0%	0%	0%	0%
Withdrawn	0%	0%	0%	0%	0%	0%
Australian average participation	**97%**	**96%**	**96%**	**95.7%**	**95.3%**	**95.7%**

Source: ACARA, 2012

Figure 3.10. Interpreting NAPLAN results by graphs.

The percentages of students (from the chosen school's cohort) who sat the test, were absent, withdrawn or exempt are presented with national percentages for these categories. Students in these non-participatory categories are not awarded a NAPLAN score and do not figure in calculations of average school achievement. The margin of error is presented graphically on the chart with lines stemming above and below the circles and diamonds depicting average achievement. The representation of margin for

error on the graph is explained. This is a measurement included in graphical presentations of NAPLAN performance data on the *My School* website. The calculation of standard errors and the influence on the decisions associated with this research will be discussed in Section 3.8.5.

3.8.3 Test construction and validity of items.

In analysing the documents presented on the *My School* website, the validity of data is an essential consideration, as decision making and further investigation in this research will be based on the data. Before considering the limitations of data from NAPLAN testing, the measures taken in the test construction to ensure items (questions) are valid require some explanation. The NAPLAN 'Technical Summary' provides a description of the comprehensive processes undertaken in designing and administering the NAPLAN tests, as well as reporting the results (ACARA, 2011). Information on test development, test administration, marking and data capture, data analysis and reporting is provided. To assist understanding the conclusions drawn from the first phase of the research, a number of elements from the NAPLAN 'Technical Summary' need to be highlighted.

First, as mentioned previously, there are four NAPLAN tests administered to each of Years 3, 5, 7 and 9. In reading, language conventions and numeracy, approximately 40 items are in the form of multiple choice and short-answer questions. The multiple choice items include four possible answers. The short-answer items are closed-constructed response items, which are scored correct or incorrect. All multiple choice items and short-answer items are dichotomously scored, which means they are marked as either correct or as incorrect. For writing, the scripts are scored based on the same ten criteria across all four year levels.

Second, the items or questions for each test are designed and refined, over a twelve-month period, by a team of specialist writers. All items must meet nationally agreed specifications, as determined by each of the educational jurisdictions in the country. Item content, length of tests and the spread of difficulty across items are guiding parameters for test writers. The distribution of item difficulty in each of the learning areas is 20 per cent, 30 per cent, 30 per cent and 20 per cent across the four equal logit quarter scales of students' proficiency. A logit is a unit of measurement to report relative differences between candidate ability estimates and item difficulties (Hosmer, 2000). Candidate ability and item difficulty are placed on the same measurement scale using the Rasch statistical model, which was developed to analyse data and responses from large scale assessments, including those seeking to measure educational outcomes (Rasch, 1960). The Rasch model generates a criterion for the structure of the responses, rather than only providing a statistical description of the responses. This is an accepted practice, based on careful research over many years (ACARA, 2011, 2013d; Hambleton, 1990; Hosmer, 2000). The Rasch model has been used in large-scale educational testing regimes throughout the world (http://www.rasch-analysis.com/, 2013), including the OECD PISA tests and the National Assessment School Programme in the USA (ACARA, 2010; Howie & Plomp, 2005; Plomp, Howie, & McGaw, 2003; Seidel & Prenzel, 2008).

The use of Rasch models with large-scale assessments ensures that measurement comparisons across disparate groups and cohorts are valid and fair. The application of Rasch measurement models offers various options of attaining and investigating such requirements as the equivalence of populations, samples, and conditions of test administration. In addition, it requires that the developed test instruments measure with

equal precision the same construct across the education systems included in the testing regime (Van de Vijver & Tanzer, 1997).

NAPLAN test developers work with sample students to improve the quality of the items and the effectiveness of the distractors proposed for trialling. Multiple choice distractors are designed to provide diagnostic information on students' misconceptions and are used with sample students by test developers. Once the questions are finalised, they are constructed into 'trial test forms' that are sat by a scientifically chosen sample of students within Australia, to obtain critical item performance data. The performance of each question is determined by psychometric analysis of the data, conducted after the trial. Psychometric analysis is a field of study and expertise in psychological measurement, which includes educational measurement. The Rasch model is a major influence in this field and is described as a special case of item response theory (IRT) (Hambleton, 1990). This allows items to be evaluated for their capacity to discriminate high performing and low-performing students, or whether there is any bias (ACARA, 2011). The final selection of items for inclusion in tests is based on a set of quality assurances, which include psychometric data, collected through trialling, and the professional judgements from chosen experts in educational measurement, test construction and curriculum from each Australian education jurisdiction. Relevant data that informs this decision making, as reported by ACARA are presented in Figure 3.11.

Figure 3.11. Data used to select test items for NAPLAN.

3.8.4 Data analysis approaches and methodology.

ACARA uses a variety of processes to analyse the results of the NAPLAN tests before reporting any outcomes. These processes are designed to further validate the meaning of data for parents, students and teachers. Once the tests have been conducted, data is collected by the Test Administration Authorities in each educational jurisdiction and forwarded to ACARA in three rounds. With each round of data delivery, the datasets are checked for invalid codes and inconsistencies, then cleaned, recoded and rectified in preparation for analysis. Test calibration and scaling for each domain at each year level is performed, based on the Rasch model. Data cleaning and analysis for reporting use two statistical software packages. The first is the Statistical Packages for the Social Sciences (SPSS), produced by IBM and the second is the Statistical Analysis Software (SAS), produced by a company of that name. ACARA uses the Australian Council for Educational Research Rasch scaling analysis software, ConQuest (Wu, Adams and Wilson, 1997) for estimating a variety of different item response models and regression models. Analyses are undertaken in a 10-step process, as represented in Figure 3.12.

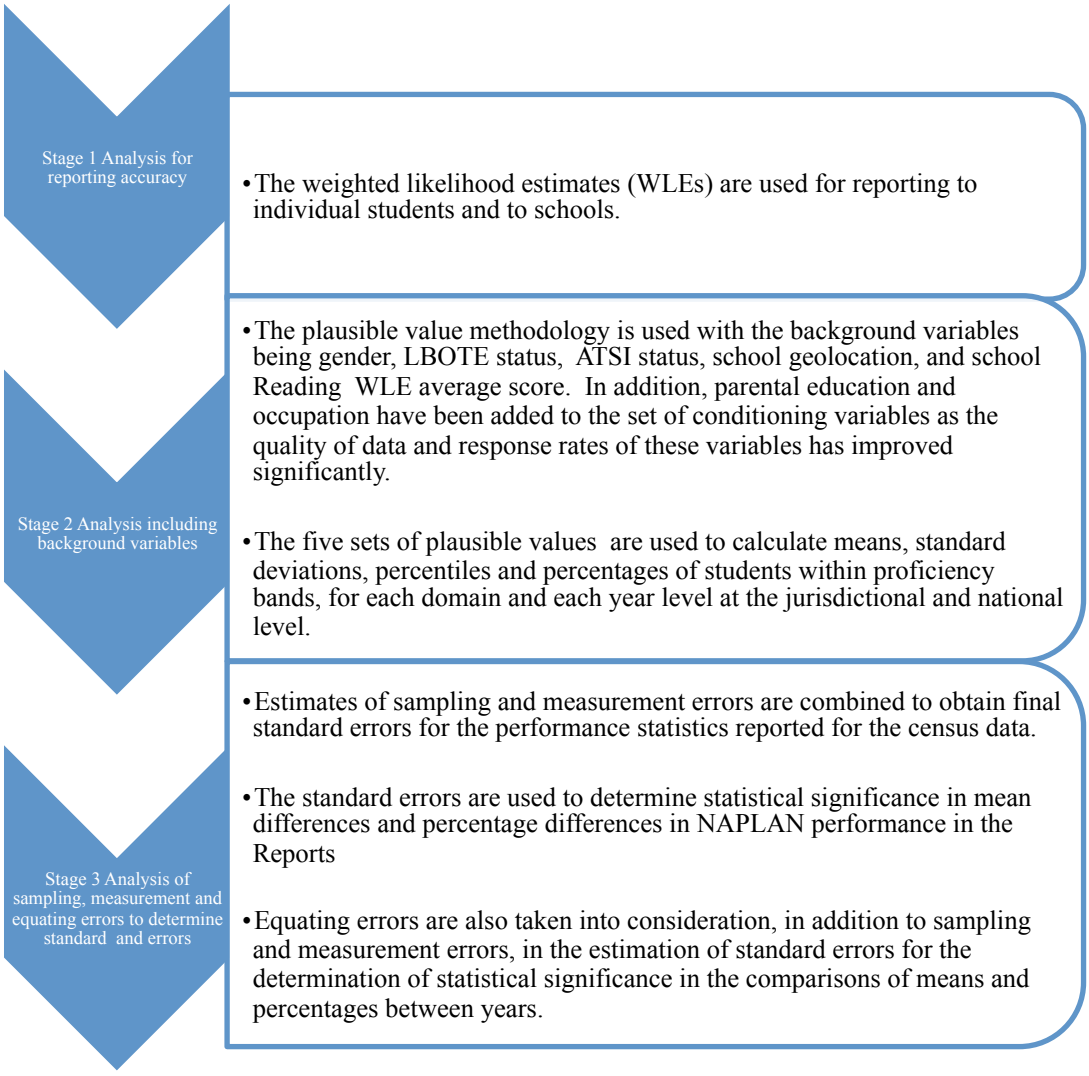
i. Item and test analyses based on cleaned and recoded calibration sample data (treating 'not reached' items as 'not administered' to obtain appropriate estimates of item difficulty). Senate weights are used for case weights
ii. Checking of item and test characteristics, distractor analysis, and DIF analysis
iii. Vertical equating based on common items in tests of adjacent year levels (Year 3and Year 5, Year 5 and Year 7, Year 7 and Year 9)
iv. Horizontal equating using the off-shore and on-shore equating data
v. Combining results of the horizontal and vertical equating to construct the NAPLAN domain scales
vi. Generation of student weighted likelihood estimates (WLE) to obtain score equivalence tables
vii. Generation of plausible values for the calibration sample. Student weights were used in the calculations of preliminary statistics.
viii. Transformation of logit scores into NAPLAN scale scores
ix. Analysis to obtain preliminary results based on the sample data
x. Calculation of equating errors

Source: ACARA, 2011.

Figure 3.12. Steps in analyses of NAPLAN tests and scores.

Rasch estimates are then applied to the test results in three stages, as depicted in Figure 3.13. As shown, this methodology is concerned with strengthening the accuracy of data for reporting. In the first stage, the weighted likelihood estimates (WLEs) used for reporting to individual students and schools are calculated. WLEs have proven statistical objectivity and are particularly appropriate in applications of IRT, for which

the parameter invariance property is important (Warm, 1989). ACARA employs IRT in the analysis of responses to NAPLAN test items in reading, language conventions and numeracy at each year level. IRT allows different weightings to be applied to different test items, depending on their difficulty in relation to the proficiency levels of the test candidates.



Source: (ACARA, 2011)

Figure 3.13. The use of Rasch estimates for reporting proficiencies in the five domains.

In the second stage of analysis, plausible value methodology is employed. Plausible values represent the range of abilities that a student might reasonably have, given the student's item responses. Plausible values methodology can be applied to most population statistics of interest. Analysts applying plausible values methodology use standard statistical tools to estimate population characteristics and calculate standard errors of estimates (Wu, 2005). As can be seen from Figure 3.13, five sets of plausible values are used in the second stage of NAPLAN results' analysis.

In the third stage, analysis of sampling, measurement and equating errors is undertaken to determine standard errors. The standard errors are reported on the *My School* website, as depicted in Figure 3.14, and require specific attention for the purposes of this research. They will be addressed in the following section.

In concluding this section, it is worth noting that in 2011, the OECD conducted an evaluation and assessment of Australian education: among the areas for review was NAPLAN. This report stated that NAPLAN:

> draws upon good expertise, in designing and reviewing the test, excellent research knowledge and technical expertise in developing the achievement scale and world-class psychometric methods in analysing and reporting the results in a meaningful way for teachers and parents. (Santiago, Donaldson, Herman & Claire, 2011, p. 58)

Such an endorsement is noteworthy, as the data from NAPLAN is considered and analysed for this research.

3.8.5 Limitations of the data, margin of error and indicative standard errors.

All tests and assessments have limitations in their ability to truly reflect an individual's proficiency or knowledge. Test conditions can vary for students, due to many factors such as their health, the physical location where the test is administered and ambient noise levels. Results from large-scale tests have limitations that need to be understood and acknowledged in making any interpretation or conclusions from the data (Linn, 1997; Schochet & Chiang, 2010; Shepard, 1997). NAPLAN results, as presented on the *My School* website, are estimates of school performance based on the students who were tested in the school. The estimates are more accurate when the number of students tested was large and when the students performed at a similar level (ACARA, 2013c). This is represented clearly in the lists of indicative standard errors, which are accessed on a secondary screen on the *My School* website, using the tab marked 'more information'. Indicative standard errors are calculated for the mean and the median. For this research, the mean scores will be analysed, as statistically they present a smaller margin for error than the standard errors for median scores (ACARA, 2013b). The indicative error is the estimated error associated with the number of students in a school's test group, where the estimate comes from regression analysis. In the case of the average, the prediction is derived by regressing the standard errors on the number of students in the test group. The standard error of the average is then modelled and the predicted values from that modelling are the indicative errors, as presented graphically and in the lists on the *My School* website (ACARA, 2012). Examples of these lists of indicative standard errors for means are provided in Figures 3.14 and 3.15.

Indicative standard errors for means

Year 3 | Year 5 | Year 7 | Year 9

Size of test group	Reading	Writing	Spelling	Grammar & Punctuation	Numeracy
200+	< ± 5.5	< ± 4.9	< ± 5.2	< ± 6.0	< ± 5.0
150	± 6.4	± 5.6	± 6.0	± 6.9	± 5.7
100	± 7.8	± 6.7	± 7.2	± 8.4	± 6.9
90	± 8.2	± 7.0	± 7.6	± 8.8	± 7.2
80	± 8.7	± 7.4	± 8.1	± 9.3	± 7.6
70	± 9.3	± 7.9	± 8.6	± 9.9	± 8.1
60	± 10.0	± 8.5	± 9.2	± 10.7	± 8.7
55	± 10.5	± 8.9	± 9.6	± 11.2	± 9.0
50	± 11.0	± 9.3	± 10.1	± 11.7	± 9.4
45	± 11.6	± 9.7	± 10.6	± 12.3	± 9.9
40	± 12.3	± 10.3	± 11.2	± 13.1	± 10.4
35	± 13.1	± 10.9	± 12.0	± 13.9	± 11.1
30	± 14.2	± 11.7	± 12.9	± 15.0	± 11.9
25	± 15.5	± 12.8	± 14.1	± 16.4	± 12.9
20	± 17.4	± 14.2	± 15.7	± 18.3	± 14.3
15	± 20.0	± 16.2	± 18.0	± 21.1	± 16.3
14	± 20.7	± 16.7	± 18.6	± 21.8	± 16.8
13	± 21.5	± 17.3	± 19.3	± 22.6	± 17.3
12	± 22.4	± 17.9	± 20.0	± 23.5	± 18.0
11	± 23.4	± 18.7	± 20.9	± 24.5	± 18.7
10	± 24.5	± 19.5	± 21.9	± 25.7	± 19.5
9	± 25.8	± 20.5	± 23.0	± 27.0	± 20.5
8	± 27.4	± 21.7	± 24.3	± 28.6	± 21.6
7	± 29.3	± 23.0	± 25.9	± 30.6	± 23.0
6	± 31.6	± 24.8	± 27.9	± 33.0	± 24.6
5	± 34.6	± 26.9	± 30.5	± 36.0	± 26.7

Source: ACARA, 2012

Figure 3.14. Indicative standard errors for means, yr 3 2012.

Standard errors reflect the accuracy of the estimated means and the degree of confidence one can have in the estimated means. In Figure 3.14, the indicative standard errors for means are presented for 2012 Year 3 in all domains. In Figure 3.15, the indicative standard errors for means are presented for 2012 Year 5 in all domains. (As

discussed in Chapter 3, for this research the estimated measure of average student gain was used to select a variety of schools. The indicative standard error for means in regard to scores in the selected schools varies from +/- 11.2 to +/- 24.5, across the domains of reading and numeracy.)

Indicative standard errors for means

Year 3 | Year 5 | Year 7 | Year 9

Size of test group	Reading	Writing	Spelling	Grammar & Punctuation	Numeracy
200+	< ± 5.2	< ± 5.0	< ± 4.8	< ± 5.6	< ± 4.9
150	± 6.0	± 5.7	± 5.5	± 6.5	± 5.5
100	± 7.3	± 7.0	± 6.7	± 7.9	± 6.6
90	± 7.7	± 7.3	± 7.1	± 8.3	± 6.9
80	± 8.1	± 7.7	± 7.5	± 8.8	± 7.3
70	± 8.7	± 8.2	± 8.0	± 9.4	± 7.7
60	± 9.3	± 8.9	± 8.6	± 10.1	± 8.3
55	± 9.7	± 9.2	± 9.0	± 10.5	± 8.6
50	± 10.2	± 9.7	± 9.4	± 11.0	± 8.9
45	± 10.8	± 10.2	± 9.9	± 11.6	± 9.4
40	± 11.4	± 10.8	± 10.5	± 12.3	± 9.9
35	± 12.2	± 11.5	± 11.2	± 13.1	± 10.5
30	± 13.1	± 12.3	± 12.1	± 14.1	± 11.2
25	± 14.3	± 13.4	± 13.2	± 15.4	± 12.1
20	± 16.0	± 15.0	± 14.8	± 17.1	± 13.4
15	± 18.4	± 17.1	± 17.0	± 19.7	± 15.1
14	± 19.0	± 17.7	± 17.6	± 20.4	± 15.6
13	± 19.7	± 18.3	± 18.2	± 21.1	± 16.1
12	± 20.5	± 19.1	± 19.0	± 22.0	± 16.7
11	± 21.4	± 19.9	± 19.8	± 22.9	± 17.3
10	± 22.4	± 20.8	± 20.7	± 24.0	± 18.1
9	± 23.6	± 21.8	± 21.8	± 25.2	± 18.9
8	± 25.0	± 23.1	± 23.1	± 26.7	± 19.9
7	± 26.7	± 24.6	± 24.7	± 28.5	± 21.1
6	± 28.8	± 26.5	± 26.6	± 30.7	± 22.6
5	± 31.5	± 28.9	± 29.1	± 33.5	± 24.5

Source: ACARA, 2012

Figure 3.15. Indicative standard errors for means, yr 5 2012.

3.8.6 The report formats.

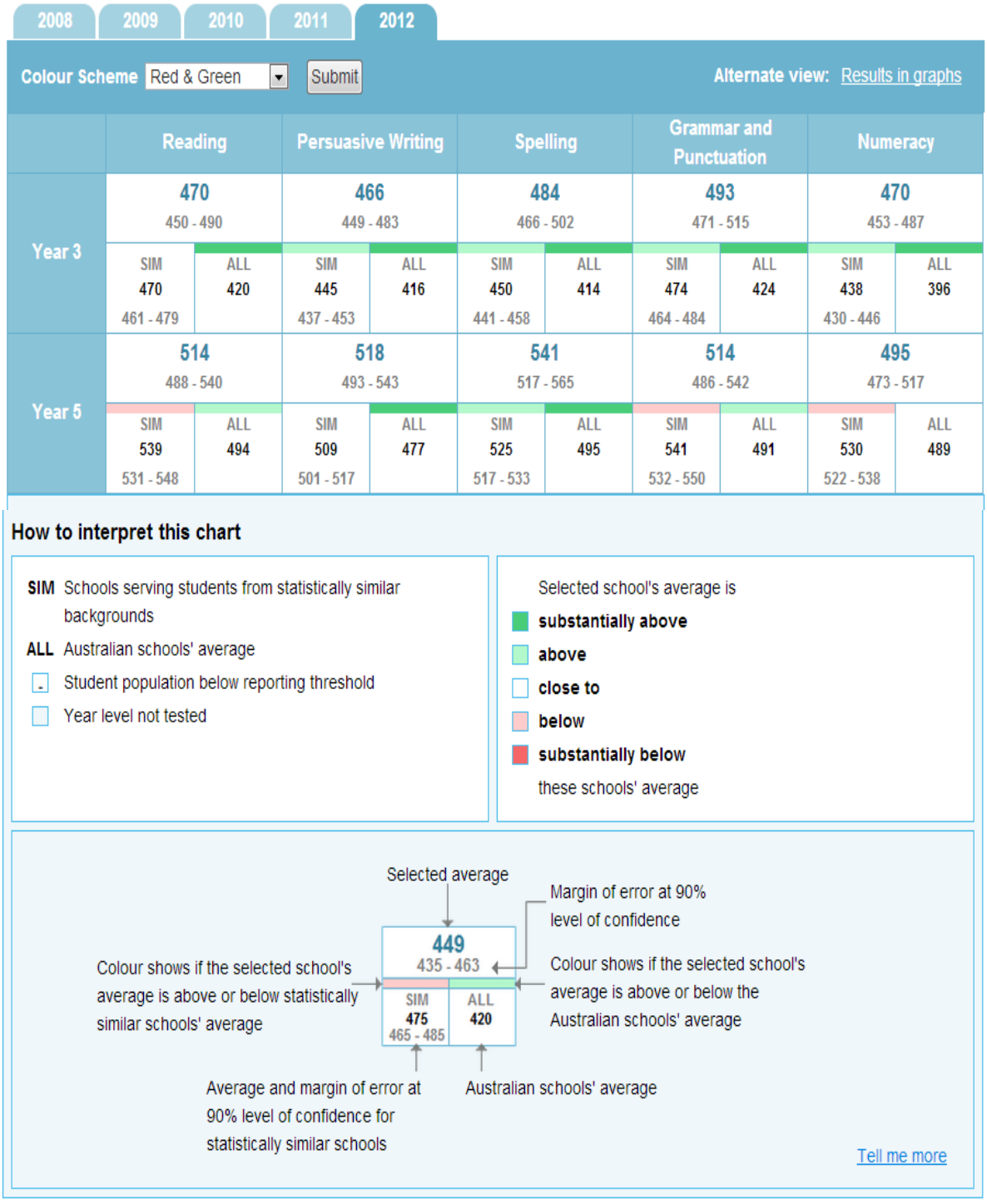
In the analysis of the *My School* website, the range of reports provided were considered for using in this research. A brief review of each report and its suitability to the research will be described. *My School* presents the NAPLAN results in three main forms: graphs, numbers and performance bands.

First, the results are presented using graphs, as illustrated earlier in Figures 3.9 and 3.10. Second, the results are reported in numbers, as shown in Figure 3.16. The average for the selected school is presented in this chart, along with the average for the schools serving statistically similar students, and the average for all schools with students at this year level in Australia. This presentation gives information for each cohort in a school that sat the NAPLAN testing in the given year across all testing domains. The colour codes, as described in the second section of the chart, depict the selected school's performance in the test at each year level in comparison to the average performance of schools serving statistically similar students and the national averages. The school's average performance and the average performance of schools serving statistically similar students are reported at 90 per cent confidence within a range of scores.

The third way in which results are reported is in performance bands, as illustrated in Figure 3.17. In this example, the selected school's performance is illustrated in percentages of students achieving in each of the six bands of proficiency for their year level in reading. The common scale for each domain is divided into ten achievement bands. For the four Year levels that were administered the tests, only six of these achievement bands are reported. The legend on the right hand side of the screen describes the colour code for comparison between the selected school, with schools

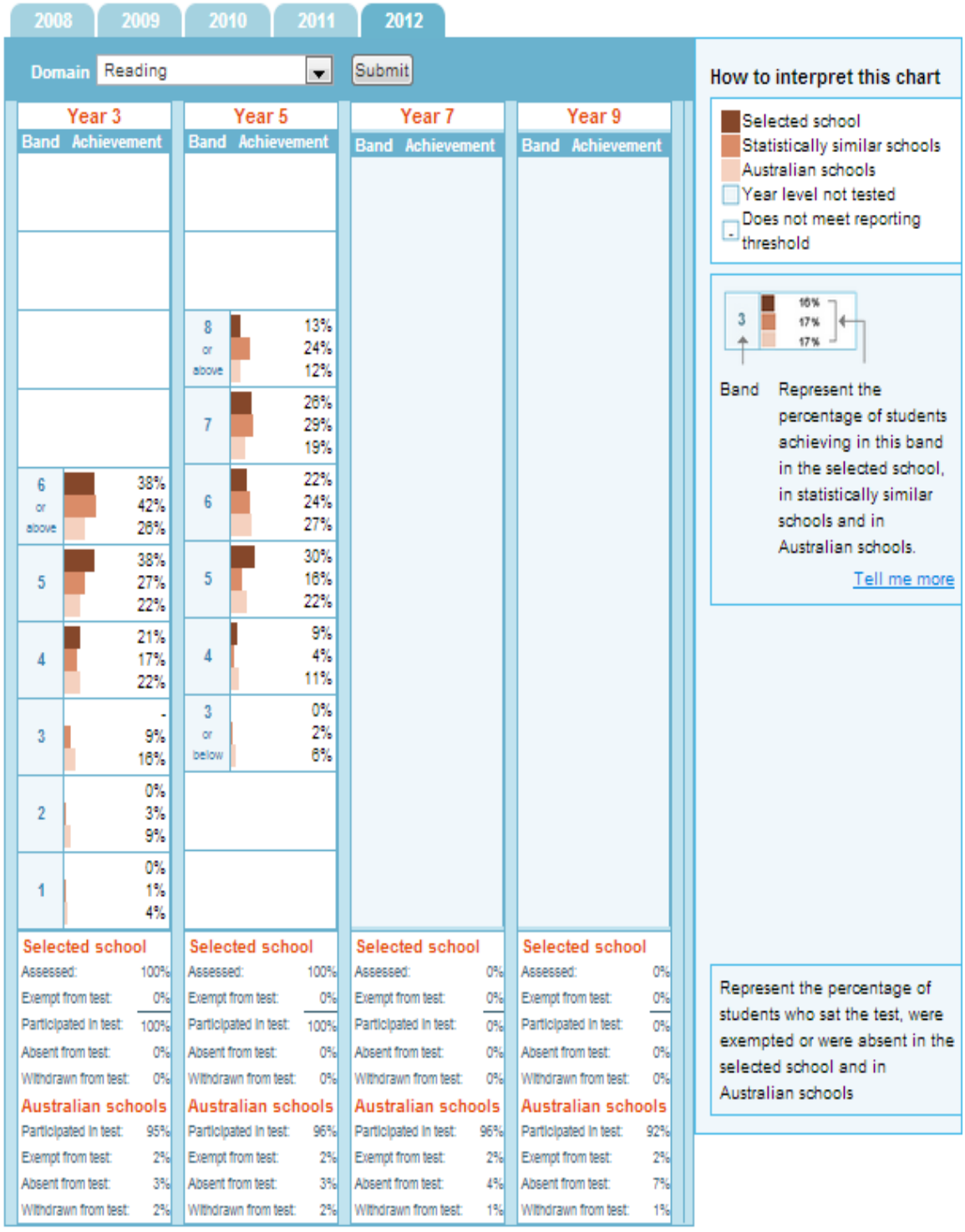
serving statistically similar students and all Australian schools. This chart provides more details for comparison on the continuum of performance for all students at the school. The same chart exists for persuasive writing, spelling, grammar and punctuation and numeracy. Details are provided at the bottom of the chart describing student participation rates at a school and national level.

The fourth way in which results are presented is by cohort and domain in comparison with the 60 schools in Australia serving statistically similar students. This analysis is presented in two formats. In Figure 3.18, the selected school is depicted by the purple shaded circle, which is outlined. The other schools serving statistically similar students are represented by variously coloured circles. As described in the legend at the bottom of the chart, the colours depict the standard deviation from the mean (average) in comparison with the mean of the selected school. The number of schools being compared is presented on the vertical axis of the graph and the average scores achieved by the schools are presented on the horizontal axis. In this chart, the average score of each school has been rounded to the nearest five points. The second format for comparison graphically with schools serving statistically similar students is illustrated in Figure 3.19. In this graph, the selected school's average performance is presented by domain and is identified on a bell curve, which presents the average achievement for all Australian schools for the chosen domain on the horizontal axis and the number of schools achieving the different average scores on the vertical axis. Schools serving statistically similar students are represented in a shaded line along the horizontal axis, and the selected school's average score is readily identifiable for comparison within that subset. The final report format presented on the *My School* website is presented in Figure 3.20.



Source: (ACARA, 2012)

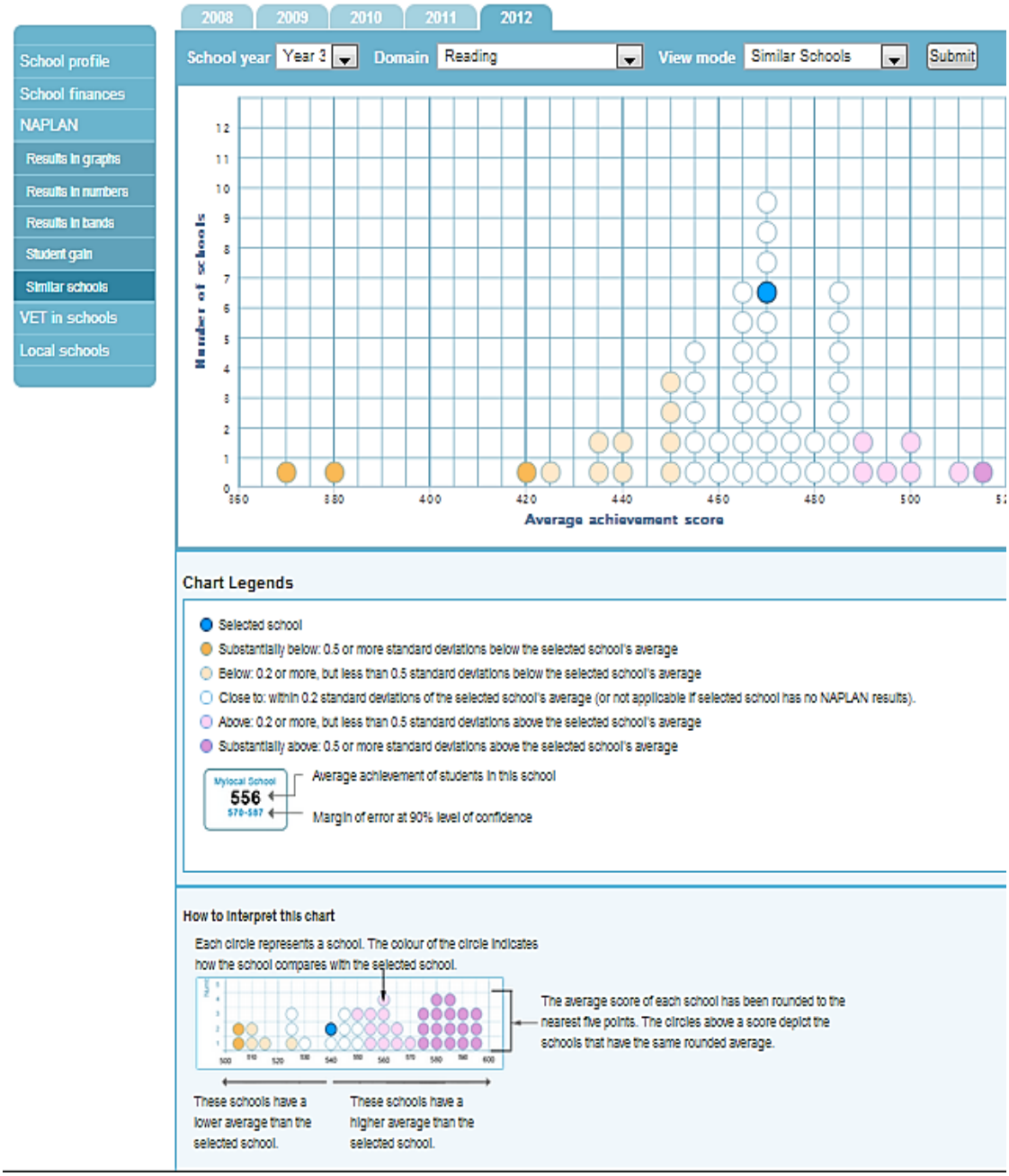
Figure 3.16. 2012 yr 3 and yr 5 results reported in numbers.



Source: (ACARA, 2012)

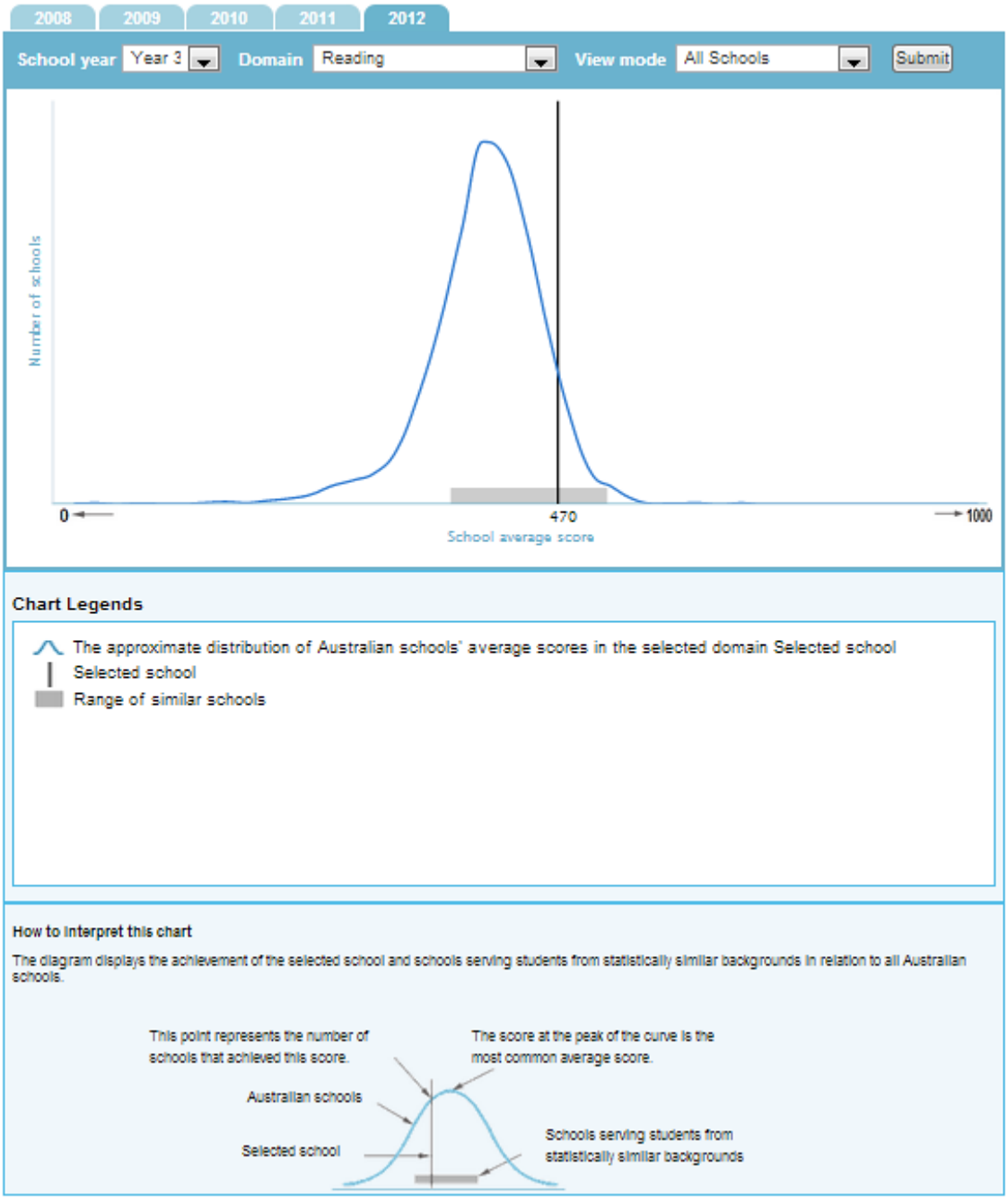
Figure 3.17. Reporting student achievement in bands.

In this graph, ACARA has presented the data with more complexity. Firstly, the graph will be described as a report format and in the next section the choice of student gain as a relevant measure for this research will be explained.



Source: ACARA, 2012

Figure 3.18. School performances in comparison with schools serving statistically similar students.



Source: ACARA, 2010

Figure 3.19. School performances, in comparison to all schools and schools serving statistically similar students.

In Figure 3.20, the graph presenting average student gain in the reading domain betweenYear 3 and Year 5 for a school is illustrated. This information is only reported for the time from 2008 until 2012 in reading and numeracy. The other domains are not presented in student gain graphs. The vertical axis shows the average scores, and the horizontal axis shows the calendar years for the cohort and the year level. The lines on the graph represent estimates of average student gain, as measured by the NAPLAN tests in the period. This report can be varied by choosing performance bands, rather than scores for the vertical axis, and median instead of mean for the averaged estimates. The averaged estimates are represented by the diamonds for the selected school, the circle for schools serving statistically similar students, the triangle for students with the same starting scores, and the squares for all Australian schools. The centre of the diamond represents the *best estimate* of the performance of students from the selected school. The 'true value' is likely to fall within the confidence levels depicted on the graph 90 per cent of the time, remembering the margin of error is presented graphically on the chart, with lines stemming above and below the circles and diamonds depicting average achievement (ACARA, 2013b). The graph also states the percentage of students who sat the NAPLAN tests at the same school. Only these matched students are included in the calculation of student gain for a school.

3.9 Choosing a Measure—Student Gain

For Phase 1 of this research, the focus for the data presented on the *My School* website were the estimates presented graphically of average student gain. For this research, *average student gain* was the basis upon which the schools were selected.

Source: ACARA, 2012.

Figure 3.20. Graph presenting estimates of average student gain.

While these estimates are not a true value, they are presented publicly by ACARA for schools, education authorities, parents and the broader Australian community, for reasonable comparisons to be made. As the average student gain measurement only involves matched students (students sitting both tests at the same school) it is the only report on the NAPLAN website that provides tracked data for a specific group of students in a cohort. All other measures reported on the *My School* website report on the average achievement of students in a specific year of testing. As with most schools throughout Australia, for schools in the inner western region, the actual identity of students within a cohort does change due to family movements and the migration to single sex Catholic schools that enrol students from Year 4 or 5 up to Year 12.

The patterns of the average student gain throughout 2008 and 2012 provide different profiles for each school in the country (ACARA, 2013b). In regard to the qualitative analysis to be undertaken in the next phase of the research, the five schools selected are at different points in regard to comparative average student gain demonstrated by schools serving statistically similar students, and students with the same starting scores.

Average student gain is a valuable measure included by ACARA (2013b) in the presentation of NAPLAN results on the *My School* website to enable parents, educators and members of the public to:

> track student performance over time and identify schools that have been successful in achieving significant progress for their students. (ACARA, 2013b, p. 1)

Comparing the average student gain for a selected school with schools serving statistically similar students based on the ICSEA, provides more realistic comparisons for analysis.

From 2012, ACARA included on the *My School* website an additional point of comparison, which was of students with the same starting score. This powerful measure allows for a selected school's average student gain between tests to be compared with the average student gain of large groups of students from across Australia, who demonstrated the same achievement level in the first test experience. It was these two points of comparison in reading and numeracy for which an analysis of all 38 schools in the inner western region was undertaken, with the aim of selecting a range of schools through purposeful sampling.

The other reports described in this chapter are informative and useful for teachers, parents and the broader community, if the focus is upon the performance of cohorts in a particular calendar year. For this research, the activity that occurs in a school before and between the administrations of tests is of interest, which is why the measure of average student gain has been chosen. The other reports on the *My School* website are important, as they provide rich information to describe the performance of students and the use of NAPLAN data in the selected schools for this research.

In choosing the measure of average student gain, it is important to note scholarly arguments associated with such an approach. Throughout the world where test-based accountability systems exist in education, measures of gain by students are often placed alongside measures of average performance at a particular point in time, which are also known as status measures (Masters, 2012). The approach of comparing student gain over time is less influenced by student background and prior level of attainment, both factors

that influence student test performance. Gain factors are considered more reliable indicators of the contributions of the school to a student's learning (Schochet & Chiang, 2012). Such measures are recognised as an improvement on status measures for comparing the contributions that schools make to student achievement, but there are still contextual influences, which are difficult to ameliorate (Masters, 2012). Measures of school effectiveness in regard to learning outcomes for students are most often based on proficiency or gain scores in a large-cohort-testing regime:

> Both methods- those based on mean proficiency and those based on gain scores - produce estimates with considerable uncertainty and some unknown bias. The logical thing to do in the presence of uncertainty is to seek more information (Raudenbush, 2004, p. 36).

In considering using the measure of average student gain in selecting schools for this research, the issues regarding acceptable error rates need to be evaluated from the perspective of purpose. Where student gain data is to be used to assess teacher performance, make reward payments to teachers or be used as data to terminate employment, obviously the acceptable error rate required would be extremely low (Schochet & Chiang, 2010). In the case of NAPLAN testing, there is as yet no such high-stakes linkage and for this research, the average student gain measure is used to select schools with different profiles of student gain, to explore their use of NAPLAN data.

3.10 Overview of the Research Design

In concluding this chapter, an overview of the research design is summarised. In describing the theoretical framework, the epistemology is pragmatism, and the research uses a mixed methods approach. A sequential explanatory research design was conceived, in which three distinct research phases were identified and characterised by quantitative and qualitative emphases, represented in Table 3.1. The first phase of the research was quantative and involved the data gathered through document analysis for 38 primary schools using the *My School website*, with an initial focus on the merits of different measures of student performance in NAPLAN. Average student gain, compared with students from statistically similar backgrounds and students with the same starting scores were the three measures chosen. The next step in the first phase was to use to choose 5 schools from the 38 for the next phase of the research. Phase 2 was qualitative, using a case study approach and conducting one on one interviews with 35 participants. In Phase 3, analysis and interpretation of all the data occurred. Each of these phases is represented in Figures 3.1 and 3.3.

Chapter 4 Presentation of Results—

Phase 1: Document Analysis

4.1 Introduction

In the previous chapter, the research methodology was outlined and the theoretical perspective explained. The type of data to be collected were described, as were the ways in which the data were to be collected. The participants were also identified and the reasons for their selection justified. This chapter presents the findings from the first phase of the research, which involved document analysis associated with NAPLAN data for the 38 primary schools in the inner western region of the Sydney Archdiocese. Through this analysis, the selection of schools for the research was determined. The source for the relevant documents was the *My School* website. The aim of this document analysis was to identify a range of schools with varying levels of average student gain, as reported in NAPLAN results. The purposes of the analysis were first to determine the most appropriate measure by which to select the schools for the research, and second to identify the actual schools for the research using the chosen measure of average student gain, as measured by ACARA and reported on the *My School* website.

4.2 Patterns of Student Gain as Reported on *My School* in Schools of the Region

The first stage of the document analysis involved investigating the student gain information, as presented on the *My School* website for each of the 38 schools in the inner western region of the Sydney Archdiocese. This involved logging onto each school individually, and accessing the average student gain section of the report. For each school, the average student gain in the domains of reading and numeracy were examined in comparison with the average student gain made by students in 60 statistically similar schools across Australia, and with all Australian students with the same starting score in the previous Year 3 NAPLAN test.

This analysis involved examining six individual graphs per school, three for reading and three for numeracy across the time between 2008 and 2012, totalling 228 graphs. Each graph presented two points of comparison, totalling 12 points of comparison for each school. With the aim of establishing patterns, each point of comparsion was coded for each school. The graphs for the chosen schools are presented in Appendix F, Figures F.1- F.30.

In Figure 4.1, the comparison between schools, based on the analysis of the graphs for reading and numeracy throughout the period, are recorded. The letter A represents an occurence when the school demonstrated an average learning gain above that of either schools serving SSSBs (presented in the columns titled SSSB) or SSSS (presented in the columns titled students SSSS). The letter B represents occurences when a school demonstrated a learning gain below that of either school serving SSSB or SSSS. The letter E represents occurences when a school demonstrated a learning gain equal to

that of either school serving SSSB or SSSS. In column 10, titled ‘2010–12 >’ in Figure 4.1, a tally for each school of occurences of average student gain above the chosen comparisons is presented in each test domain. In column 11, titled ‘total occurrences’, the total of occurrences of average student gain above the comparisons for each school are recorded for the period.

In column 12, the consistency in average student gain above the average student gain achieved by the chosen subsets is presented as a percentage. This figure was calculated by tallying the occurences when average student gain was reported *above* the comparisons in both reading and numeracy in the *same testing year*. This particular measure was purposefully included to assist in selecting schools that consistently demonstrated above average student gain in both testing domains, to provide a rich context for the interviews with school leaders and teachers in the second phase of the research.

In column 2, four school variables are listed, which provide some context for the schools of the region and influenced the decisions made in selecting schools for the research. These are purposefully broad descriptors to inform the reader, while protecting the schools’ identities.

The variables reported are change in leadership, consistently small cohorts, structural differences in class groupings and the percentage of special needs students in a school population at least two times greater than the regional average. The change of leadership factor was recorded where there had been two or more changes of personnel at the executive level of principal and assistant principal during 2008 to 2012. The small cohorts were listed where the number of same students measured for gain between Year 3 and Year 5 was less than 15 on more than one ocassion betweeen 2010 and 2012. The

structural factor was listed where schools were not staging Year 3 and 4 students together or Year 5 and 6 students together, which is the predominant pattern of organising classes in the region's schools. The high percentage of special needs students was reported for schools serving large numbers of students funded for additional support by the commonwealth government. In the schools reported, this percentage is as high as 30 per cent, in comparison with the regional average of eight per cent, and the state average of 4.5 per cent.

The first decision was to choose schools that had demonstrated consistent patterns of average student gain in reading and numeracy. Schools 24 to 38 were not considered for the research, as they had demonstrated an average student gain *below* that of the chosen sub-sets on eight or more occasions out of the 12 points of comparison. As explained in the previous chapter, the researcher is seeking to explore the use of NAPLAN data in schools consistently demonstrating a range of above average student gain in reading and numeracy during 2008 and 2012, in comparison with schools serving SSSB and SSSS.

Schools 1 to 23 were ranked according to occurences across the 12 points of comparison and sorted into five categories. The first category was the school that had achieved average student gain above the chosen comparisons on ten or more occasions. The first school listed achieved above the chosen comparisons on 11 occasions, and was chosen as School 1 for the research.

The second category was schools that had achieved average student gain above the chosen comparisons on eight occasions. Five schools fitted this profile and so the measure of consistency in pattern between reading and numeracy in a test year narrowed the choice down to Schools 5 and 6; these schools had measures of consistency at 66 per

cent. Due to the reported school variables in the context of School 5, School 6 was chosen as School 2 for the research.

The third category was schools that had achieved average student gain above the chosen comparisons on seven occasions. Three schools were in this category, and Schools 10 and 11 presented the most consistent pattern at 33 per cent. Due to the reported school variables for School 10, School 11 was chosen as School 3 for the research.

The fourth category was schools that had achieved average student gain above the chosen comparisons on six occasions. Four schools were in this category and Schools 12, 14 and 15 demonstrated the most consistent pattern at 33 per cent. Due to the reported school variables for Schools 12 and 14, School 15 was chosen as School 5 for the research.

The fifth category was schools that had achieved gain above the comparison on five occasions. Eight schools were in this category. Five schools shared the same pattern in consistency at 17 per cent. Six schools recorded school variables. School 23 was chosen as School 4 for the research.

The selection of schools for the research is presented in Figure 4.2, in graph format to illustrate the differences among the schools of the inner western region when comparing average student gain in the period. On the x axis the percentage of occurences are listed, which was calculated using the number of occurences when average student gain was above the chosen 12 points of comparison with average student gain by schools serving SSSB and SSSS. On the y axis, the 38 schools of the region are recorded.

	School variables									Total	Consistency in pattern of
	Δ L		2010	2010	2011	2011	2012	2012	2010-12	Occurrences	average student gain
	CSC		SSSB	SSSS	SSSB	SSSS	SSSB	SSSS	>	>	in Reading and Numeracy
	STR										above comparative subsets
	DSP										per year 2010-12
SCHOOL 1 1		Reading	A	A	A	A	A	A	6	**11**	83%
		Numeracy	A	A	A	A	A	E	5		
2	STR	Reading	A	A	A	A	A	E	5	**10**	66%
		Numeracy	A	E	A	A	A	A	5		
3		Reading	A	A	B	B	A	A	4	**10**	66%
		Numeracy	A	A	A	A	A	A	6		
4	CSC	Reading	B	B	A	A	A	A	4	**8**	33%
		Numeracy	A	A	A	A	B	E	4		
5	STR, CSC	Reading	A	A	A	A	E	B	4	**8**	66%
		Numeracy	A	A	A	A	B	B	4		
SCHOOL 2 6		Reading	A	A	B	A	A	B	4	**8**	66%
		Numeracy	A	A	B	A	A	B	4		
7	CSC	Reading	A	A	A	E	A	B	4	**8**	33%
		Numeracy	E	B	A	A	A	A	4		
8		Reading	A	A	B	B	A	E	3	**8**	50%
		Numeracy	A	A	E	A	A	A			
9	Δ L	Reading	A	A	A	A	B	E	4	**7**	17%
		Numeracy	B	B	A	E	A	A	3		
10	Δ L, CSC	Reading	A	E	A	B	A	A	4	**7**	33%
		Numeracy	A	B	B	A	A	B	3		
SCHOOL 3 11		Reading	B	A	B	A	A	B	3	**7**	33%
		Numeracy	B	A	A	B	A	A	4		
12	CSC	Reading	A	A	B	B	A	A	4	**6**	33%
		Numeracy	B	B	B	E	A	A	2		
13		Reading	A	A	A	E	B	B	3	**6**	17%
		Numeracy	B	B	A	A	A	B	3		
14	STR	Reading	A	B	B	B	A	E	2	**6**	33%
		Numeracy	A	A	A	E	A	E	4		
SCHOOL 5 15		Reading	B	B	B	B	A	A	2	**6**	33%
		Numeracy	B	B	A	A	A	A	4		
16	Δ L	Reading	B	B	A	E	B	B	1	**5**	17%
		Numeracy	E	E	A	A	A	A	4		
17	Δ L, STR	Reading	A	A	E	B	E	B	2	**5**	17%
		Numeracy	A	A	B	A	B	B	3		
18	Δ L, DSP	Reading	A	A	B	B	B	B	2	**5**	17%
		Numeracy	A	B	A	A	B	B	3		
19	Δ L	Reading	A	A	B	B	B	B	2	**5**	17%
		Numeracy	A	E	A	A	B	B	3		
20	Δ L	Reading	B	E	B	B	B	B	0	**5**	0%
		Numeracy	E	A	A	A	A	A	5		
21	Δ L	Reading	A	A	B	B	B	B	2	**5**	17%
		Numeracy	A	E	B	B	A	A	3		
22		Reading	E	B	E	E	A	B	1	**5**	17%
		Numeracy	E	E	A	A	A	A	4		
SCHOOL 4 23		Reading	B	A	B	B	A	B	2	**5**	17%
		Numeracy	B	B	A	A	A	B	3		

Figure 4.1. Patterns of average student gain emerging from the *My School* website analysis.

The blue lines in the graph present (as a percentage) the occurences in either reading or numeracy when the average student gain was greater than the average student gain by schools serving SSSB and SSSS.

The red line presents the consistency in average student gain in reading and numeracy reported above the comparisons in both reading and numeracy in the same testing year. The five schools chosen for this research are highlighted.

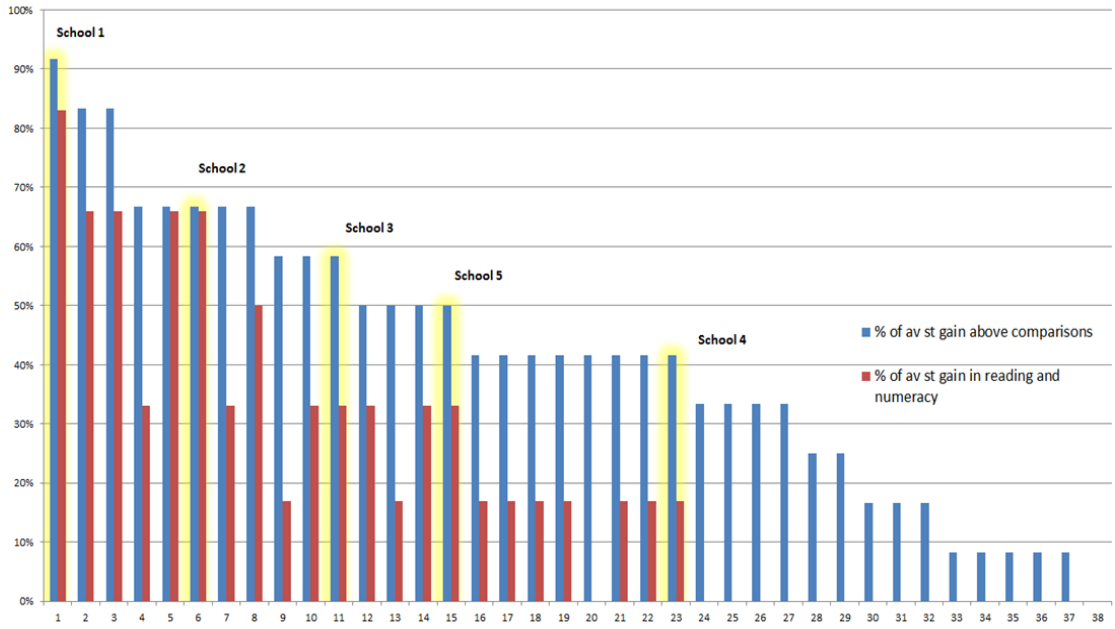


Figure 4.2. Occurences (%) of average student gain above SSSB and SSSS and consistency in average student gain above SSSB and SSSS in reading and numeracy in same year.

4.3 *My School* Website Data in Detail (see appendix G)

4.3.1 Summary of *My School* data for chosen schools.

The sample for the study presents five schools which demonstrate a range of performance, as measured by students from the selected school's average gain when compared with the average gain by schools serving SSSB and the average gain of SSSS.

A summary of the results is presented in Table 4.1 for matched students from Year 3 in the Year 5 cohorts for 2010, 2011 and 2012. In the first headed column, the difference between the selected school's average student gain in reading is reported in relation to the average gain by schools serving SSSB. In the second headed column, the difference between the selected school's average student gain in the reading domain is reported in relation to the average gain by SSSS across Australia. In the third headed column, the difference between the selected school's average student gain in numeracy is reported in relation to the average gain by schools serving SSSB. In the fourth headed column, the difference between the selected school's average student gain in numeracy is reported in relation to the average gain by SSSS across Australia.

The information presented in Table 4.1 indicates School 1 has demonstrated average student gain equal to or above that of the chosen comparisons in both domains throughout the time period. School 2 has demonstrated average student gain above that of the chosen comparisons in both domains in 2010 and 2011, and below that of the chosen comparisons in both domains in 2012. School 3 has demonstrated average student gain above that of the chosen comparisons in both domains throughout the period, with the exception of reading when compared with statistically similar schools in 2010 and 2012, and numeracy in both chosen comparisons in 2010. School 4 has demonstrated average student gain above that of the schools serving statistically similar students in the domain of reading in 2010 and 2012 and numeracy in 2011 and 2012. School 4 has also demonstrated average student gain below that of the SSSS in the domain of reading throughout the period, and in numeracy in 2010 and 2012. School 5 has demonstrated average student gain below that of all the chosen comparisons in each

domain in 2010, student gain below the chosen comparisons in the domain of reading in 2011 and student gain above that of all the chosen comparisons in both domains in 2012.

4.4 Conclusion

In this chapter, the data from the document analysis has been presented, which has informed the selection of schools for the research. With the understandings of the data, including the sources and limitations as discussed in Chapter 3, the data presented in this chapter has presented a rich picture of the context from which the selected schools were chosen, as well rich description for the chosen schools.

Table 4.1:

Selection of Schools Based upon Comparative Measures of Student Gain

	School's averaged student gain years 3–5 in **reading** compared with average student gain in **schools serving statistically similar students**.			School's averaged student gain years 3–5 in **reading** compared with average student gain by **students with the same starting score**			School's averaged student gain years 3–5 in **numeracy** compared with average student gain in **schools serving statistically similar students**			School's averaged student gain years 3–5 in **numeracy** compared with average student gain by **students with the same starting score**			Occurrence of school's student gain > to chosen comparisons throughout the time period
YEAR	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010–2012
SCHOOL 1	**+13**	**+22**	**+6**	**+14**	**+21**	**+5**	**+6**	**+13**	**+9**	**=**	**+8**	**+7**	**11 occurrences**
SCHOOL 2	**+18**	**+16**	**-7**	**+31**	**+34**	**-1**	**+15**	**+9**	**-24**	**+20**	**+21**	**-18**	**8 occurrences**
SCHOOL 3	**-29**	**+24**	**-24**	**+10**	**+20**	**-14**	**-13**	**+21**	**+19**	**-7**	**+17**	**+7**	**7 occurrences**
SCHOOL 4	**+14**	**-4**	**+21**	**-1**	**-12**	**-1**	**-7**	**+35**	**+6**	**-12**	**+14**	**-12**	**5 occurrences**
SCHOOL 5	**-9**	**-16**	**+1**	**-7**	**-14**	**+5**	**-23**	**+1**	**+9**	**-24**	**+6**	**+5**	**6 occurrences**

Chapter 5 Presentation of Results – Phase 2: Interview Data

5.1 Introduction

The presentation of the data will be made using a matrix of three factors. The first factor will be the RQs. The second factor will be the five selected sites for the research, and the third factor will be the information provided by participants. Each interview has been read, coded manually and also coded using NVivo software to enable the identification of themes in the data that will inform the five RQs. Before describing the data in detail, the next section will present again the interview questions to which the participants responded, and a brief discussion linking them to the major themes identified in the review of the scholarly literature, presented in Chapter 2.

5.2 Sub Research Questions and Interview Questions

The interview questions associated with the first RQ explore the attitudes of school leaders and teachers regarding the phenomona of centralised measurement and large-cohort standardised testing and the influence, if any, these attitudes may have on using NAPLAN data in their core work as educators. Educators' understandings of the the purpose of such testing regimes has been found to influence school leaders and teachers in the use of data produced by these tests (Alexander, 2010; Cizek, 2006; Phelps, 2005; Timperley, 2009). RQ1 was: how do school leaders and teachers perceive the influence of NAPLAN data on classroom practice for the improvement of learning?

Four interview questions were designed to invite reflection and insights from participants. Interview questions 1 and 2 were designed to primarily inform RQ 1. The

first interview question (IQ 1) is: what is your experience of the use of NAPLAN data at your school?

This was a general question, purposefully phrased to invite a breadth of responses, from which an authentic reflection on the use of the data would be discussed. This would then provide a sense of the emphases and purposes school leaders and teachers were placing on the data and its use.

The second interview question sought to focus on any possible change in the practice of leadership or teaching since the advent of NAPLAN testing and the data it produced. The second interview question (IQ 2) (which contains parts a and b) is:

a. what changes, if any, have you implemented in your teaching (leadership) since NAPLAN data was available? (and); b. why?

The third question was in nine parts and attempted to explore in some detail the influence, if any, on aspects of school life. This question was also designed to inform RQ 2. The third question (IQ 3) was: I would like you to think about the way in which the analysis of NAPLAN data has influenced (if at all) a number of elements of school life. What effect, if any, has the use of NAPLAN data had upon:

i. Student experiences of learning;
ii. Student outcomes;
iii. School review and improvement planning;
iv. Teacher goal setting;
v. Teacher performance;
vi. Teacher accountability;
vii. Leader goal setting;
viii. Leader performance;

ix. Leader accountability?

The final question (IQ 4), designed to primarily explore RQ 1 was:in what ways, if any, did the presentation of NAPLAN data on the public My School website influence your teaching (leadership) at the school?

RQ 2 asked: what role does professional dialogue play in the utilisation of NAPLAN data to improve student learning?

The nature of professional dialogue among school leaders and teachers has been identified in the scholarly literature as influential in improving outcomes for students, (Crowther, Ferguson & Hann, 2009; Fullan, 2009; Hargreaves & Shirley, 2009; Hattie, 2008; Leithwood et al., 2006; Levin et al., 2008). By exploring the nature of professional dialogue, participants were invited to consider and reflect on their lived professional experience across a range of realities. Three interview questions were designed to invite reflection and comment on the nature of conversations, if any, about NAPLAN data at the school. They were:

- IQ 3 (see above)
- IQ 4. In what ways, if any, do teachers speak about NAPLAN data at this school?
- IQ 5. As a result of conversations about NAPLAN data what changes, if any, would you identify to: a. teacher practice ? b. student learning ?

RQ 3 asked: how is NAPLAN data integrated with other forms of school assessment for improvement of student learning?

Managing assessment data in schools to ensure it is organised, interrogated and integrated in a way that provides coherent feedback for teachers and students is a major

challenge facing educators. Teachers with students engaged in large-cohort centralised testing regimes such as NAPLAN face even more complexities in managing the wealth of available data. The ability of school leaders and teachers to meet this challenge has been identified in the scholarly literature as influential in teachers improving student outcomes (Becta, 2009; Bernhardt, 2009; DeCourcy, 2005; Earle, 2005; Love, 2009; Pettit, 2009; Wasson, 2009). Two interview questions were designed to explore with participants ways, if any, that NAPLAN data has been integrated with other forms of school assessment records and assessment practices. They were:

- IQ 6. In what ways has NAPLAN data been integrated with other forms of school assessment?
- IQ 7. What has been the influence, if any, of NAPLAN data on the nature of school-based assessments?

RQ 4 asked: what influence has the use of NAPLAN data had on student feedback for the purposes of improving student learning?

The quality and regularity of teacher feedback to students about their learning has been identified in the scholarly literature as one of the strongest influences on teacher effectiveness (Hattie, 2003; Rowe, 2006; Rowe, 2004). The relationship between large-cohort testing data and feedback to students has been an issue widely discussed in the scholarly literature, and within the Australian context with NAPLAN (Axworthy, 2005; Fullan, 2009; Hargreaves & Shirley, 2009; Hattie, 2005; Kirkup et al., 2005; Love, 2009; Marzano, 2004). Two interview questions were designed to discover whether NAPLAN data had an influence on the nature of feedback by teachers to students and parents about their learning. Both questions were in two parts:

- IQ 8a. What influence, if any, has NAPLAN data had on the nature of feedback to students about their learning?
- b.To what extent has the SMART data analysis package influenced your feedback to students? Please explain.
- IQ 9a. How do teachers at this school integrate data from NAPLAN with school-based assessments and their professional judgement?
- b. What has been the influence of NAPLAN data, if any, on the nature of feedback to parents about their child's learning?

RQ 5 asked: what elements in the use of NAPLAN data contribute to the improvement of learning as measured by growth in NAPLAN performance?

Two interview questions were designed to seek participant's professional judgement on the use of NAPLAN data and its influence, if any, on learning growth for students:

- IQ 10. What would you consider to be the three main characteristics of your school's use of NAPLAN data? What influence, if any, have these characteristics had on learning growth for students?
- IQ 11. What evidence would you cite to justify your answer to the previous question?

5.3 Initial Coding of Interview Data

The first interrogation of the interview data was conducted to discover if the descriptive responses provided by participants to the stimulus of the interview questions had similarities with the themes identified by the literature review. Participant responses (totalling 1059) to the 12 interview questions were coded manually and stored in an NVivo Project data base. The results of this analysis are presented below in Figure 5.1. In this figure, the four themes are presented and the number of references within each theme are recorded for each school. The percentage of references made by participants from all five schools to a theme is recorded in the columns titled '% theme'. The percentage of references made by participants from a school to a theme is recorded in the columns titled '% school'. References were coded at this stage within the broad context of these themes. As a result, references were of a general and descriptive nature, between three and 50 lines in length.

INITIAL CODING: INTERVIEW REFERENCES TO THEMES FROM THE LITERATURE													
	Theme 1			Theme 2			Theme 3			Theme 4			
Schools	Leadership	%	%	Mentoring, monitoring and	%	%	Teacher	%	%	Assessment	%	%	Totals
		THEME	SCHOOL	Professional Development	THEME	SCHOOL	Practice	THEME	SCHOOL		THEME	SCHOOL	
1	27	14	12	75	26	31	47	19	17	68	21	23	**217**
2	21	11	13	46	16	28	45	18	27	52	16	32	**164**
3	50	25	23	54	21	24	49	20	22	68	21	31	**221**
4	48	24	21	62	21	27	49	20	21	70	22	31	**229**
5	53	27	23	55	19	24	54	22	24	66	20	29	**228**
Totals	**199**	**19**		**292**	**28**		**244**	**23**		**324**	**31**		**1059**

Figure 5.1. Results of initial coding.

From the total references coded, 19 per cent referred to leadership, 28 per cent referred to mentoring, monitoring and professional development, 23 per cent to teacher practice and 31 per cent to assessment. This analysis of reference frequency is aligned with the word count according to theme, which was sourced from NVivo. For Theme 4, the number of words coded were 49, 627, for Theme 2 34, 721, Theme 3 24, 544 and Theme 1 21,300.

Thirty-one per cent of all references by School 1 participants were regarding the influence of NAPLAN data within the context of mentoring, monitoring and professional development. Twenty-three per cent of all references by School 1 participants were regarding the influence of NAPLAN data in the context of assessment. Seventeen per cent of all references were to the influence of NAPLAN data regarding the context of teacher practice and 12 per cent were made in the context of leadership.

Thirty-two per cent of all references by School 2 participants were about the influence of NAPLAN data within the context of assessment. Twenty-eight per cent of references were to mentoring, monitoring and professional development. Twenty-seven per cent of all references were about the influence of NAPLAN data in the context of teacher practice and 13 per cent were made in the context of leadership.

Thirty-one per cent of all references by School 3 participants were about the influence of NAPLAN data within the context of assessment. Twenty-four per cent of references were about mentoring, monitoring and professional development. Twenty-three per cent of all references were about the influence of NAPLAN data in the context of leadership and 22 per cent were made in the context of teacher practice.

Thirty-one per cent of all references by School 4 participants were about the influence of NAPLAN data within the context of assessment. Twenty-seven per cent of

references were about mentoring, monitoring and professional development. Twenty-one per cent of all references were on the influence of NAPLAN data in the context of leadership and 21 per cent were made in the context of teacher practice.

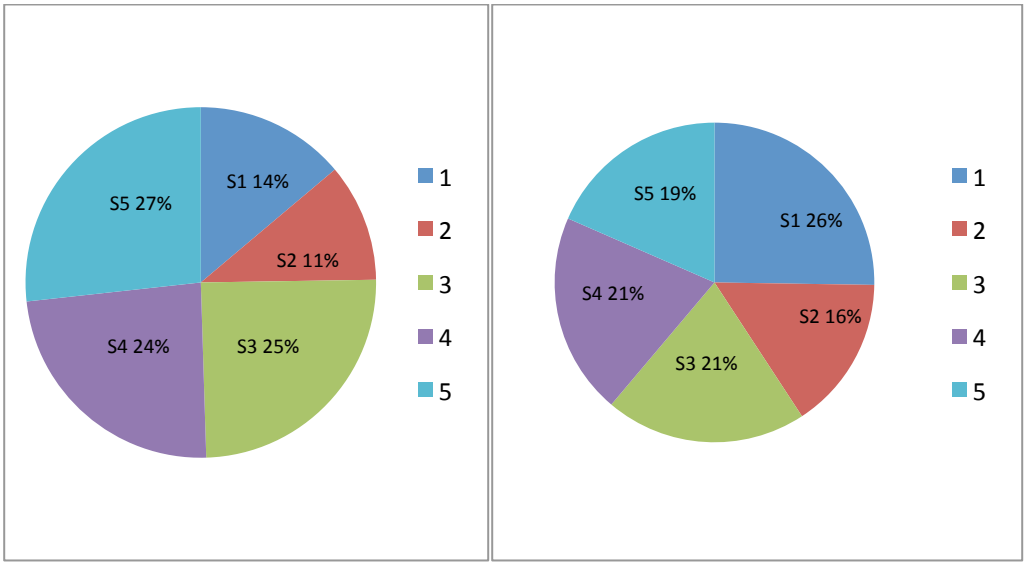
Twenty-nine per cent of all references by School 4 participants were about the influence of NAPLAN data within the context of assessment. Twenty-four per cent of references were about mentoring, monitoring and professional development. Twenty-four per cent of all references were about the influence of NAPLAN data in the context of teacher practice and 23 per cent were made in the context of leadership.

The frequency of reference to the themes from the literature is presented graphically in Figure 5.2. The schools are presented by number and the percentage of responses within the context of each theme.

This analysis of the data in relation to the four major themes from the literature provided an overview that indicated the data was robust and suitable for further analysis in regards to the RQs derived from the literature review themes. An explanation of this next stage of analysis will be presented in the next section.

Theme 1: Leadership

Theme 2: Mentoring Monitoring and Professional Development



Theme 3: Teacher Practice.

Theme 4: Assessment

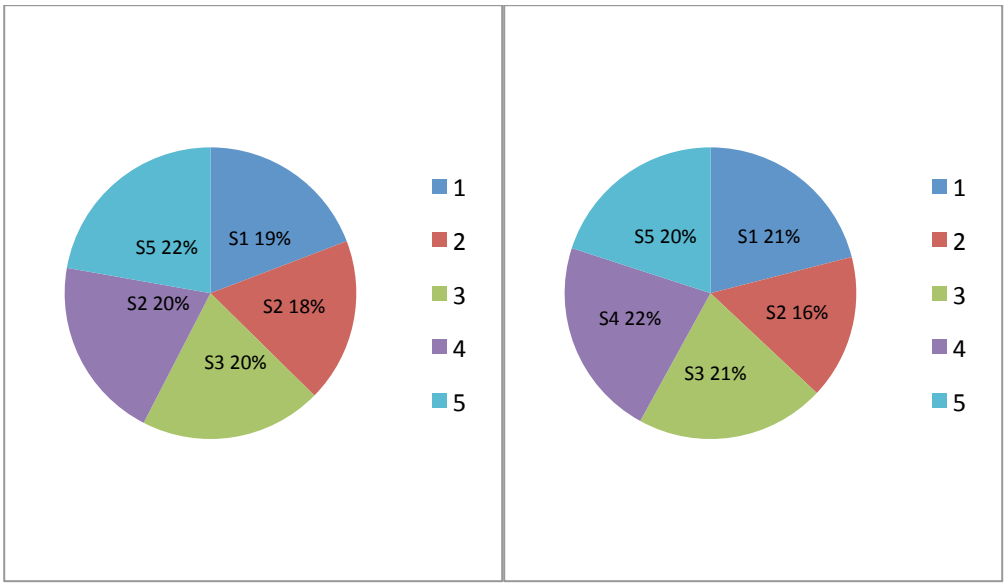


Figure 5.2. Frequency of participant references to the themes from the literature.

5.4 Coding According to Major and Minor Themes of the RQs

Having established that the data were describing themes similar to those from the literature, the next step was to read the data again and code participant responses more specifically to the RQs that emerged from the literature review, as discussed earlier in this chapter (and in detail in Chapter 2). This second analysis of the data was again undertaken manually to ensure the meaning of rich descriptions in context by participants was captured. As this analysis progressed, it became evident that within each RQ a major theme, associated minor themes, and in some cases components of minor themes, emerged. The major themes, minor themes and their components in the context of each of the RQs are presented in Figure 5.3. This figure provides an overview of the five major themes, 16 minor themes and 26 components drawn from the raw data included in references from the participant interviews. A lone component emerged, which has been named NAPLANENZA, and will be discussed later in this chapter.

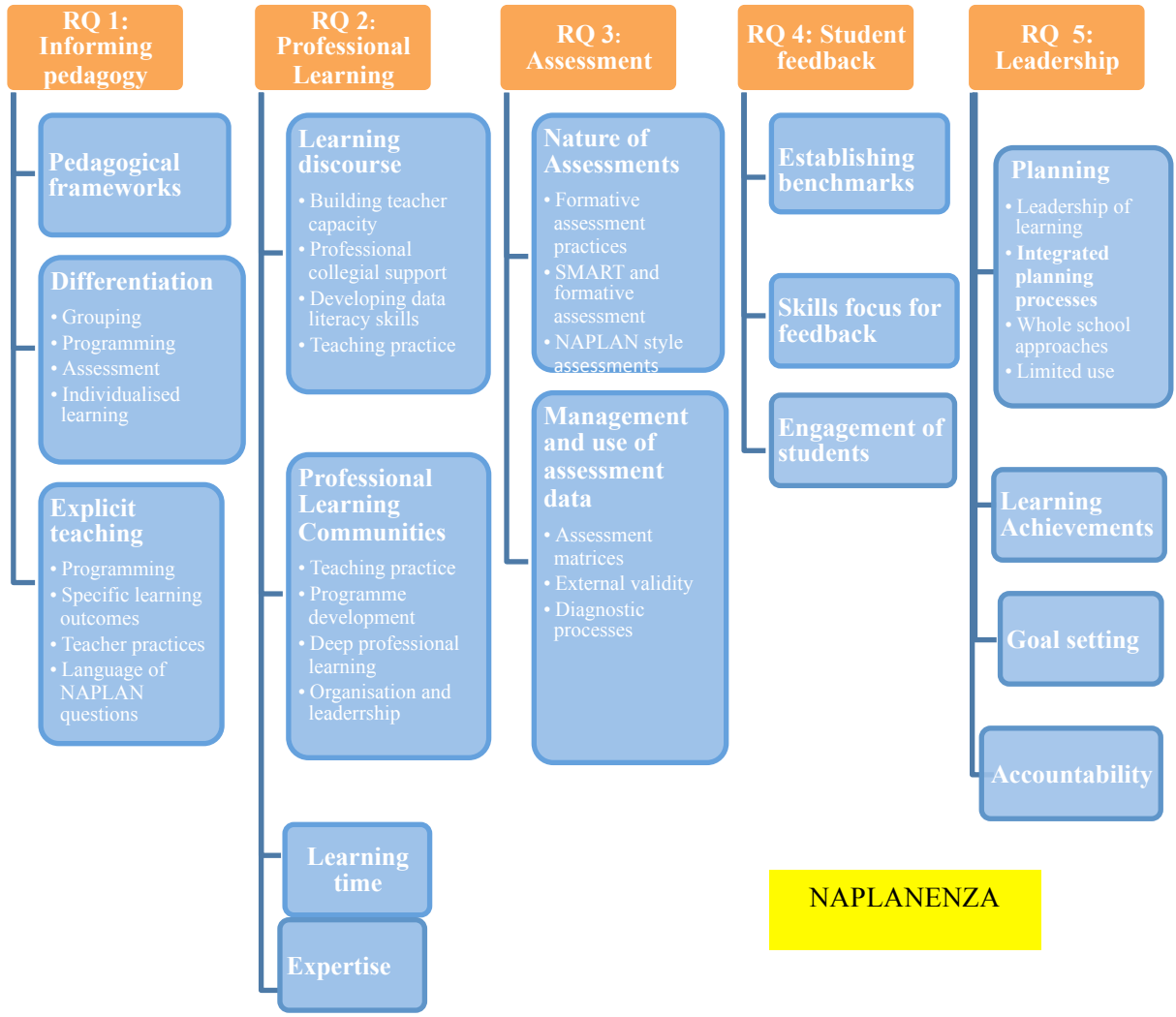


Figure 5.3. Overview of major themes, minor themes and components.

In Figure 5.4, the number of references emerging from the data have been presented, coded and counted according to the themes that emerged from the analysis.

In this stage of analysis, 2,439 references were coded, which included 161, 258 words. The total number of words from the transcripts of participant interviews totalled 152, 986, which indicates some words and phrases were coded within more than one major or minor theme.

	Research Question 1				Research Question 2				
	Major theme: Informing Pedagogy				Major Theme: Professional Learning				
	Minor themes			Major	Minor themes				Major
	Pedagogical		Explicit	Theme	Learning				Theme
Participants	frameworks	Differentiation	teaching	Totals	Discourse	PLCs	Time	Expertise	Totals
S1	14	48	123	**185**	70	52	20	19	**161**
S2	9	17	83	**109**	75	38	28	1	**142**
S3	10	82	66	**158**	83	40	17	18	**158**
S4	4	27	65	**96**	46	18	16	23	**103**
S5	11	38	74	**123**	64	33	12	24	**133**
Totals	48	212	411	**671**	338	181	93	85	**697**

	Research Question 3				Research Question 4			
	Major theme: Assessment				Major Theme: Student Feedback			
	Minor Themes		Major		Minor themes			Major
	Nature of	Management	Theme		Establishing	Skills focus	Engagement	Theme
Participants	Assessments	& use	Totals		Benchmarks	for feedback	of students	Totals
S1	36	22	**58**		22	19	31	**72**
S2	21	13	**34**		9	33	29	**71**
S3	17	54	**71**		4	23	14	**41**
S4	30	26	**56**		3	14	9	**26**
S5	29	35	**64**		2	13	11	**26**
Totals	133	150	**283**		40	102	94	**236**

	Research Question 5					
	Major Theme: Leadership					
	Minor themes				Major	
		Learning	Goal		Theme	
Participants	Planning	Achievement	setting	Accountability	Totals	NAPLANENZA
S1	40	34	14	20	**108**	10
S2	37	16	12	30	**95**	16
S3	83	18	20	35	**156**	14
S4	56	11	11	26	**104**	10
S5	46	12	10	21	**89**	2
Totals	262	91	67	132	**552**	52

Figure 5.4. References to the major themes and minor themes of the RQs.

The average words coded for a participant was 62 per cent, and ranged from seven per cent to 79 per cent. Participants with lower percentages of coding were at times repetitive, or provided lengthy anecdotes to illustrate a point. Key elements of many anecdotes were coded, but not the full descriptive background, which sometimes included contextual detail important to the participant but did not illuminate the research.

Within seven of the minor themes, components emerged that will be discussed in this chapter. To assist in demonstrating the focus of discussions, frequency counts have been made for each minor theme, and where necessary for the components that will be presented in this chapter within the detailed description of the data.

Breaking down the 2,439 coded comments across the five RQs, 671 references were coded which informed RQ 1; 697 references were coded which informed RQ 2; 283 references were coded which informed RQ 3; 236 references were coded which informed RQ 4; and 552 references were coded which informed RQ 5.

In the following five sections, the data for each RQ will be presented and discussed within the context of the major and minor themes that emerged in three stages. Firstly, the frequency of references by participants to each major theme which informed the RQ will be presented. Secondly, the frequency of reference by participants to all the themes informing the RQ will be presented by school. Thirdly, quotations will be included with discussion describing data for each theme and minor theme. Participant references include the participant's School, (recorded as S1, S2, S3, S4, or S5), their position as Principal, Assistant Principal or Teacher (P, AP or T) and the relevant numbers from the lines from the transcript of the interview (L).

5.5 Major and Minor Themes for RQ 1

The major theme to emerge from the data in relation to RQ 1 concerned consistent references to the influence of NAPLAN data in informing pedagogy. With 671 references coded in association with this theme, the major theme of informing pedagogy was established. Participants from School 1 made 28 per cent of all references to using NAPLAN data for informing pedagogy; 24 per cent School 3, 18 per cent School 5, 16 per cent School 2, and 14 per cent School 4. Within this major theme, the minor themes of pedagogical frameworks, differentiation and explicit teaching were identified. The distribution of reference frequency by participants in each school is presented in Figure 5.5. Each of the minor themes will be discussed in this section.

5.5.1 RQ 1 minor theme 1: pedagogical frameworks.

As presented in Figure 5.5, seventeen participants made 48 references to using NAPLAN data in the context of pedagogical frameworks. This represented seven per cent of all references by participants to the major theme of informing pedagogy. Nine per cent of references by School 5 participants to informing pedagogy were associated with pedagogical frameworks, eight per cent School 1, eight per cent School 2, six per cent School 3, and four per cent School 4. Twenty-nine per cent of references made about the use of NAPLAN data within the broader context of pedagogical frameworks were by participants from School 1, 23 per cent School 5, 21 per cent School 3, 19 per cent School 2 and eight per cent School 4.

	Research Question 1											
	Major theme: Informing Pedagogy										Minor Theme Reference Totals per School	% Minor Theme References per School
	Minor themes											
	Pedagogical frameworks			Differentiation			Explicit teaching					
Participants		% Minor	%		% Minor	%		% Minor	%	Total		
	References	theme	School	References	theme	School	References	theme	School	School		
S1	14	29	8	48	23	26	123	30	66	100%	185	28%
S2	9	19	8	17	8	16	83	20	76	100%	109	16%
S3	10	21	6	82	39	52	66	16	42	100%	158	24%
S4	4	8	4	27	13	28	65	16	68	100%	96	14%
S5	11	23	9	38	18	31	74	18	60	100%	123	18%
Totals	48	100%		212	100%		411	100%			671	100%
%	7%			32%			61%					

Figure 5.5. References to the minor themes for RQ 1.

Participants referred to the pedagogical frameworks in describing their school's context for the use of NAPLAN and other data. The five pedagogical frameworks mentioned were: the University of Southern Queensland's IDEAS project (Crowther, Ferguson & Hann, 2009); Language Features of Text Types (LFTT) (Canavan, 2004); Understanding by Design (UBD) (Wiggins & McTighe, 2005); Inquiry-based learning (Savery, 2006); and Soundwaves (Firefly, 2014).

Participants from Schools 1, 2, and 3 reported their school's involvement with IDEAS for three to four years in the previous five-year period. Participants from Schools 1, 2 and 3 highlighted IDEAS as an essential foundation in building professional understanding, which included the constructive use of NAPLAN data within the school's vision for learning.

The importance of NAPLAN data within the context of the IDEAS project emerged in two main ways. Firstly, as indicated in this first quotation, as a reliable source of baseline student performance data that provided information for professional reflection, evaluation and then action:

> When I first came they had the IDEAS project which allowed for that innovative design and I think the teachers at this particular school were really ready to explore innovative designs. I think they were in a mindset where they were ready to take that on and through the school review I think we could actually plan for changes to happen. I think they were very open to PLCs, to authentic tasks, to open ended questioning through assessment, assessment to inform your programming, to collect your baseline data including NAPLAN, to inform your groupings and so on (S1AP L146-157).

Secondly, the IDEAS project built professional capacity among teachers, which enabled them to use the NAPLAN data constructively, to inform their pedagogy. The principal from School 3 described the interplay between the IDEAS framework and NAPLAN data in the quotation below:

> The IDEAS process, if I think back, probably should have taken us two years. We weren't ready after two years. It really did unearth teaching and learning. People were doing professional reading, attending workshops; it was high on the agenda. Then with the NAPLAN data, we were skilled in good pedagogy through the IDEAS programme. That was one way for us to look at holistic education, what underpins a true learning environment. I think it did really support it. A big tick for that one (S3P L206-215).

School 4 participated in the IDEAS project, but participants did not comment upon it during the interviews.

Participants reported a Sydney Catholic Education Office teaching approach to literacy, 'Language Features of Text Type' (LFTT) (Canavan, 2004) as influencing school-wide pedagogical approaches to teaching and assessing writing. In Schools 1 and 2, the criteria-based approach to assessing student development in literacy, which underpins LFTT, was described as being used with close reference to NAPLAN data. School 4 participants reported LFTT as a literacy focus, without associating it or the data with NAPLAN data.

Participants from Schools 1, 2, 3 and 4 made specific reference to UBD. School 1 described the integration of the approach in the most detail, with reference to NAPLAN data as a source of information to better clarify the intended learning

outcomes from a teaching programme, and the associated assessment strategies. Participants from Schools 2, 3 and 4 made only brief mentions of UBD. The following statements by participants from School 1 illustrate the use of NAPLAN data within the UBD approach:

> We collect a lot of data as well because we're using the UBD theory which is great and the children tend to change in different environments as well, so students rotate, they have a taste of different teachers and the way they teach, the environment changes for them because they move from different classrooms (S1T34B L274-279).
>
> From the NAPLAN data, we then designed our assessment tasks and it's actually using the UBD model as well, working backwards (S1AP L46-48).

Principles of enquiry-based learning (also called 'early learning') were a pedagogical framework referred to by participants from Schools 2, 3, 4 and 5. School 2 participants described the development of teaching programmes within an enquiry-based context being closely aligned with competencies as assessed and reported through NAPLAN data, as described in the following quote from a Year 5/6 teacher from School 2:

> We do early learning which carries out, even to – last year we changed our maths programme so it was very much discovery learning and it was all – every task they did was—I don't want to say it was exactly like a NAPLAN question but it could be related back to one and they were all very open to discovery and hands on with projects and things like that. But they all could come back and be related to a closed NAPLAN topic (S2T56a L108-116).

Participants from School 3 reported that NAPLAN analysis identified problem solving in mathematics as a concern and enquiry-based learning was chosen as an approach that could strengthen this skill among students (S3 T34b PF1). School 5's principal considered understanding NAPLAN data assisted in using the enquiry-based learning principles in designing learning experiences.

School 5 participants spoke of a school-wide approach to literacy using Soundwaves (Firefly, 2014), a commercially available web-based software program based on the synthetic phonics approach (Johnston & Watson, 2005). School 5 instituted this approach in 2013. The choice of this program by the school leaders was based on a range of data, including NAPLAN. The ongoing success of the program with individual students is externally referenced using NAPLAN data.

In summarising responses across the sites, participants from Schools 1, 2, and 3 spoke most comprehensively about the benefits of a pedagogical framework within which to analyse and use NAPLAN data. The IDEAS process was the identified framework for these three schools. New leaders in Schools 4 and 5 reflected on the absence of a conscious commitment to any pedagogical framework from prior leaders, which was reflected in the teacher statements from those schools.

5.5.2 RQ 1 minor theme 2: differentiation.

The use of NAPLAN data to assist teachers in differentiating learning for students emerged as a minor theme. Thirty-five participants from all schools made 212 references to using NAPLAN data in some way to differentiate learning experiences for students. As illustrated in Figure 5.5, this represented 32 per cent of all references by participants to the major theme of informing pedagogy. Fifty-two per cent of references

by School 3 participants to informing pedagogy were associated with differentiation, 31 per cent School 5, 28 per cent School 4, 26 per cent School 1 and 16 per cent School 2.

As indicated in Figure 5.6, the distribution of reference frequency to the influence of NAPLAN data on differentiation was 39 per cent from School 3, 23 per cent School 1, 18 per cent School 5, 13 per cent School 4, and eight per cent School 2. Four distinct components were identified from the descriptions participants gave of their use of NAPLAN data within a broad definition of differentiation. These components are presented in Figure 5.6. References to the components of the minor theme of differentiation emerged as: grouping students according to proficiency in different learning areas; teaching programme design; individualised learning experiences; and modifying assessment.

	Research Question 1														
	Major theme: Informing Pedagogoy													Reference	%
	Minor theme: Differentiation														of
	Grouping			Programming			Assessment			Individualised Learning				Reference	References
Participants			%			%			%			%	Total	Totals	per
	References	%	School	References	%	School	References	%	School	References	%	School	School	per School	School
S1	22	35%	46%	6	15	13%	2	25	4%	18	18	38%	100%	48	23%
S2	1	2%	6%	4	10	24%	1	13	6%	11	11	65%	100%	17	8%
S3	23	37%	28%	22	54	27%	3	38	4%	34	34	41%	100%	82	39%
S4	11	17%	41%	3	37	11%	0	0	0%	13	13	48%	100%	27	13%
S5	6	10%	16%	6	15	16%	2	25	5%	24	24	63%	100%	38	18%
Totals	63	100%		41	100%		8	100%		100	100%			212	100%
%	30%			19%			4%			47%					

Figure 5.6. References to the components of the minor theme of differentiation.

5.5.2.1 Component 1 of differentiation: grouping.

Sixty-three references were made to using NAPLAN data to assist in grouping students based on proficiency in different areas of learning, as measured by NAPLAN and other assessment data. This represented 30 per cent of all references to the minor theme of differentiation. Forty-six per cent of references by participants from School 1 to differentiation were associated with the use of NAPLAN data for student grouping, 41 per cent School 4, 28 per cent School 3, 16 per cent School 5 and six per cent School 2.

Thirty-seven per cent of references to the use of NAPLAN data in grouping students were made by participants from School 3, 35 per cent School 1, 17 per cent School 4, ten per cent School 5 and two per cent School 2.

School 1 school leader and teacher participants identified differentiation by grouping of students as an initial action undertaken, following analysis of NAPLAN results. These groups were created using standardised tests at the beginning of the academic year. A key feature of these groupings in Stages 2 and 3 was the flexibility they had in being able to move students between groups, depending on progress and development of proficiencies in learning. The discussions and observations were consistent among participants from School 1:

> So number one, of course, is to collate our base line data, so gather our data, analyse it and then differentiate our groups, formulate our programme including authentic tasks (S1AP L34-37).

School 1 participants also reported the use of NAPLAN data to differentiate students into ability groups:

> we also used it across Stage 2, Years 3 and 4, to streamline children into ability groups to support their needs (S1FAP L11-13).

A Stage 2 teacher at School 1 identified the benefits that differentiation based upon NAPLAN data had made for the students in Years 3 and 4, where the students were divided into three groups, and described the effect on teaching practice:

> Another change that we have made is that we have noticed in Stage 2 that the needs, because it is a stage, it is so varied and we found that the best way to meet the children's needs we've streamed the groups so we have the support group, the middle and the top – I find that's been really helpful in terms of changing our practice (S1T34a L174-179).

A Stage 2 teacher from School 1 reported positive outcomes for students stemming from the differentiated groups:

> I could definitely see a shift in the children. They really like maths because they're in groups which are working at their level (S1T34a L181-182).

Participant teachers from School 2 noted their perception of the benefits of differentiated groups within classes based upon NAPLAN data:

> I really want to see if I can push these kids, I really want to see if I can take that, mostly either [the] bottom or middle or top group and extend them to show what they really are (S2T56a L165-168).

> The next step is it's usually gone through as a staff and that affects our actual class programming and then under that, at teacher level, it comes into how you need to individualise your programme after that. So it hits the three levels (S2T56b L289-293).

> I've been able to go through and actually almost individualise programmes so I can actually look at individuals and see, they need this and these people don't need it. The teaching, I might have six different lessons almost going within the one lesson, particularly maths, maths and English are the two, well that's NAPLAN I suppose. I'm thinking the writing and the maths in particular (S2T56b L25-32).

School 3 participants commented comprehensively on the role NAPLAN data played in the differentiating of learning at the school. Participants reported that the structure of School 3's learning was re-conceptualised after analysis of the first iteration of NAPLAN data in 2008. School leader participants, as well as teacher participants, were consistent in their appraisal of the central role NAPLAN data played in bringing about structural changes. These changes involved creating three distinct stages of learning within the school, named 'Junior Primary', 'Middle Primary' and 'Senior Primary'. Kindergarten to Year 2 was Junior Primary, Years 3 and 4 Middle Primary and Years 5 and 6 Senior Primary. Students within these learning stages were grouped according to proficiency in every subject across the curriculum. A timetable was established and teachers specialised in specific areas of the curriculum where they had particular expertise or interest. The creation of the timetable established set times for learning in specific subjects for all students within a stage. This measure allowed students to be grouped and for the groups to be fluid and flexible, with students changing as regularly as every five weeks, and teachers also being able to change, at the discretion of school leaders, across subject areas. The following statements have been

selected to provide examples of the richness of the description by participants and their perception of the influence NAPLAN data played:

> The Year 3 and the Year 5 teachers had to look at the data, they had to bring all their assessments and they had to group and regroup and they had to show their data and they had to show the NAPLAN data and where the needs were and they had to totally analysis all of that in order to put the groups together (S3AP L397-402).

> I think that's the biggest thing that we look at when it comes to kids achieving and it's through NAPLAN, as well as other things, but it's mainly NAPLAN that we look at—ok right we've got weaknesses here, here and here, how do we strengthen them and that obviously gets those targets, gets those kids and also it's really great for kids that are doing well, they get that extra—we've had multi-aged classes and enrichment classes and that—kids start to feel, hey I'm in this class. It kind of, for them, it's a great feeling of achievement and those kids that are getting that extra help, once we get the data and have the little groups, those kids kind of go, wow, you see it now, the group, the special ed group that I've got in the class, as soon as they get something, you go, wow, well done. It's like this, wow, I've done something great, cause they know that they're not, they don't achieve as well, but when they get that feeling, wow I did something, wow I got a compliment—you just see it overtake their whole face—it's really good (S3T34a L75-94).

School 4 participants reported limited use of NAPLAN data as a source for the differentiation of student groups and learning activities. Grouping was reported as

happening within classes in reading, and across a year level for maths and English. Participants reported focus that is more recent on these models of differentiation in 2012 and 2013:

> I guess we've used NAPLAN data at a real basic level to group students because we've got data in English and maths so we've used NAPLAN data and other base lines to group the students (S4T56a L232-234).

Participants from School 5 reported a limited amount of differentiation occurring in the school and a desire to develop this further. Differentiating class groupings was a practice in mathematics and English in Years 3 and 4. School leaders observed the need for more consistent implementation across the school. One school leader noted the reluctance of teachers to move into new teaching structures, while naming this as a challenge intended to address. Another school leader noted the development by some teachers in their desire and capacity to differentiate learning within their classroom, based upon student assessment data including NAPLAN:

> Things like more grouping of kids, more use of—I know in middle school where they are across the grade for English and maths and things like that. There still has to be a shift there, there still needs to be a shift in that area (S5AP L217-222).

In summary, when comparing responses across the sites, participants from Schools 1, 2 and 3 reported NAPLAN data as an important influence in grouping students across year levels and within individual classes. School 4 participants spoke generally of the limited influence of NAPLAN data for grouping students. School 5 participants described the use of NAPLAN data for student grouping as limited.

5.5.2.2 Component 2 of differentiation: programming.

Forty-one references were made to using NAPLAN data to assist in differentiating the teaching programme. This represented 19 per cent of all references to the minor theme of differentiation. Twenty-seven per cent of references by participants from School 3 to differentiation were associated with programming, 24 per cent School 2, 16 per cent School 5, 13 per cent School 1, and 11 per cent School 4.

Fifty-four per cent of references made about the use of NAPLAN data to assist in differentiating the teaching programme were by participants from School 3, thirty-seven per cent School 4, fifteen per cent School 1, fifteen per cent School 5, and ten per cent School 2.

School 1 participants reported comprehensively on the use of NAPLAN data in designing authentic learning tasks. This terminology refers to meaningful, often problem-based learning experiences in real life contexts, which in this case were designed to assist groups of students and individual students in mastering specific skills and demonstrating competence in areas where proficiency was lacking (Hung, Tan, & Koh, 2006; Nicaise, Gibney, & Crane, 2000). The following statement from the assistant principal from School 1 captures the experiences described by participants from that school in differentiating teaching programmes:

> The NAPLAN data, as I said before, pinpointed specific areas. From that we designed our programme with authentic tasks and these authentic tasks, which we've used from the NAPLAN data, has given us that broader experience. It's created more open ended tasks so moving away from the paper and pen to be actually exploring that environment. We've moved away from structured whole class into differentiated groupings (S1AP L90-98).

The principal from School 2 provided a rich description of the purposeful use of NAPLAN data in a comprehensive manner to support differentiation of teaching and learning programmes at the school:

> NAPLAN highlighted the need for continued whole staff development on differentiation of the curriculum. The obvious need highlighted by NAPLAN led to the use of use of Bloom's Taxonomy and the Williams Model to plan programmes that allowed students to work at different levels with a variety of open ended tasks. There was also a greater focus on designing tasks to promote higher order thinking skills. The data showed that ESL (English as a Second Language) learners needed to be identified and professional development on the needs of these students and the adjustments that needed to be made and considered in programming, teaching and assessing these students was undertaken with support from the CEO ESL advisor. The school's literacy focus was sharpened using NAPLAN and other data to enable teachers to go beyond generalist approaches and drill further into specific skill areas at the sentence level to include text cohesion, vocabulary and specific grammatical features. Professional development included ESL in the classroom, whole staff analysis of texts to create whole staff understandings of what quality work samples included (S2P notes L46-66).

School 3 participants commented most frequently on the use of NAPLAN data for differentiating programmes. References were made to the boy's education programme initiated after NAPLAN results demonstrated that boys in Years 3 and 5 were not performing as well as girls in reading and writing. In addition, they were

generally well below expectation from a regional and state perspective. Participants from School 3 reported the appointment of an experienced and effective teacher to lead a boys' education programme centred on a series of special projects, the first of which was the refurbishment of a vintage Mini Minor motor vehicle. The following statement from a Stage 2 teacher from School 3 describes this innovative learning experience, initiated after needs were identified through NAPLAN analysis:

> I know that a few years ago we had a really, really, really poor Year 5, the Year 5 boys—their reading was really low and it's thinking outside the box so—they've gone out there, they've made up the whole boys' ed, they appointed a boys' ed coordinator, they got resources, it's all about the mini and that became a stimulus for reading and writing (S3T34a L132-139).

Initially, the project was for boys in Years 5 and 6. It was then expanded to boys in K–6. Other projects in which the students were involved included the building of a cubby house and a chapel. All projects were aimed at providing a practical and motivational stimulus for the boys' reading and writing. School 3 participants highlighted improvements in the boys' reading and writing results in NAPLAN since the advent of the boys' education programme, and emphasised the ongoing importance of NAPLAN data as a measure for success.

School 4 participants made only two references to the use of NAPLAN data for programme differentiation. The limited use of NAPLAN data for this purpose is well illustrated by a School 4 teacher:

> So I think having the blanket of using the NAPLAN data over the top of the programmes has really guided the teachers and then assisted in the student

> growth as well. But that's a very new thing. There wasn't a focus last year but this year I think everyone is starting to get on board to a whole-school approach around data and how we're using data to inform teaching (S4T56a L440-446).

School 5 participants referred to differentiation of the teaching programme on five occasions, in a non-specific manner. One participant highlighted an area of learning in which NAPLAN had influenced programming.

In summary, comparing responses across the sites, School 3 participants spoke most comprehensively of the influence of NAPLAN on differentiating the teaching programme, highlighted by rich descriptions of the boys' education Mini Minor project. The references by leader participants from Schools 1 and 2 were comprehensive and described the central place of NAPLAN data in programme differentiation in their schools. Schools 4 and school 5 participants spoke in general terms, with little specificity of the influence of NAPLAN data on differentiating programmes.

5.5.2.3 Component 3 of differentiation: assessment.

There were eight references made by participants from all schools regarding the use of NAPLAN data to assist in differentiating assessment tasks, which represented four per cent of all references to the minor theme of differentiation.

5.5.2.4 Component 4 of differentiation: individualised learning.

One hundred references were made about the use of NAPLAN data to assist in constructing learning experiences to meet the individual learning needs of students. This represented 47 per cent of all references made to the minor theme of differentiation. Sixty-five per cent of references by participants from School 2 to differentiation were

associated with constructing individualised learning experiences, 63 per cent School 5, 48 per cent School 4, 41 per cent School 3, and 38 per cent School 1.

Thirty-four per cent of references made aobut the use of NAPLAN data to assist in constructing learning experiences to meet the individual learning needs of students were by participants from School 3, 24 per cent School 5, 18 per cent School 1, 13 per cent School 4, and 11 per cent School 2.

School 1 participants reported the use of NAPLAN data in creating a learning environment in which student progress and understanding specifically and dynamically influenced the nature of the learning programme. A more individualised competency-based approach to teaching the students was fostered with the help of NAPLAN data, as described by the former assistant principal from School 1:

> But it's also to focus in on the students and their needs and so therefore differentiation for the students has become really important so it's not just we're all working on measurement so let's all focus on measurement, that's not how we use it anymore, it's like really individualised grouping—it makes us look more closely at what children knew and what they didn't need to be retaught as well as where they needed support (S1FAP L43-49).

Similarly, School 2 participants spoke of the influence NAPLAN data had on raising awareness among teachers of individual differences and learning needs of students. School 2 participants reflected on the pedagogical change from a broad cohort-based content-driven approach, to a skills-based individual student competency approach, as indicated by the following comment from School 2's principal:

> this discussion has helped us to understand that it's not about getting the programme done so that you're delivering content. It's about delivering what each student actually needs (S2P L376-378).

Significant among participants from School 2 was their reflection that NAPLAN data had influenced awareness concerning the identification of ESL learners. Many students were Phase 2 ESL learners, whose English was proficient, but whose higher order language skills needed further development. Participants reported the role NAPLAN data played in helping them realise there was an underlying need to be addressed with these students that was not immediately apparent in the usual assessment undertaken by the school. As the principal summarised:

> ESL learners needed to be identified—professional development on the needs of these students and adjustments that needed to be made and considered in programming, teaching and assessing these students (Support from ESL advisor) (S2P notes L57-60).

NAPLAN data also influenced School 2 in identifying areas for teacher development with gifted and talented students. The advent of NAPLAN data was reported as critical in creating greater awareness among teachers and leaders at School 2 regarding the importance of student performance data to help identify and address individual student learning needs. NAPLAN was seen as a precise initiator to seek other forms of external assessment. The first area reported was the need for greater precision in identifying gifted students using recognised external instruments, and the second was professional development for teachers in their work with gifted and talented students.

This change in emphasis is reflected in the following comment from the principal, which list the initiatives:

> Professional development (to support teachers) of gifted and talented students—selection of instruments that would be used to identify gifted students—AGAT tests for all students, Ravens, Slosson test for selected students (S2P L48-50).

The data provided by participants from School 3 was consistent and comprehensive, with a sustained narrative describing the influence of NAPLAN data on individualised learning. A central feature of the school staff area was a student data board. Every student in the school appeared on the data board twice, once for reading and once for numeracy. There were 360 students in the school, each placed according to their proficiency level in that domain of learning. The names were colour coded to their Stage and Year levels, so students demonstrating proficiency beyond their age cohort were readily identified, as were students who were demonstrating proficiency below that of their age cohort. Teachers moved the names constantly, according to ongoing assessments. The data board covered two large walls in the staff common room and was a centrepiece for conversation and teacher focus. The school principal described the purpose of the data board as a symbolic and practical method of putting the faces of the students in the forefront of teacher's minds, to remind them that all the figures and grades are a reflection of a young person at the beginning of their learning journey. Focus on the individual, complemented by the use of data, differentiated the learners for the teachers and leaders at School 3.

School 4 participants provided rich descriptions of the use of NAPLAN data and individualised learning. Between 2008 and 2011, the use of NAPLAN data evolved as a

broad sorting tool used to identify students ‘at risk’, needing support in reading, writing and numeracy. Based on thresholds established by the Commonwealth government, School 4 had 100 students classified as at risk from a student population of 260. The scale of the challenge facing the leaders and teachers led to approaches that were largely cohort-based, rather than individualised. From 2012, the focus changed and NAPLAN data became incorporated as a source (among others) to build teacher knowledge of the individual learner. This change is reflected in the following comment from the School 4 assistant principal:

> We’ve made a real focus on getting to know your students, knowing them inside out and knowing their interests, knowing their hobbies, knowing their cultural background, knowing their families and we spend a lot of time in term one in that process and used a whole lot of new things that we hadn’t tried before. But that’s meant the teachers now have a different depth of knowledge about their students and NAPLAN data is just one more bit. So I think that cultural change, where you’re really focusing on the student and where they’re coming from and what they bring to the table is enriching what’s happening in classrooms (S4AP L605-614).

School 5 leaders observed the need for teachers and leaders to develop better understandings of each student as individual learners, and saw better use of data, including NAPLAN, as assisting in achieving this goal. Leaders and teachers in School 5 also named developing capacity to differentiate more effectively as a goal. The principal’s reflection below captures the reported challenges still to be met in this component of differentiation among teachers at School 5:

> we're beginning to know the kids as individuals rather than as a cohort, although we'll be measuring cohorts, I understand that, but I'm starting to say, well within that cohort, that's really good for that kid or that's what we wanted or that's a bit disappointing, what are we doing for this particular child in our classroom programme with differentiation (S5P L222-228).

In summary, comparing responses from across the sites, participants from Schools 1, 2 and 3 provided rich descriptions of the influence of NAPLAN data on creating individualised learning opportunities, while
Schools 4 and 5 reported a growing role for NAPLAN data in this regard.

5.5.3 RQ 1 minor theme 3: explicit teaching.

The term 'explicit teaching' describes this minor theme, as it captures the meaning participants gave to their use of data in this context, using a range of descriptive words. Participants reported using NAPLAN data to inform their pedagogy with references to explicit teaching practices on 411 occasions. This represented 61 per cent of all references by participants to the major theme of informing pedagogy, as reported in Figure 5.5.

As presented in Figure 5.7, thirty per cent of references to the influence of NAPLAN data on explicit teaching were by participants from School 1, 20 per cent School 2, 20 per cent School 5, 16 per cent School 3, and 16 per cent School 4. Participants described similar features concerning explicit teaching, yet the reported regularity and intensity varied. To capture the reporting by participants across the schools, four minor components emerged, presented in Figure 5.7. The four components

that emerged were: programming, specific learning outcomes, teacher practices, and the language of NAPLAN questions.

Research Question 1														
	Major theme: Informing Pedagogy													
	Minor theme: Explicit Teaching												Minor Theme Ref Totals per Sch	% Minor Theme Ref per Sch
	Programming	% Sub Minor theme	% Sch	Specific Learning Outcomes	% Sub Minor theme	% Sch	Teacher Practices	% Sub Minor theme	% Sch	Language of NAPLAN questions	% Sub Minor theme	% Sch		
S1	38	23%	31%	33	29%	27%	13	29%	10%	39	41%	32%	123	30%
S2	39	24%	47%	21	18%	25%	9	18%	11%	14	15%	17%	83	20%
S3	37	23%	56%	15	13%	23%	7	13%	11%	7	7%	11%	66	16%
S4	23	14%	35%	22	19%	34%	6	19%	9%	14	15%	22%	65	16%
S5	25	15%	34%	23	20%	31%	6	20%	8%	20	21%	27%	74	18%
Tots	162	100%		114	100%		41	100%		94	100%		411	100%
%	39%			28%			10%			23%				

Figure 5.7. References to the components of the minor theme of explicit teaching.

5.5.3.1 Component 1 of explicit teaching: programming.

Participants from all schools made 162 references about the use of NAPLAN data to inform their teaching programmes to strengthen identified areas of learning, where student proficiency had been below the expected standard. This represented 39 per cent of all references to the minor theme of explicit teaching. Fifty-six per cent of references by participants from School 3 to explicit teaching were associated with programming, 47 per cent School 2, 35 per cent School 4, 34 per cent School 5 and 31 per cent School 1.

While participants across all sites reported the use of the data throughout the interviews in this manner, school leaders and teacher participants from Schools 1, 2 and 3 reported this feature most consistently, and in detail. Participants from Schools 4 and 5 spoke about this feature and noted an increase in focus in the past six to 12 months, as well as intended future development.

School 1 participants spoke of using NAPLAN data to identify programme areas within mathematics and reading in which students were performing poorly. This focus was initially at a cohort level, but grew to include all stages within the primary school. In particular, trends were identified that then specifically influenced programming across all year levels, described consistently by participants as being explicit in their desired outcomes. School 1 participants reported the increased growth in ownership that this created among teachers for the ongoing iterations of NAPLAN data.

The influence of NAPLAN data on programming for explicit teaching was discussed by School 2 participants as helping to develop a diagnostic approach to teaching the students. This is captured in the following comment from the School 2 principal:

> We needed to move away from what we called 'tick a box teaching', where we merely delivered a set curriculum, to a more diagnostic approach to teaching where teachers were able to plan, modify and adjust programs to meet the needs of the students. We needed to make teaching the intellectual activity that it is required to be, and move away from a factory- product based approach to teaching (S2P notes L27-32).

School 3 participants likewise were specific in their description of the influence of NAPLAN data on explicit teaching practices, designed in their dynamic teaching programmes. This is expressed in the following comment from a Stage 2 teacher:

> NAPLAN data, when we get it back, is so valuable, it's great, we sit down at staff meetings, we get the strengths, we get the weaknesses and from there we're able to develop our programmes and take those kids further and target those kids that obviously need that extra help that we weren't too aware of (S3T34a L14-19).

School 4 participants reported the role of NAPLAN data in programming for explicit teaching as desirable, but not yet embedded in their practice.

Participant responses indicated a high level of trust in NAPLAN data to inform programming, in conjunction with other forms of data. It was clear that NAPLAN data was a consistent, reliable and fundamental reference point for the five schools in the

design of their teaching programmes. In comparing the responses across sites, collaborative programming using NAPLAN data as a key reference point was clearly established practice in Schools 1, 2 and 3. School 4 and School 5 participants reported collaborative programming practices as an area for further development that was previously limited.

5.5.3.2 Component 2 of explicit teaching: specific learning outcomes.

Participants made 114 references describing the use of NAPLAN data to assist in making student learning outcomes specific. This represented 28 per cent of references to the minor theme of explicit teaching. Thirty-four per cent of references by participants from School 4 to explicit teaching were associated with specific learning outcomes, 31 per cent School 5, 27 per cent School 1, 25 per cent School 2, and 23 per cent School 3.

Thirty-three per cent of references made about the use of NAPLAN data to inform the creation of specific learning outcomes were by participants from School 1, twenty-three per cent School 5, twenty-two per cent School 4, twenty-one per cent School 2, and fifteen per cent School 3.

Central to the practice of specifying learning outcomes for students has been the use of the SMART analysis software package, which is provided by the NSW state government through the Catholic Education Commission. Since 2010, SMART has been available to individual teachers through a web-based platform accessed by a personal identification number (PIN). Participants reported that this development greatly increased easy access to NAPLAN data and hence teacher familiarity with it. A participant from School 1 described an example of the use of SMART to inform explicit learning outcomes:

> then I think we've realised that SMART data can provide us with much more information. For example, the activities that are linked to each of the sub-areas in mathematics, in measurement, so you click onto that and you're looking at length and you've got activities and how that has changed last year is that we're actually using those activities to formulate our authentic tasks within the classroom. So that's how we've developed along. Also, by allocating our coordinators of each area of English and mathematics to really analyse the data to pinpoint exactly what we really need to look at, rather than the whole gamut (S1AP L71-81).

Participants from all five schools reported an influence in this regard. Associated with this practice are the principles of UBD (Wiggins & McTighe, 2005), which was described in the minor theme of pedagogical frameworks. A noted benefit of the approach was a more effective use of class time, as described by a participant from School 2:

> because we're not teaching things that the children already know—it opened up time for you to teach the areas that they didn't have a clear understanding in (S2P L381-383).

NAPLAN tests and the resultant data analyses have reportedly refined teacher language regarding discussing learning outcomes among themselves, and with students in the learning domains of reading, writing and numeracy. Analysis of the data has highlighted the need for students to have a better understanding of key terms associated with key concepts. Teachers identified the need for greater discipline and consistency by

themselves in using terminology to strengthen student understanding. Such sentiments are captured in the following two comments from participants from School 1:

> Also giving names to different strategies so that the children are aware of the processes they're going through. This type of question is say a comprehension question. This question is an inferential question because it's not in the text (S1 T56a L166-169).

> You've originally highlighted the areas of need and I think the outcomes have become more refined and focused for teachers and students, so they know exactly where they're heading and what they have to do (S1FAP L66-70).

In School 2, one teacher commented on this element of using NAPLAN data in a negative sense, suggesting such specificity was detrimental to a child's learning and encouragement of creativity. A School 3 leader made this same observation. A School 2 leader observed that some teachers had (in their judgement) concentrated excessively on a highly specific approach to learning outcomes based upon NAPLAN and other data. As a result, students were losing meaning, as the contexts for learning certain skills were being overlooked. This led to disengagement by the students. A School 4 leader observed the tension between specificity and more general approaches when utilising NAPLAN and other assessment data to inform teaching programmes and learning outcomes.

While noting these comments, which represent another perspective, all 35 participants described the benefits of NAPLAN data in assisting teachers to create explicit learning outcomes for students in some way. School 1 provided the most

comprehensive and rich descriptions in the use of NAPLAN data to inform specific learning outcomes.

5.5.3.3 Component 3 of explicit teaching: teacher practices.

Participants made 41 references to the use of NAPLAN data in association with teacher practices. This represented ten per cent of all references to the minor theme of explicit teaching. Eleven per cent of references by participants from School 2 to explicit teaching were associated with teaching practices, 11 per cent School 3, ten per cent School 1, nine per cent School 4, and eight per cent School 5.

Twenty-nine per cent of references made about the use of NAPLAN data with teacher practice were by participants from School 1, 20 per cent School 5, 19 per cent School 4, 18 per cent School 2, and 13 per cent School 3.

School 1 participants reported that the use of NAPLAN data had been an initiating factor in shaping the practioner enquiry approach (Dana & Yendol-Hoppey, 2014) to pedagogy in their school (S1 AP ET 15,16. S1 P ET 6). School 1 participants also reported reflective practice, recorded in a log kept by all teachers, and the role NAPLAN data had played in its creation (S1 AP 3.9). School 2 participants reported NAPLAN data also influenced participants to reflect on their teaching practice, as reported by a teacher from School 1 and leader from School 2. This use of NAPLAN data is described by two participants:

> It influenced my teaching where I—like I said to you last year, as far as last year, I had to become accountable for it or the two years ago and thought, I have to be accountable because this is my doing. I've become more reflective and I do an evaluation after each day and say to myself, what lessons can I validate—that have validity there (S1T34b L475-480).

> Teacher practice I think NAPLAN, I know this probably sounds a bit farfetched, but I think NAPLAN has helped teachers to see that their teaching is an intellectual activity, it's not something you do, it's something you think about, you reflect, you act, it's explicit. So it's intellectualised the whole process of teaching, that's what I think (S2P L445-450).

Participants in School 3 also reported the influence of NAPLAN data on teacher practice as a stimulus for discussion and action regarding pedagogical approaches. Participants from Schools 4 and 5 reported a need to use NAPLAN data more in this way, rather than such a practice being established.

5.5.3.4 Component 4 of explicit teaching: language of NAPLAN questions

Participants made 94 references to activities associated with the explicit teaching of the language of NAPLAN questions. This represented 23 per cent of all references to the minor theme of explicit teaching. Thirty-two per cent of references by participants from School 1 about explicit teaching were associated with the language of NAPLAN questions, 27 per cent School 5, 22 per cent School 4, 17 per cent School 2, and 11 per cent School 3.

Forty-one per cent of the references made to activities associated with teaching the language of NAPLAN questions were made by participants from School 1, 21 per cent School 5, 15 per cent School 2, 15 per cent School 4, and seven per cent School 3.

This focus on NAPLAN questions was reported in the context of actions following analysis of NAPLAN data. Inferential meaning within the context of NAPLAN questions and stimuli on the NAPLAN test papers featured in participant responses. Participants made 68 references to the use of NAPLAN-style questions in

their teaching, and 27 references to a focus upon inferential meaning within questions and stimuli on NAPLAN papers.

School 1 participants mainly described their focus on NAPLAN questions in their teaching in three ways. Seven references were made to using the questions as warm-up activities for students at the beginning of lessons throughout the year, or for general practice for NAPLAN. Fourteen references were made to using NAPLAN questions with students to teach comprehension of question skills, and 13 references were made to using NAPLAN questions to teach students skills in understanding inferential meaning in questions and stimuli.

School 2 participants described their focus on NAPLAN questions in the same three ways. Five references were made to using the questions as warm-up activities for students throughout the year at the beginning of lessons, or for general practice for NAPLAN. Six references were made to using NAPLAN questions with students to teach comprehension of question skills, and 12 references were made to using NAPLAN questions to teach students skills in understanding inferential meaning in questions and stimuli.

School 3 participants described their focus on NAPLAN questions in similar ways. Four references were made to using the questions as warm-up activities for students throughout the year at the beginning of lessons, or for general practice for NAPLAN. Four references were made to using NAPLAN questions with students to teach comprehension of question skills, and no references were made to using NAPLAN questions to teach students skills in understanding inferential meaning in questions and stimuli.

School 4 participants described their focus on NAPLAN questions in the same three ways. Six references were made to using the questions as warm-up activities for students throughout the year at the beginning of lessons, or for general practice for NAPLAN. Three references were made to using NAPLAN questions with students to teach comprehension of question skills and four references were made to using NAPLAN questions to teach students skills in understanding inferential meaning in questions and stimuli.

School 5 participants described their focus on NAPLAN questions in the same three ways. Five references were made to using the questions as warm up activities for students throughout the year at the beginning of lessons, or for general practice for NAPLAN. Seven references were made to using NAPLAN questions with students to teach comprehension of question skills, and three references were made to using NAPLAN questions to teach students skills in understanding inferential meaning in questions and stimuli.

In summary, by comparison across sites, Schools 1 and 2 gave rich descriptions of a greater emphasis by teachers on the actual language of NAPLAN questions, with the strongest focus on inferential meaning.

In Figure 5.8, the frequency of reference by participants in each school to the three minor themes is presented as a percentage of the total references made by participants from each school.

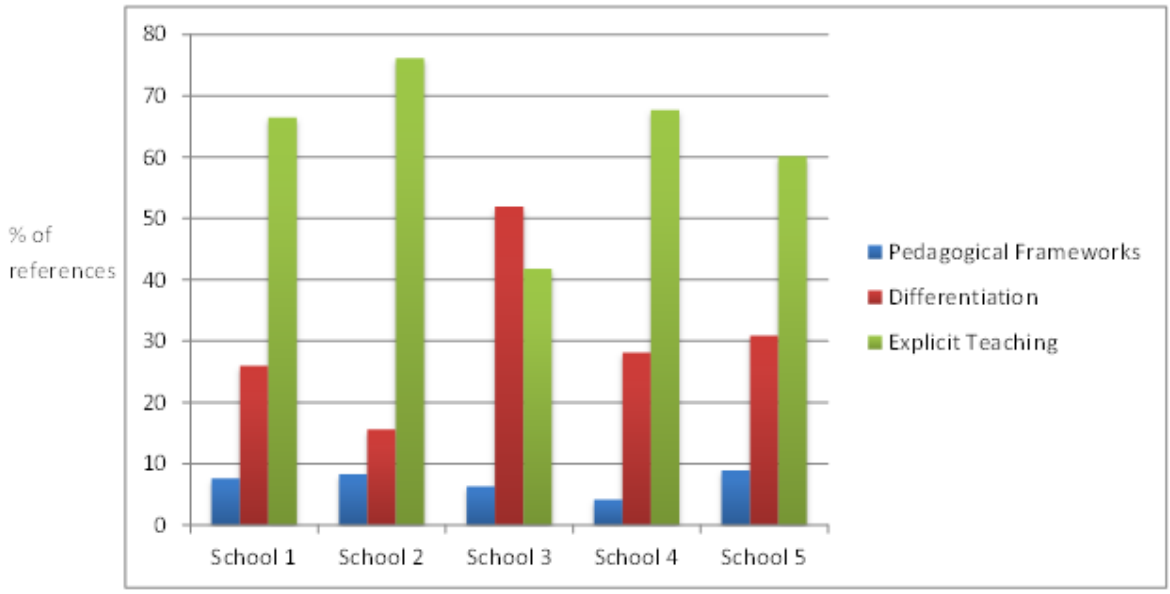


Figure 5.8. RQ 1 Informing pedagogy minor themes.

5.6 Major and Minor Themes for RQ 2

The major theme to emerge from the data in relation to RQ 2 was the manner in which NAPLAN data had influenced and impacted upon professional learning. Participants made 697 references to the use of NAPLAN data and professional learning by teachers. Within the references made by participants to professional learning, four minor themes were identified; learning discourse, Professional Learning Communities, time, and external expertise. The influence of NAPLAN data in the professional learning among the teachers and leaders in the 5 schools was commented upon by each of the 35 participants. The frequency of references to the minor themes are presented in Figure 5.9.

5.6.1 RQ 2 Minor theme 1: learning discourse.

Participants from all schools made 338 references to the influence NAPLAN data had on conversations of a professional nature among colleagues and with parents. Six components emerged to describe the learning discourse associated with NAPLAN data. These are presented in Figure 5.10. Twenty-two per cent of references were related to building teacher capacity. Twelve per cent of references described conversations that provided professional collegial support. Ten per cent described specific conversations that led to developing skills in data literacy; fourteen per cent described conversations that concentrated on teaching practice; nineteen per cent described conversations concentrated upon knowing students and, twenty-four per cent described conversations in which parents were engaged with their child's learning progress.

	Research Question 2													
	Major theme: Professional Learning												Minor Theme Reference Totals per School	% Minor Theme References per School
	Minor themes													
	Learning Discourse			PLCs			Learning Time			Expertise				
Participants		% Minor	%		% Minor	%		% Minor	%		% Minor	%	Total	
	References	theme	School	References	theme	School	References	theme	School	Referenc	theme	School	School	
S1	70	21	43	52	29	32	20	22	12	19	22	12	100%	**161**	**23%**
S2	75	22	53	38	21	27	28	30	20	1	1	1	100%	**142**	**20%**
S3	83	25	53	40	22	25	17	18	11	18	21	11	100%	**158**	**23%**
S4	46	14	45	18	10	17	16	17	16	23	27	22	100%	**103**	**15%**
S5	64	19	48	33	18	25	12	13	9	24	28	18	100%	**133**	**19%**
Totals	338	100		181	100		93	100		85	100			**697**	**100%**
%	**48%**			**26%**			**13%**			**12%**					

Figure 5.9 . References to the minor themes for RQ 2.

	Research Question 2																		
	Major theme: Professional Learning																		
	Minor theme: Learning discourse																		Minor Theme Ref Totals
	Building Teacher capacity Ref	% Sub Minor theme	% Sch	Prof Collegial support Ref	% Sub Minor theme	% Sch	Dev data lit skills Ref	% Sub Minor theme	% Sch	Teaching Practice Ref	% Sub Minor theme	% Sch	Knowing students Ref	% Sub Minor theme	% Sch	Parent Engmnt Ref	% Sub Minor theme	% Sch	
S1	19	25%	27%	8	21%	11%	7	29%	10%	13	28%	19%	13	21%	19%	10	12%	14%	70
S2	16	21%	21%	9	23%	12%	9	18%	12%	10	22%	13%	17	27%	23%	14	17%	19%	75
S3	12	16%	14%	10	26%	12%	7	13%	8%	8	17%	10%	15	24%	18%	31	38%	37%	83
S4	11	15%	24%	2	5%	4%	5	19%	11%	8	17%	17%	8	13%	17%	12	15%	26%	46
S5	17	23%	27%	10	26%	16%	5	20%	8%	7	15%	11%	10	16%	16%	15	18%	23%	64
Tots	75	100%		39	100%		33	100%		46	100%		63	100%		82	100%		338
%	22%			12%			10%			14%			19%			24%			

Figure 5.10. References to the components of the minor theme of learning discourse.

5.6.1.1 Learning discourse component 1: building teacher capacity

Seventy-five references were made to the influence NAPLAN data had on discussions among teachers and school leaders, which were focused on building teacher capacity. This represented 22 per cent of all references by participants to the minor theme of learning discourse. Twenty-seven per cent of references by participants from School 1 to learning discourse were associated with building teacher capacity, 27 per cent School 5, 24 per cent School 4, 21 per cent School 2, and 14 per cent School 3.

Twenty-five per cent of references to the influence of NAPLAN data on learning discourse to build teacher capacity were made by participants from School 1, 23 per cent School 5, 21 per cent School 2, 16 per cent School 3, and 15 per cent School 4.

Participants described the influence NAPLAN data had upon learning discourse aimed at building teacher capacity. Participants from Schools 1 and 2 described in most detail the open and enquiring conversations among teachers in the light of NAPLAN data, as stated by a school leader from School 1:

> Now that might seem really simple, but a lot of our teachers are questioning, what is an authentic lesson? What is inferential questioning? What is inferential reading? (S1AP L37-39)

The rich descriptions by School 1 and 2 participants constantly referred to collaborative conversations and sharing new knowledge from a variety of sources, after looking at NAPLAN data in detail. Participants from Schools 1 and 2 highlighted conversations reflecting on effective strategies, based upon the trustworthiness of NAPLAN data, as described by the former assistant principal from School 1 in the comment below:

> When we looked over a few years using trend data to indicate that there was some support needed in the area of numeracy and it was around the time we also had that numeracy project and so we used that to drive the professional development. It's definitely provided a more quantitative base from which to drive professional development so it's very obvious to teachers the data is hard and its there, it's not just—we think this is happening—so that's one good thing (S1FAP L7-11, 35-38).

Comments from participants from all schools reflected (to varying degrees) acknowledgement of NAPLAN data as a stimulus for professional discourse that did build teacher capacity. Critical to these conversations was the credibility and trustworthiness of NAPLAN data and the specicifity of the feedback it provided on student learning and skill development.

5.6.1.2 Learning discourse component 2: professional collegial support.

Thirty-nine references were made to the influence NAPLAN data had on discussions among teachers and school leaders described as collegial. This represented 12 per cent of all references participants made to the influence of NAPLAN data on learning discourse. Such discussions included sharing new knowledge, seeking professional advice from colleagues perceived to have proficiency or expertise, collaborative planning of learning and assessment experiences, innovative ideas, and analysis of student performance data. Twenty-six per cent of references made to the influence of NAPLAN data on learning discourse that supported professional collegiality were by participants from School 3, 24 per cent School 2, 24 per cent School 5, 18 per cent School 1, and five per cent School 4.

An example of the influence of NAPLAN data on collegial conversations is from a School 3 teacher, who was in the first five years of her profession in the following quotation:

> One of the things that I found extremely useful is that working with other staff members, with my programming. So I wasn't just programming on my own and other teachers would help me if I didn't understand anything about the data. They would explain it to me better. They would show me how to programme better to meet the children's needs (S3T56b L94-100).

Comparing responses across sites, School 3 participants decribed this component in the richest detail, followed by participants from Schools 1 and 2.

5.6.1.3 Learning discourse component 3: developing data literacy skills.

Thirty-three references were made by participants regarding the influence NAPLAN data had on professional conversations, centred on teachers and leaders developing skills in data literacy. This represented 10 per cent of all references participants made to the influence of NAPLAN data on learning discourse. Twenty-nine per cent of references made about the influence of NAPLAN data on learning discourse centred on developing skills in data literacy were by participants from School 1, 20 per cent School 5, 19 per cent School 4, 18 per cent School 2, and 13 per cent School 3. An example of a reference to the influence of NAPLAN data on conversations that developed data literacy among teachers and school leaders is by a leader from School 2:

> But through NAPLAN and through the emphasis on using the data and interpreting the data, then it helped you to look at what we were collecting through a different lens and having the conversation, is this important, what are

> we going to do with it, what's the point of it? Again, it opened up a real conversation with teachers (S2P L440-445).

Considering references by participants across all sites, School 1 participants described this component in the most detail, followed by participants from School 5 and then School 2.

5.6.1.4 Learning discourse component 4: teaching practice.

Participants made forty-six references to the influence NAPLAN data had on conversations among teachers and school leaders that reflected on teaching practice. This represented 14 per cent of all references participants made to the influence of NAPLAN data on learning discourse. Twenty-eight per cent of references made to the influence of NAPLAN data on reflective conversations concerning teacher practice were by participants from School 1, 22 per cent School 2, 17per cent School 3, 17 per cent School 4, and 15 per cent School 5.

An example of a reference from a School 5 teacher is included below. This illustrates the type of comments participants from all schools made regarding the influence of NAPLAN data in learning discourse with a particular focus on teaching pratctice:

> It has changed the way that we review our practices and our pedagogy and our professional learning communities that we work together in our teams with our English and maths committees. We look at our goals and we look at what we need and our students need, and how we can work towards achieving those goals. The results of NAPLAN impact really on everything that we do because we're constantly trying to raise the bar and NAPLAN is that tangible thing that you

> have that says, basically it tells us where our school is at, how our school is performing. So everything we do affects, not just that but us as a school and how we can better our students (S5T3 L149-161).

Analysis of responses across all sites indicated that participants from Schools 1 and 2 described this component in the most detail, followed by participants from School 3.

5.6.1.5 Learning discourse component 5: knowing students.

Sixty-three references were made by participants to the influence NAPLAN data had on conversations among teachers and school leaders regarding individual students and their learning. This represented 19 per cent of all references participants made to the influence of NAPLAN data on learning discourse. Twenty-seven per cent of references made to the influence of NAPLAN data on conversations among teachers and leaders concerning individual students and their learning were by participants from School 2, 24 per cent School 3, 21 per cent School 1, 16 per cent School 5, and 13 per cent School 4.

As mentioned in the presentation of data associated with RQ 1, School 3 had established a data board with all students represented from Kindergarten to Year 6 in reading and numeracy. This data board was located in the staff common room and dominating an entire wall; as such, conversation naturally led to the progress of individual students. A reflection from a Stage 3 teacher from School 3 illustrates how NAPLAN data influenced the staff and led to an expansion of a data culture among staff:

> We look at the data as a whole staff so it's not just my stage partners and myself looking at the data but it's everybody from Kinder to Year 6 so we're all working as a team and so as a team we're all looking at how we can help not the whole

school but individual children. We would share resources to suit the need of the child (S3T56b L52-58).

In comparing responses across all sites, it was clear that participants from School 2 described this component in the most detail, followed by participants from Schools 1 and 3.

5.6.1.6 Learning discourse component 6: parent engagement.

Eighty-two references were made by participants to the influence NAPLAN data had on conversations among teachers, school leaders and parents regarding student learning. This represented 24 per cent of all references participants made to the influence of NAPLAN data on learning discourse. Thirty-seven per cent of references were by participants from School 3, 18 per cent School 5, 17 per cent School 2, 15 per cent School 4, and 12 per cent School 1. The profile of the NAPLAN tests and results in the media was reported to have a range of effects with parents that required some action from school leaders in particular. Discussion with parents was reported to have been maifested in three main ways, detailed below.

Firstly, NAPLAN data generated conversation initiated by parents, regarding comparisons with other local schools. This was reported most consistently by participants from Schools 1 and 5. Communication with parents purposefully addressed the facility on the *My School* website, to explore statistically similar schools.

Secondly, NAPLAN data generated conversation initiated by parents that placed in participants' minds an undue and disproportionate emphasis on NAPLAN, to the detriment of a child's confidence and well-being. This was most evident in responses from participants from School 2.

Thirdly, NAPLAN data generated conversations with parents initiated by the school. Participants reported this from all schools, and most strongly by those from School 3. Upon the release of the results, the School 3 principal wrote a personal letter to every child, addressed to the parents and commending them on aspects of their (the child's) performance. The letter encouraged them to address any challenges the NAPLAN data confirmed from their own school-based assessments. The NAPLAN data was also integrated in formal parent teacher interviews, as described in the comment below from a Stage 3 teacher from School 3:

> We use the NAPLAN as part of the assessment so when we're having teacher interviews or class interviews with parents, just one-on-one ones during the course of the year—and parents are very keen with the results of NAPLAN—they are very keen and they do look at them as a big part of their child's progress in a school so we do—I think it is important and we do use it to say, and they like to hear it to, you know, that little Johnny got, he got 5 but he's worked exceptionally hard to get to this five and we're going to keep working with him. He might get a 6 (S3T56c L418-426).

Across all sites, participants from School 3 described this component in the most detail, followed by participants from Schools 1 and 5.

5.6.2 RQ 2 minor theme 2: PLCs.

The concept of PLCs is fundamentally one of teacher collaboration (DuFour, 2007). Within the context of PLCs, participants described the influence of NAPLAN data on the collaborative nature of professional learning experiences. The frequencies of participant responses according to school are presented in Figure 5.11. Participants made 181 references to PLCs in describing their interaction with the data from the NAPLAN tests. This represented 26 per cent of all references to the major theme of professional learning. Twenty-nine per cent of references by participants from School 1 to professional learning were associated with the use of NAPLAN data in PLCS, 22 per cent School 3, 21 per cent School 2, 18 per cent School 5, and ten per cent School 4. The nature of participant references to the use of NAPLAN data within the context of PLCs was described most commonly in four ways, as presented in Figure 5.11. The four components to emerge from the data within this minor theme were teaching practice, programme development, deep professional learning, and organisation and leadership.

The nature of these PLCs and the ways in which they were structured varied, while all reported NAPLAN data as an important reference point for their PLCs. An overview of the structure of PLCs across the five schools is presented in Table 5.1.

Research Question 2														
	Major theme: Professional Learning													
	Minor theme: Professional Learning Communities												Minor Theme Ref Totals per Sch	% Minor Theme Ref per Sch
	Teacher Practice Ref	% Sub Minor theme	% Sch	Programme Development Ref	% Sub Minor theme	% Sch	Deep Professional Learning Ref	% Sub Minor theme	% Sch	Organisation Leadership Ref	% Sub Minor theme	% Sch		
S1	17	38%	33%	15	29%	29%	12	19%	23%	8	35%	15%	**52**	**29%**
S2	8	18%	21%	11	22%	29%	12	19%	32%	7	30%	18%	**38**	**21%**
S3	8	18%	20%	13	25%	33%	17	27%	43%	2	9%	5%	**40**	**22%**
S4	4	9%	22%	4	8%	22%	8	13%	44%	2	9%	11%	**18**	**10%**
S5	8	18%	24%	8	16%	24%	13	21%	39%	4	17%	12%	**33**	**18%**
Tots	45	100%		51	100%		62	100%		23	100%		**181**	**100%**
%	**25%**			**28%**			**34%**			**13%**				

Figure 5.11. References to the components of the minor theme of PLCs.

Table 5.1

Structures for PLCs

Organisational Characterisitcs	School 1	School 2	School 3	School 4	School 5
Vertically based K-6 (V) Stage based K–2, 3–4, 5–6 (S)	S	V S	S	V S	V S
Executive Mentor (Yes—Y/N–No)	Y	Y Y	Y	Y Y	Y Y
Formal release time provided and frequency (w—weekly, f/n—fortnightly, t—each term, d—discretionary)		t 2 half- days	t 1 half- day	d	t
Formal meeting time established and frequency (w—weekly, f/n—fortnightly, t—each term)	W	f/n	w	w	T f/n
Months (m),Years (y) established	6 m	2.5 y	3 y	6 m	6 m 18 m 6 m

School 1's PLCs meet weekly before and after school class time.

School 2's PLCs have time provided in stage groups for half a day every five weeks, and are structured in Stages as well, with a whole-school focus based on NAPLAN data. School 2's PLCs also meet before and after class time at least once a fortnight.

School 3 has developed PLCs at the stage level and time is provided for the teachers to meet; however, this is mainly time before and after class time. Each PLC has a focus on NAPLAN data and this is incorporated with other forms of data.

School 4 established PLCs in 2013. Before 2013, PLCs did not exist at the school. These are structured vertically around a school-wide emphasis in learning that has been identified in the school's annual improvement plan, and at a stage level as well. An executive member attends each Stage PLC weekly meeting.

School 5 nominated two scheduled staff meetings per term for vertically organised PLCs to operate.

5.6.2.1 PLC component 1: teaching practice.

As presented in Figure 5.11, of the 45 references made by participants to describe the influence NAPLAN data had on a PLC's focus to improve teacher practice, 38 per cent were from School 1, 18 per cent School 2, 18 per cent School 3, 18 per cent School 5 and nine per cent School 4. Typical of comments describing the use of NAPLAN data within a PLC to focus on teaching practice, is that from a School 1 teacher:

> We've looked at weaknesses of our school and they've been given to us as a focus on things that we can improve in our teaching and fortnightly we have PLC meetings and those PLC meetings, the focus on that is the weaknesses in NAPLAN data and how we can improve them (S1T34a L9-13).

School 4 leaders and teachers reported a change in emphasis in the school concerning the use of NAPLAN data, with the advent of stage level PLCs. Much of the PLC activity in 2013 involved regularly evaluating student performance data, with a view to NAPLAN data as well, to make adjustments and differentiate learning. The commonly stated perspective among participants was that this focus was relatively

recent, as a collegial activity had only occurred within the defined structure of a PLC for six months.

Comparing responses across all sites, participants from School 1 described this component in the most detail, followed by participants from Schools 2 and 3.

5.6.2.2 PLC component 2: programme development.

Of the 51 references in which participants described the influence NAPLAN data had on a PLC's focus to develop teaching programmes, 29 per cent were from School 1, 25 per cent School 3, 22 per cent School 2, 16 per cent School 5, and eight per cent School 4.

In each of the schools, participants spoke of PLCs being designed for teachers to collaboratively explore NAPLAN data and formulate plans to address identified areas of need through teaching programmes. A School 4 school leader described the interplay between NAPLAN and other data within the context of a PLC, to bring about responsive changes to programmes that had previously been difficult to implement:

> But I find the PLC grade team is really good in terms of pushing the data issue because when we meet with them regularly, and ask the questions that prompt them to think about the data, then something is much more likely to happen. And when you put it on the agenda and say, alright, well let's try this and next week we'll see what the results are and we'll analyse it next week and we'll see where we'll go. As a team, there's going to be change happening. Whereas working with one teacher on one part in isolation, which is what I've done perhaps in the past three years, there hasn't been the consistency of change in the programming.

> So the structures now are much more able to support that process (S4AP L278-291).

Reviewing responses across all sites, participants from School 1 described this component in the most detail, followed by participants from Schools 2 and 3.

5.6.2.3 PLC component 3: deep professional learning.

Of the 62 references in which participants described the influence NAPLAN data had on a PLC's focus to strengthen deep professional learning and collaboration, 27 per cent of references were from School 3, 21 per cent School 5, 19 per cent School 2, 19 per cent School 1, and 13 per cent School 4.

In School 1, PLCs had been introduced and structured around teachers sharing the same stage of the curriculum; that is, teachers of students in Kindergarten to Year 2 formed a Stage 1 PLC, Years 3 and 4 formed a Stage 2 PLC, and 5 and 6 a Stage 3 PLC. Each of these PLCs included a member of the school executive. All staff analysing NAPLAN results led to the identification of areas for professional learning, classroom practice and assessment.

In School 5, the PLCs were given the responsibility of acting as major drivers in innovation and reflective practice, using NAPLAN data, as well as other student performance data, as described below by a School 5 leader:

> the maths and English ones are our focus and so on each PLC there's one person from every grade on either so that you then have both being able to share with each other. We decided on a focus from what we either had found from NAPLAN or from some other data and we say, ok this is what we need to do. We then use staff meetings etc to go back and feedback so as a PLC, you have to put

> some strategy in place and have a go at it or talk about it, discuss it and come up with whatever you think it needs to be and then you got back to the staff meeting (S5AP L276-286).

Comparing responses across all sites, participants from School 3 described this component in the most detail, followed by participants from Schools 1 and 2.

5.6.2.4 PLC component 4: organisation and leadership.

Of the 23 references participants made to the organisation and leadership of PLCs, 35 per cent were from School 1, 30 per cent School 2, 17 per cent School 5, nine per cent School 3, and nine per cent School 4.

Differences emerged in the nature of the PLCs across the five schools.

School 1 instituted Stage PLCs in 2009, with executive presence at each stage. The group met once a fortnight, and collaborative NAPLAN data-informed programming occurred. School 1 also established a PLC intranet page, for staff to make contributions and share innovations in their professional journeys.

School 2 instituted Stage PLCs in 2009, with executive presence at each stage, meeting once every five weeks for half a day, and where collaborative NAPLAN data-informed programming occurred.

School 3 instituted PLCs at each stage in 2008, meeting fortnightly and where collaborative NAPLAN data-informed programming occurred.

School 4 instituted PLCs at stage and across-stage levels in 2013. NAPLAN data is a focus at the stage level PLCs in School 4. The Stage PLCs met each week with an executive presence at each stage. The frequency of these meetings was only established in 2013.

In School 5 there were PLCs, but they only operated at a vertical level. In 2012, the principal introduced more structured stage meetings, but they were not present in the school before this. The PLCs met once or twice per term during formal staff meeting time. The stage meetings had release time provided by the principal for them to occur. This was a new strategy, introduced in 2012.

5.6.3 RQ 2 minor theme 3: professional learning time.

Participants from each school spoke of the need for time for effective professional learning regarding the use of NAPLAN data. This was an issue for leaders and teachers and received considerable comment. As detailed in Figure 5.9, 93 references were made to time by the 35 participants. Thirty per cent of references were made by participants from School 2, 19 per cent School 1, 18 per cent School 3, 17 per cent School 4, and 13 per cent School 5.

In relation to professional learning, School 1 participants described the professional learning time gained by reducing briefing time, which had previously been consumed by organisational matters, rather than learning conversations. School 1 cited additional time being made available to curriculum leaders in the school for analysis of NAPLAN data, and the time required for teachers to become more familiar with student profiles according to NAPLAN scores in numeracy, and then aligning that judgement with levels of proficiency consistent with other assessments and communicated on school reports. School 1 reallocated 30 minutes per fortnight from general staff meeting time to PLC meetings in a structured approach (S1P L62, 341–358), and school leaders saw the need for more structured time to be made available to teachers.

School 2 participants identified time for professional learning and collaboration as a high priority in using NAPLAN data effectively:

> we would withdraw teachers out of class once every three weeks and out of that three weeks, rather than have them create a programme that would last them for the term, they would create a programme that would meet the needs of the students for those three weeks. So when they came to the planning meetings, they would have to use data to have a look at what it is that their children need for the next cycle of learning and so some of that would be NAPLAN data (S2P L297 -304).

Teachers S2T3b, S2T56a, S2T56b also identified the need for time and acknowledged provisions made by the school's leaders for additional time to incorporate NAPLAN data in their collaborative programming.

School 3 dedicated two one-hour staff meetings per term to examine assessment data for their students, which included NAPLAN data as a core reference point. School 3 also released teachers from class for a full day in Stage PLCs to review programmes in light of the progress students had made in areas of need, as identified in NAPLAN from the previous year and that were being addressed at the various stage levels. Further, School 3 planned three meetings with all staff present, which occurred during the six months following the release of NAPLAN results, to enable reflection over time on what results revealed about students' progress.

School 4 participants identified the time allocated during staff meetings for teachers to reflect and write in their professional journals, as associated with analysing and using NAPLAN data. The PLCs, the main forum for discussing NAPLAN data, met

before and after school. Specific blocks of time, as discussed by participants from Schools 1, 2 and 3, were not identified by any of the School 4 participants. School 4 participants reported that stage meetings each week commenced in 2013.

School 5 participants reported the provision of time for collaborative planning that included reference to NAPLAN data in the form of a day per term and staff meeting time devoted to PLCs twice a term. This process has been in place during 2013.

5.6.4 RQ 2 minor theme 4: expertise.

Participants from all schools made 85 references to using external and internal expertise in the school, which had been sourced to assist with interpreting NAPLAN data, and creating strategies to address areas of need identified by NAPLAN data, in alignment with other school-initiated assessment data. As presented in Figure 5.9, 28 per cent of comments were made by participants from School 5, 27 per cent School 4, 22 per cent School 1, 21 per cent School 3, and one per cent School 2.

Participants from Schools 1, 3, 4, and 5 made a similar number of references to using expertise, while School 2 had one reference to expertise. Fifty-one per cent of references by all participants in this regard were made to using expertise from the Regional Catholic Education Office. Twenty-two per cent of references by all participants were made to using expertise by outsourcing to academics and other professionals, fourteen per cent to using expertise among staff members at the school, and 13 per cent to using expertise from the Catholic Education Central Office.

School 1 actively sought the advice and time of the Catholic Education Office regional numeracy officer and regional data analyst to assist teachers and leaders understand the NAPLAN data, and to explore the meanings derived from the SMART

data package in relation to patterns of learning growth for cohorts, groups of students and individual students. School 1 also cited some learning from involvement in the CEO Reading and Mathematics Programme (RAMP). Ninety-four per cent of the external expertise sought by School 1 was from the Regional Catholic Education Office, and six per cnt was from outsourced professionals.

School 2 participants reported limited use of external expertise from the Regional Catholic Education Office.

School 3 participants reported the use of external expertise as 28 per cent from the Regional Catholic Education Office, 39 per cent from outsourced professionals and 33 per cent from internal staff's expertise.

School 4 reported assistance from the Catholic Education Office in the form of the regional data analyst, and a full time teacher educator. Four participants from School 4 identified learning gained from the regional CEO's literacy advisor through the Language Features of Text Type (LFTT) Programme, which had been operating for four years. School 4 participants reported the use of external expertise as 36 per cent from the regional CEO, 45 per cent from the central CEO, four per cent from outsourced professionals and 14 per cent from internal staff expertise.

School 5 participants reported the use of external expertise as 43 per cent from the regional CEO, four per cent from the Catholic Education Central Office, 39 per cent from outside professionals and 13 per cent from internal expertise.

In Figure 5.12, the frequency of reference by participants in each school to the four minor themes is presented as percentages of the total references made by participants from each school.

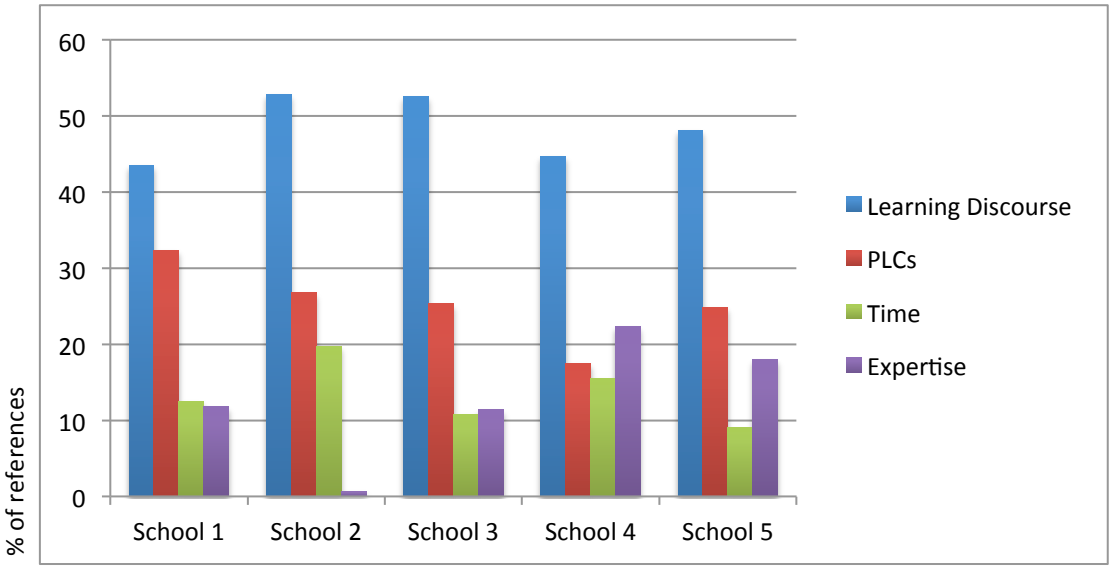


Figure 5.12. RQ 2 professional learning: minor themes.

5.7 Major and Minor Themes for RQ 3

The major theme to emerge from the data in relation to RQ 3 concerned consistent references to the influence of NAPLAN data on student assessment. As illustrated in Figure 5.13, 426 references were coded in association with this theme, and the major theme of assessment was established. Within the major theme of assessment, two minor themes emerged from the data in relation to RQ 3. The first minor theme was the influence of NAPLAN data on the nature of assessment. The second minor theme was the influence of NAPLAN data on the management and use of assessment data.

As presented in Figure 5.13, 23 per cent of references made to the influence of NAPLAN data on the nature of assessment were made by participants from School 5, 22 per cent School 1, 21 per cent School 2, 21 per cent School 4, and 14 per cent School 3.

	Research Question3								
	Major theme: Assessment							Major Theme Reference Totals per School	% Major Theme References per School
	Minor themes								
	Nature of Assessments			Management and Use of Assessment Data					
Participants		% Minor	%		% Minor	%	Total		
	References	theme	School	References	theme	School	School		
S1	45	22	54	39	17	46	100%	84	20%
S2	42	21	57	32	14	43	100%	74	17%
S3	28	14	30	66	30	70	100%	94	22%
S4	42	21	47	47	21	53	100%	89	21%
S5	46	23	54	39	17	46	100%	85	20%
Totals	203	100%		223	100%			426	100%
%	48%			52%					

Figure 5.13. References to the minor themes for RQ 3.

5.7.1 RQ 3 minor theme 1: nature of assessments.

As illustrated in Figure 5.13, thirty-five participants made 203 references to the influence NAPLAN data had upon the nature of student assessments in their schools. This represented 48 per cent of all references to the major theme of assessment. Fifty-seven per cent of references by School 2 participants described the influence NAPLAN data had on the nature of school assessment, 54 per cent School 1, 54 per cent School 5, 47 per cent School 4, and 30 per cent School 3.

Figure 5.14 presents the three components identified from the descriptions participants made regarding the influence of NAPLAN data on the nature of assessments. First was the influence of NAPLAN data on the creation of formative assessment tasks. Second was the more specific influence of NAPLAN data, using the SMART analysis software in the creation of formative assessment tasks; third was the influence of NAPLAN on the style of school-designed assessment tasks. Each of the minor themes and components are discussed in this section.

	Research Question 3											
	Major theme: Assessment										Reference	%
	Minor theme: Nature of Assessments											of
	Formative Assessment Practices			SMART and Formative Assessment			NAPLAN style Assessments				Reference	References
Participants			%			%			%	Total	Totals	per
	References	%	School	References	%	School	References	%	School	School	per School	School
S1	22	18	49	10	26	22	13	32	29	100%	45	22%
S2	28	23	67	8	21	19	6	15	14	100%	42	21%
S3	15	12	54	8	21	29	5	12	18	100%	28	14%
S4	28	23	67	6	15	14	8	20	19	100%	42	21%
S5	30	24	65	7	18	15	9	22	20	100%	46	23%
Totals	123	100%		39	100%		41	100%			203	100%
%	61%			19%			20%					

Figure 5.14. References to the components of the minor theme of nature of assessments.

5.7.1.1 Nature of assessments component 1: formative assessment practices.

Sixty-one per cent of references by all participants to the influence of NAPLAN data on the nature of school assessment described practices associated with formative assessment. Sixty-seven per cent of references by participants from School 2 regarding the influence of NAPLAN data on the nature of school assessment described practices associated with formative assessment. Sixty-seven per cent of references were by participants from School 4, 65 per cent School 5, 54 per cent School 3 and 49 per cent School 1.

Participants from the five schools made 123 references regarding the influence NAPLAN data had upon formative assessment practices with students. Twenty-four per cent of references about the influence of NAPLAN data on formative assessment experiences were made by participants from School 5. Twenty-three per cent were made by School 4, 23 per cent School 2, 18 per cent School 1, and 12 per cent School 3.

Participants described the different ways in which NAPLAN data had influenced formative assessment practices, as demonstrated in the following quotations. A distinguishing feature reported by participants was the use of NAPLAN data to create pre- and post-test experiences for students. This was a particular emphasis among participants from Schools 1, 2 and 3. In Schools 1 and 2, pre-testing and post-testing experiences, which were aligned with NAPLAN data, were highly organised and of weekly or fortnightly frequency. In Schools 1, 2, and 3 matrices of skill sets for individual students were constructed using a variety of assessment sources, including NAPLAN as a key reference point.

In School 1, NAPLAN data was used to build a language of learning with students, as illustrated in the quotation below:

> then sometimes what I do is we role-play and they're the teacher and I'm the parent and I ask them 'why didn't my child get an A in their report for this piece of work?' And so they've got to use all that language and the sentences and the connecting and all that, so they have to tell me and it's in front of the class (S1 T34b L358-363).

Participants from School 1 spoke of the benefits to students in becoming knowledgeable about the NAPLAN assessments, as they developed clear understandings of the skills to be developed. This constructive approach is illustrated in the comment below from the School 1 principal:

> and I know at one point she gave some examples of Year 7 NAPLAN test to some of our good maths students and it became a real teaching tool in a way for them. Ok we can't do this, what can we do about it, breaking the processes down so it became intelligible for the kids (S1P L501-505).

Similar examples were provided by participants from Schools 2 and 3, which demonstrated the influence of NAPLAN data on formative assessment practices.

The use of NAPLAN data in formative assessment practices, as reported by participants from Schools 4 and 5, was limited in comparison and the general nature of the approach is well represented in the following quotation:

> If we had a writing pre-test, for instance, on narratives, we looked at the paper copy of the NAPLAN and we actually looked at the percentage too of how many children in Australia got it right, got it wrong and so we would have that there along with, ok this NAPLAN we know it's persuasive writing and we might have the ESL scales, we might look at level 6 and level 5 for instance, and bring it all

> together and go, ok, we're going to keep our eyes out for this because this is what they're meant to be good at and we're going to keep our eyes out for these areas too. It's definitely a good tool to look at (S4T56b L378-387).

When comparing responses across sites, there was not the same detail or rigour in organisation as revealed by participants from Schools 1, 2 and 3 when discussing the influence of NAPLAN on formative assessment practices.

5.7.1.2 Nature of assessments component 2: SMART and formative assessment.

Nineteen per cent of references by all participants to the influence of NAPLAN data on the nature of school assessment described practices associated with use of the SMART data package in creating formative assessment experiences. Twenty-nine per cent of references by participants from School 3 about the influence of NAPLAN data on the nature of school assessment described practices associated with use of the SMART data package in creating formative assessment experiences. Twenty-two per cent of references were by participants from School 1, 19 per cent School 2, 15 per cent School 5 and 14 per cent School 4.

Participants made 39 references to the influence of NAPLAN data on formative assessment practices through the use of the SMART data analysis package. Twenty-six per cent of references to SMART as a tool in formative assessment practices were made by participants from School 1. Twenty-one per cent were made by participants from School 3, 21 per cent School 2, 18 per cent School 5, and 15 per cent School 4.

A teacher from School 1and a leader from School 2 provided comments representative of the use of the NAPLAN SMART package for formative assessment in

those schools. Participants from Schools 1, 2 and 3 provided rich descriptions of their use of the SMART data analysis package to create learning experiences and formative assessment tasks. A teacher from School 2 described how she used the SMART data package:

> So I will use the SMART website, for example I'm teaching literacy, so I'll use those work samples for example, and as a class, a whole class, we then analyse that student's work sample and we say, what can they have added, what could they have not included in this, what could they have done to make this a B or an A.

This same participant explained the benefit of the SMART data package for individualising learning and assessment, while reflecting on the limited use of this facility especially among new teachers:

> The other thing that I wanted to mention too is with the SMART data too, it does look at the zone of proximal development as well. When you look at it, it tells you what the child has actually understood, what the child doesn't know and of course, then you can push them along. So yes, it does do that, but not many teachers and especially these ones who are coming through university now, can see that. It's too abstract for them (S1T34b L350-355, 406-412).

Participants from Schools 1, 2, and 3 spoke of using the SMART data package teaching strategies in warm up activities. This practice was described in the School 2 context by the assistant principal:

> The SMART data analysis package is very explicit. It also has areas where you can find teaching strategies for a particular area. So you can go in there and say,

> oh I can use that particular thing in my warm up because this is what my students need. So it's a great resource and it is very useful. And in fact in one staff meeting, I think the year before last, we took a different approach where we did develop a warm up system in the maths to address some of the needs in the school and that's exactly what we got teachers to do because teachers aren't always willing to do that themselves. We allocated time and set up a situation where they could go and do that (S2AP L289-300).

The use of the SMART data package was reported by participants from School 3 who were in leadership positions. Teachers from School 3 similarly described the use of the SMART data package as being the role of the executive who 'digested' it for the rest of the teachers.

In Schools 4 and 5, using the SMART package to assist with formative assessment was reported as being limited or growing. The following comments represent descriptions by participants from Schools 4 and 5 on the use of the SMART data package. The assistant principal from School 4 reflected on the inconsistent use among teachers of the SMART data analysis package in the following comment:

> It's inconsistent, there are some teachers who use it really well and luckily we've kind of got them spread out across the school now so they will influence their teams. So I think that will help in the next few years (S4AP L552-555).

The following reference, indicative of the experience of participants from School 5 in the use of the SMART data analysis package,was made by the former assistant principal:

> I'm not sure what's going on now but we all had passwords and we had staff development days where we all logged on and navigated around it and I know all the graphs and everything (S5FAP L224-226).

There were limited specific references made to using the SMART data analysis package for formative assessment purposes by participants from School 5.

5.7.1.3 Nature of assessments component 3: NAPLAN-style assessments.

Congruency in the nature of school-based assessments with NAPLAN tests was described by participants in terms of assessing skills using NAPLAN-style language in questions and stimuli. (This same focus was reported in the major theme of explicit teaching as reported for RQ 1.) As illustrated in Figure 5.14, 20 per cent of references by all participants regarding the influence of NAPLAN data on the nature of school assessment described practices associated with the creation of NAPLAN-style school assessment tasks. Twenty-nine per cent of references by participants from School 1 about the influence of NAPLAN data on the nature of school assessment described practices associated with the creation of NAPLAN-style school assessment tasks. Twenty per cent of references were by participants from School 5, 19 per cent School 4, 18 per cent School 3, and 14 per cent School 2.

Participants made 41 references about the influence of NAPLAN data on the design of NAPLAN-style school assessment experiences. Thirty-two per cent of references were from School 1, 22 per cent School 5, 20 per cent School 4, 15 per cent School 2, and 12 per cent School 3.

References by participants illustrating the influence of NAPLAN data on the style and language of school-based assessments varied across the schools.

Participants from School 1 described the conscious focus by teachers on the style of NAPLAN assessments, and their explicit links to particular skills. A feature of School 1's approach was the very specific focus they made on the language of the NAPLAN questions. In a school population with a very high percentage of students from a speaking background other than English, focus on the language of the NAPLAN questions was given high priority. This is described in the following comment from the School 1 principal:

> I think it's had an impact on the way teachers assess because they're looking at—they've had that example say of NAPLAN, they know how the questions are formed, they're very much more conscious of the language that's used in the questions (S1P L471-474).

A Stage 3 teacher from School 1 explained that the language of assessment tasks for students in year groups other than those sitting NAPLAN tests were also designed to include elements of NAPLAN language:

> In NAPLAN, even though they may be in Year 4 or Year 6, it doesn't matter. When you do these kinds of assessments, that's what they'll be looking for, not that you're teaching to NAPLAN but it's always part of —to try and get the best out of them (S1T56a L253-256).

School 2 participants described the influence of NAPLAN-style assessments in their assessment of writing in particular, as described by a Stage 3 teacher:

> I'll say in writing, we have looked at how is writing graded for NAPLAN, how is it marked for NAPLAN, the criteria and actually tried to make sure we're

> looking at that criteria as well when we're grading so that we are aligned (S2 T56b L195-198).

School 3 participants spoke of a more general influence of NAPLAN on the style of school-based assessments across a range of skills, as explained by a Stage 2 teacher:

> I think we've tried to align our school-based assessments to the NAPLAN. You know just so that we can get—it's no good having school-based assessments that are totally different to that, so we are focusing in on those skills that have been tested in the NAPLAN but also we have some other tests that look at other things that we're doing in class, of course we have to assess what we're doing in class. But I think maybe it has, we're trying to maybe blend them together (S3T34b L306-313).

School 4 participants recognised a growing influence of NAPLAN on assessments. One teacher participant reflected on the influence of NAPLAN on his formative assessment dialogue with students:

> So I guess it's guided me to be more specific and to not accept those ones that are close but not quite right. We work with them on the different types of answers that are in there and I think so often I'm the sort of person that you want to be positive about everything and you say, yeah that's great and they start to think that it's right, but then you don't put enough effort into reinforcing what the actual correct answer is so when they go and sit the test like the NAPLAN test, then they look at the ones that you would say, yeah that's right for, and then they get confused. Now my feedback to the students is more precise and I'm

> making sure that I'm getting the best possible answer every time not just around about as you sometimes do (S4T56a L352-363).

School 5 participants described the growing use of NAPLAN-style questions in school-based assessments, but there was a general observation that the practice was not consistent among all staff. An indicative comment from School 5 participants is presented below:

> We use several questions in our school-based assessments. We pulled some of those out or if not exactly the same question just the same format for two reasons, that the kids were used to the format from NAPLAN and also just the types of questioning and the language that was used, if it was used in the tests we would use that in our assessments. That took a long time for people to start doing. I would say that not everybody was on board with that but that was what we were sort of hoping (S5FAP L188-195).

5.7.2 RQ 3 minor theme 2: management and use of assessment data.

The second minor theme to emerge from RQ 3 was the influence of NAPLAN data on the management and use of student assessment data.

As presented in Figure 5.13, 36 participants made 223 references to the influence NAPLAN data had upon the management and use of assessment data. This represented 52 per cent of all references to the major theme of assessment. Seventy per cent of references to assessment by School 3 participants described the influence NAPLAN data had upon the management and use of assessment data, 53 per cent School 4, 46 per cent School 1, 46 per cent School 5, and 43 per cent School 2.

In Figure 5.15, the distribution of reference frequency by participants about the influence of NAPLAN data on the management and use of assessment is presented. Thirty per cent of references made to the influence of NAPLAN data on the management and use of assessment data were made by participants from School 3, 21 per cent School 4, 17 per cent School 1, 17 per cent School 5, and 14 per cent School 2.

Within this minor theme, three components emerged. First was the manner in which schools used NAPLAN data within a broader assessment matrix, where results from other assessment experiences were recorded—along with a student's NAPLAN performance—to create a comprehensive assessment profile. Second was the use of NAPLAN data in providing external validity to the professional judgements of school leaders and teachers. The third characteristic was the role of NAPLAN data in supporting a school's diagnostic processes, designed to identify the learning needs of students. The number of references to the minor theme and components are presented in Figure 5.15 below.

	Research Question 3											
	Major theme: Assessment										Reference	%
	Minor theme: Management and Use of Assessment Data											of
	Assessment Matrices			External Validity			Diagnostic Processes				Reference	References
Participants			%			%			%	Total	Totals	per
	References	%	School	References	%	School	References	%	School	School	per School	School
S1	11	17	28	22	17	56	6	22	15	100%	39	17%
S2	11	17	34	20	15	63	1	3	3	100%	32	14%
S3	22	34	33	36	27	55	8	30	12	100%	66	30%
S4	7	11	15	32	24	68	8	30	17	100%	47	21%
S5	14	22	36	21	16	54	4	15	10	100%	39	17%
Totals	65	100%		131	100%		27	100%			223	100%
%	29%			59%			12%					

Figure 5.15. References to the components of the minor theme of management and use of assessment data.

5.7.2.1 Management and use of assessment data component 1: assessment matrices.

Twenty-nine per cent of references by all participants described influences of NAPLAN data upon the management and use of assessment data within the context of assessment matrices. Thirty-six per cent of references by participants from School 5 described influences of NAPLAN data on upon the management and use of assessment data within the context of assessment matrices, 34 per cent School 2, 33 per cent School 3, 28 per cent School 1 and 15 per cent School 4.

Participants from the five schools made 65 references to NAPLAN data within a broader assessment matrix. Thirty-four per cent of references to NAPLAN data within a broader assessment matrix were made by participants from School 3, twenty-two per cent School 5, 17 per cent School 1, 17 per cent School 2 and 11 per cent School 4.

Participants from Schools 1,2 and 3 described a variety of ways in which NAPLAN data played a role in school assessment matrices. The assistant principal from School 1 described the intergration of NAPLAN data with other school assessments, and commented that while the different forms of assessment data—including NAPLAN—were weighted equally, there was an underlying reliance on, or respect for, the data from NAPLAN. These observations are captured below:

> I think all data have been used with the same—probably NAPLAN data just a little bit more but with the same responsibility, the same weight. In any time Stage 1 or Stage 3, which I was very closely linked to, I still have chats with them, if they're looking at say, the grammar or the spelling, really have a look at the NAPLAN data last year because it's going to affect these kids and the results of that and what the needs are before you do any base line data or any

> assessments really to hone in on those areas of need first. It really is equal weighting, we always fall back on that SMART data (S1AP L320-328).

The qualitative and quantitative elements of assessment were highlighted by the former assistant principal from School 1, and the central role NAPLAN data played as a quantitative measure of student performance. NAPLAN data proved to be a catalyst for School 1 to focus on the different types of assessment the students were experiencing, as captured in the comment below:

> I think that when we first started to really get into the data one of the things we did was to develop matrices to assess student's work and so there were indicators of what we needed to be looking for as teachers. So the NAPLAN really ensured, through the answers the children gave in NAPLAN, not just that but all the matrices, the outcomes about the different strategies each student should be able to do, so it really made us focus on ensuring … there was consistent assessment across the stage (S1FAP L216-224).

Participants from School 2 described the necessity for a balanced approach in regard to assessment, and described NAPLAN as one of a number of standardised tests in which students were required to participate throughout the year. In addition to a series of standardised tests, School 2 participants emphasised the importance of work samples from the classroom, and observations by teachers of students mastering skills and competencies in less formal ways. Important in School 2's approach was the care taken in the detailed collection of various forms of assessment data. In the words of the principal, 'you weren't only relying on NAPLAN data' (S2 FP L321).

School 3 participants also described the necessity of a highly organised and balanced approach to assessment and the need for alternative standardised tests, apart from NAPLAN. The fact that NAPLAN was one standardised test on one day was highlighted, and the need for other standardised assessments to fairly represent the abilities of each student was emphasised. The School 3 principal described their approach:

> And another thing that NAPLAN data has kind of made us think about standardised testing, so throughout the year we have now an assessment scope and sequence and we have locked in other measures like that apart from the measures that you have in your classroom (S3P L246-251).

In School 4, paricipants referred to the concept of assessment matricies as developing cohesion and coordination; yet, in regard to NAPLAN data, participants described a lack of integration at a practical level. The former assistant principal described NAPLAN as being 'tracked in a different place' (S4FAP L312), and the responsibility was for teachers to ensure they sought information from three repositories of assessment data to inform their programme development and work with students.

In School 5, leaders described a comprehensive tracking system initiated in the previous 12 months, which tracked varied student assessments, while teacher participant observations were less specific. A School 5, Stage 2 teacher described her approach to the organisation of different types of student assessment:

> It's something that happens incidentally … so I guess even through doing pre-testing and post-testing, students doing oral assessments, I think it's just a combination, being conscious of all those factors (S5T4 L266-273).

In comparing responses across sites, participants from Schools 4 and 5 were general in their responses and observations in regard to assessment matrices, while Schools 1, 2 and 3 were quite specific.

5.7.2.2 Management and use of assessment data component 2: external validity.

Fifty-nine per cent of references by all participants regarding the influence of NAPLAN data on the use and management of assessment data were associated with providing external validity to the professional judgement of school leaders and teachers. In the minor theme of use and management of assessment data, participant references about NAPLAN data providing external validity to the professional judgement of school leaders and teachers accounted for 68 per cent of School 4 participant references, 63 per cent School 2, 56 per cent School 1, 55 per cent School 3 and 54 per cent School 5.

Participants made 131 references about the use and management of assessment data that associated NAPLAN data with providing external validity to the professional judgement of school leaders and teachers. Twenty-seven per cent of references to NAPLAN data as a source of external validity were made by participants from School 3, 24 per cent School 4, 17 per cent School 1, 16 per cent School 5 and 15 per cent School 2.

School leader participants from School 1 described the confidence NAPLAN data provided as a source of external validation in a variety of ways. The former assistant principal described NAPLAN data as enhancing her leadership in two ways. Firstly, the data from NAPLAN gave her confidence in naming issues to be addressed. Secondly, NAPLAN data improved her focus on student needs. Critically for this

participant, NAPLAN data was described as a highly credible assessment reference point for teachers:

> as I said the NAPLAN, I suppose it reinforces the results you would be getting from other post-tests or other standardised tests and where there was a difference it would raise questions about what's happening here and why isn't that similar (S1FAP L259-263).

The principal from School 1 identified the benefits of NAPLAN data as an external lens on student performance, as it challenged teacher perceptions of student ability. In analysing the NAPLAN results, the School 1 principal described the reaction of staff in the following way:

> there were children that definitely last year we looked at and thought, that kid is doing far better—obviously got a maths brain that we didn't appreciate, he needs to be really pushed and moved along (S1P L542-545).

In circumstances such as these, NAPLAN data was used to further investigate the skills and abilities of particular students that may have been previously unnoticed through the usual school assessment regime.

School leader participants from School 2 also expressed confidence in NAPLAN as a source of external validation. In particular, NAPLAN was a key reference for teachers at School 2 to judge whether school-based assessments were providing a picture of a student's capabilities, consistent with the profile illustrated in the NAPLAN assessments. In School 2's context, where there were inconsistencies in a child's assessment data, further investigation and intervention was undertaken with the close involvement of parents:

> The way that we did it was when we were assessing students, we really did have a look if the NAPLAN data was supporting what we were saying, if it wasn't supporting then we would say, well, let's have a deeper look at this child and then we'd spend a lot of time making sure that parents were aware of what we were doing, what wasn't happening, there were a lot of measures (S2P L542-547).

Participants from School 2 discussed the effects of using NAPLAN data to evaluate the effectiveness of programme implementation, captured in the following quotation from the assistant principal:

> I think it does have a big impact because you see how you're actually going. You think you've implemented something to a certain level but when the data comes back you might think, well, I didn't do as well in that area as I thought, what happened. How can I change that? So I think it does have a big impact because it's there, it's observable data. You need to take notice of it (S2AP L181-188).

A leader from School 3 described the confidence that NAPLAN data encouraged in her leadership, and staff united in their motivation to try new initiatives:

> [Regarding] credibility with staff, yes, it was fabulous. It was really easy then to get everybody on board—with anything you wanted to do in the school. Even if they didn't realise why you were doing it in the first place, they realised … they had trust (S3AP L490-493).

Participants from School 3 identified the benefits of NAPLAN as a source of external validation in reporting to parents, to verify the efficacy of school-based

assessments and to gauge the appropriateness of reported student results. The external validity NAPLAN results provided are described by a teacher from Stage 3:

> We also look at—NAPLAN does play a big part because we like to look at that when we are doing our end of year reports just to make sure that it balances off with our standardised tests, that they're not at two ends of the spectrum, that one is not contradicting the other one. So we use it specifically there as well. So if a child's at one band and we think that they're not really showing that in the classroom, then we look at it and say, we'll look at that child and say, 'well why not?' Maybe a school assessment has not targeted well, so that's where we make those changes. Well then we look at NAPLAN and say, 'is there something in NAPLAN that's not fitting in well?' It does play a big part in assessments because we do use it as a verifier. It's another tool that we can use to gauge results. It's important (S3T56c L294-306).

School 4 leaders did not comment on the external validity of NAPLAN data, but a few general comments from teachers were made, as represented in the comment below:

> Yes, but I think at the same time it's useful because it lets us know how we're going across the nation and I know we're compared with—you know how it compares you to other schools that are at your same level and I think it was a little tiny school up in Cape York, an Indigenous school, and it hits home—okay this is where we're at (S4T56b L129-135).

A leader from School 5 explained that NAPLAN data was a relatively recently used source for external validation, but was now key to assessing the success of a range of interventions:

> From when we've implemented the Sounds Waves and implemented the specialist intervention teacher, we've turned. The results have turned. We haven't gone up dramatically, it's not like a roller coaster up but we've turned in every test be it maths and spelling and grammar, whatever, every line has turned, turned upwards. And we now expect that that line will continue to turn (S5P L137-143).

A comparison between sites demonstrated participants from Schools 1, 2, and 3 richly described the purposeful use of NAPLAN data in providing external validation in a variety of ways; in comparison, descriptions by participants from Schools 4 and 5 were limited.

5.7.2.3 Management and use of assessment data component 3: diagnostic processes.

Twelve per cent of references by all participants regarding the influence of NAPLAN data on the management and use of assessment data were associated with diagnostic processes used by schools to identify the learning needs of students. Seventeen per cent of references by participants from School 4 about the influence of NAPLAN on the management and use of assessment data were associated with diagnostic proceeses. Fifteen per cent of references were by participants from School 1, 12 per cent School 3, ten per cent School 5 and three per cent School 2.

Participants made 27 references to the influence of NAPLAN data on the diagnostic processes. Thirty per cent of these references were by participants from School 3, 30 per cent School 4, 22 per cent School 1, 15 per cent School 5 and three per cent School 2.

The former assistant principal from School 1 identified the use of NAPLAN data for diagnostic purposes, particularly among parents. As the profile of NAPLAN grew, the importance parents placed on the results also increased, which led to constructive conversations regarding areas for individual student development. A Stage 2 teacher from School 1 highlighted the use of past NAPLAN tests with students to identify areas of weakness, which in the description given was student inability to understand inferential meaning in text. The teacher described using commercially produced NAPLAN student help books, as described below:

> One of the booklets that you can buy from Dymocks, but it's got inferential questions and it tells you what band they're in, so then we collated all that data and we then said, okay, these students are in Band 2 for inferential comprehension, what do we need to get to, to get to Band 5 (S1T34b L300-304).

Participants from School 1 were consistent in desribing their use of NAPLAN data as a diagnostic tool with individual students, rather than at a cohort level.

School 2 participants spoke of the use of NAPLAN data as a tool that complemented other forms of assessment information in diagnosing key areas for individual student development. In this school's context, NAPLAN data was a catalyst for generating more data-informed conversations about individual students among

teachers, and played a part in the encouragement of student voices in the learning process. A description of the situation in School 2 is provided below:

> But through NAPLAN and through the emphasis on using the data and interpreting the data, then it helped you to look at what we were collecting through a different lens and having the conversation, is this important, what are we going to do with it, what's the point of it? Again, it opened up a real conversation with teachers ... we started this thing called a HIGS Report, which was 'How am I Going at school?' and through the HIGS reports the children had their input in it and then the teacher gave some input of how the child was performing and we'd send the workbooks home (S2P L440-445, 554-558).

The 'How am I Going at School?' (HIGS) report referred to above emphasised the importance of the individual student's learning journey for teachers, and the role NAPLAN and other assessment data played in informing observations and evaluations of each individual journey.

Various descriptions of the influence of NAPLAN in diagnostic processes were made by School 3 participants. NAPLAN data was a core component of the data wall that was used to track individual student progress in reading and numeracy, according to the bands reported on the *My School* website for NAPLAN. The analysis led to action described by the principal below:

> As you walk into the staff room we've got this big board and we call it a student wall. So the top part of the wall is their reading levels but next to the child's name we've have a dot, if they're an ESL learner or if they've been on reading

> recovery or they're special needs so we identify them through that code and they're colour coded according to grades.
>
> Then their reading as we assess them, we move them on this chart. So we continuously focus on where they're at and where they should be in their cohort. If their cohort is here and they're dragging behind then there's staff meetings, we sit and we say, why is that child not moving, what's happening here (S3P L229-241).

In the School 4 context, NAPLAN data was used as a diagnostic tool at a whole-school level and was described as having some influence on the focus of the annual improvement plan, as described by the principal below:

> So reading and oral language are our two big things that the NAPLAN data, the analysis of the NAPLAN data suggested that we needed to do that. So those two needs are our big areas in our annual improvement plan but NAPLAN data just supports what we are thinking (S4P L119-128).

The assistant principal from School 4 was qualified in her description of the role NAPLAN data had in diagnostic processes, saying 'I think it's had a part, probably not the part it deserves' (S4AP L180-181). School 5's approach focused at a cohort level, rather than an individual student level, and is represented in the following comment from the former assistant principal:

> We look at the data, we did a lot of analysis on the NAPLAN so basically we pulled out the Year 3 and Year 5 teachers and we analysed both the maths and English with an executive—so it was either me or one of the coordinators and in

that way we learned quickly where our strengths and weaknesses were both in Year 3 and Year 5 (S5FAP L6-11).

In Figure 5.16, the frequency of reference by participants in each school to the two minor themes is presented as percentages of the total references made by participants from each school. In summary, participants from Schools 1, 2 and 3 described personalised approaches to the use of NAPLAN data in the diagnostic processes, while Schools 4 and 5 described approaches at a whole-school and cohort level respectively.

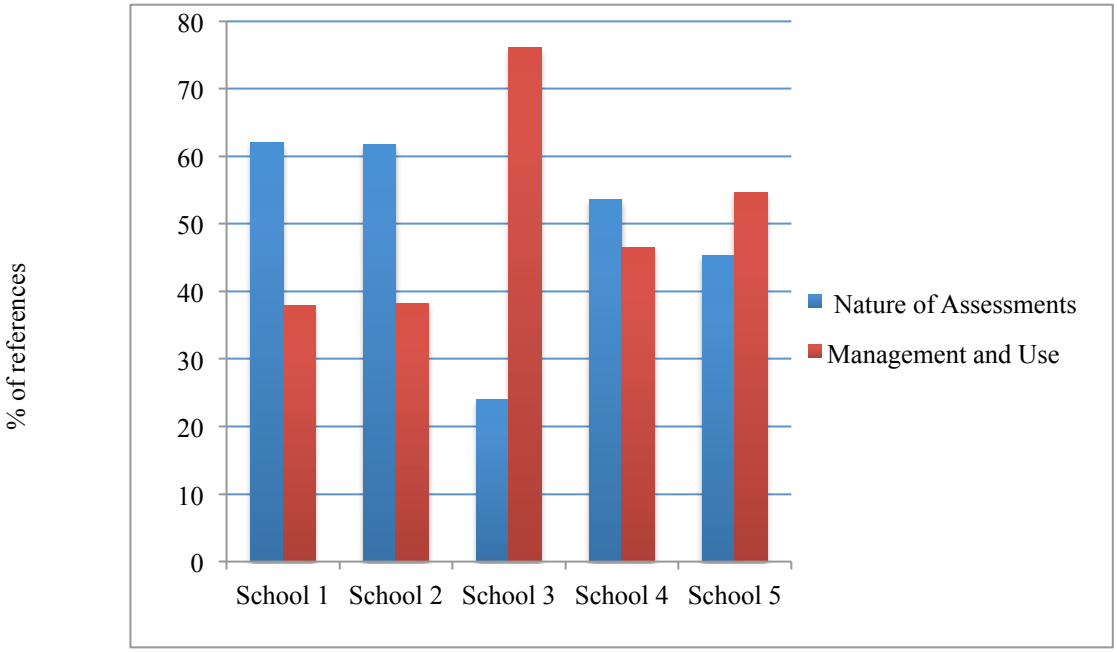


Figure 5.16. RQ 3 Assessment: minor themes.

5.8 Major and Minor Themes for RQ 4

The major theme to emerge from RQ 4 was the influence of NAPLAN data on the provision of feedback by teachers to students. As illustrated in Figure 5.17, participants made 236 references associated with the influence of NAPLAN data on student feedback. Thirty-one per cent of references to the theme of student feedback were by participants from School 1, 30 per cent School 2, 17 per cent School 3, 11 per cent School 4 and 11 per cent School 5.

Within this major theme of feedback to students, participants identified three minor themes. First was the influence of NAPLAN data in assisting teachers in establishing benchmarks for performance with students. Second was the influence NAPLAN data had on teacher feedback that focused specifically on the skills students required in each of the domains tested by NAPLAN. Third was the influence NAPLAN data had on the engagement of students in their learning.

5.8.1 RQ 4 minor theme 1: establishing benchmarks.

As presented in Figure 5.17, 17 participants made 40 references to the influence of NAPLAN data on the establishment of benchmarks for students in the feedback process. This represented 17 per cent of all references to the major theme of student feedback. Thirty-one per cent of references by participants from School 1, 13 per cent School 2, 12 per cent School 4, ten per cent School 3 and eight per cent School 5. As illustrated in Figure 5.17, 55 per cent of references to the use of NAPLAN data in establishing benchmarks were made by participants from School 1, 23 per cent School 2, ten per cent School 3, eight per cent School 4 and five per cent School 5.

	Research Question 4										
	Major theme: Student Feedback									**Major Theme Reference Totals per School**	**% Major Theme References per School**
	Minor themes										
	Establishing Benchmarks			**Skills Focus for Feedback**			**Engagement of Students**				
Participants		% Minor	%		% Minor	%		% Minor	%		
	References	theme	School	**References**	theme	School	**References**	theme	School		
S1	22	55%	31	19	19%	26	31	33%	43	**72**	**31%**
S2	9	23%	13	33	32%	46	29	31%	41	**71**	**30%**
S3	4	10%	10	23	23%	56	14	15%	34	**41**	**17%**
S4	3	8%	12	14	14%	54	9	10%	35	**26**	**11%**
S5	2	5%	8	13	13%	50	11	12%	42	**26**	**11%**
Totals	40	100%		102	100%		94	100%		**236**	**100%**
%	**17%**			**43%**			**40%**				

Figure 5.17. References to the minor themes for RQ 4.

School 1 participants provided the richest descriptions of the influence of NAPLAN data on establishing benchmarks for student performance. Using the student performance bands according to NAPLAN data and associated remediation activities from the SMART data analysis package, participants from School 1 described how they created specific profiles and benchmarks for students, based on their performance in pre-tests, classroom activities and school-based asessments. The assistant principal from School 1 described in some detail creating a pre-test of student skills before the instructional phase of a new topic area:

> That came about through wanting consistency across all teacher's assessments of students in one particular stage and looking at the outcomes of where we would expect students to be. So together with the pre-tests we developed a matrix which identified the strategies or skills we'd expect the students to have at the end of the instruction and pre-testing was done and the teachers sat together and evaluated students according to the pre-test and the reason for that was because obviously we had 30 students across three classes and we wanted to make sure that teachers weren't assessing differently in interpreting the outcomes students were to meet (S1FAP L325-341).

A Stage 2 teacher from School 1 supported the description of this approach, explaining that with the assistance of external expertise from an advisor from the Regional Catholic Education Office, teachers refined their expectations of students at the completion of each stage and year level:

> so we then made indicators and did the checking—it's like they're checking out of Year 1 and we're ticking off, yeah they know that by the end of Year 1 (S1T34b L54-56).

School 2 participants highlighted the role NAPLAN data played in assisting students to become familiar with the level of performance expected at each stage of their learning. The principal from School 2 explained the follow-on effect from teachers to students in the establishment of benchmarks:

> because our awareness was more heightened, the children became more aware of what they had to do to produce good quality work (S2P L100-102).

Typical of School 3 participant descriptions of the use of NAPLAN data in establishing benchmarks was the beneficial assistance to teachers regarding the precision of their work with students, evident in the following observation from a Stage 3 teacher:

> I mean you have to do it anyway in school life, but I think the NAPLAN puts again a bit of that pressure on to say this is what they need to know, this is where they need to be, this is what they're going to need to achieve this year—it does give the teachers a goal of focus and direction again (S3T56a L127-132).

School 4 participants did not refer to NAPLAN data as a source for benchmarking, while the School 5 principal spoke of benchmarking in a broad sense, associated with growth between Years 3 and 5.

5.8.2 RQ 4 minor theme 2: skills focus for feedback.

As presented in Figure 5.17, 30 participants made 102 references to the influence of NAPLAN data on skills focused feedback for students. This represented 43 per cent of all references to the major theme of student feedback. Fifty-six per cent of all

references by participants from School 3 about student feedback were associated with establishing benchmarks, 54 per cent School 4, 50 per cent School 5, 46 per cent School 2 and 26 per cent School 1. As illustrated in Figure 5.17, 32 per cent of references to the influence of NAPLAN data on skills focused feedback were made by participants from School 2, 23 per cent School 3, 19 per cent School 1, 14 per cent School 4 and 13 per cent School 5.

Participants described the influence of NAPLAN data on skills focused feedback to students in a variety of ways. School 1 participants discussed the additional clarity NAPLAN data provided to teachers concerning specific skills students should have at various stages of development. The former assistant principal cited the clear focus NAPLAN data provided for teachers to provide quite specific feedback to students in the topic area of measurement and conversion:

> we were looking at measurement and conversion. There would be skills that we expected children to be able to demonstrate, we did what it would look like for a student as a D, a C and a B. We didn't go A and E. It was very time consuming and once we did that a couple of times, it gave teachers greater confidence in assessing students accurately (S1FAP L345-350).

School 2 participants described the influence NAPLAN data had upon the nature of feedback to students. Highlighted in the following comment from the principal of School 2 is the improved clarity and specificity of feedback to students, which led to greater confidence and responsibility among students for their learning:

> it allowed more explicit teaching to happen and it allowed a greater understanding for teachers that they needed to give children really deep and good

> feedback so that they knew what it was that they had to do, so instead of trying to play 'how do I make a good piece of work?' and just waiting for the teacher's response, the children were more responsible and independent themselves to know what [they had] to put into a piece of writing or what [they had] to do in this maths problem. So, the children are becoming much more explicit in the way they are thinking about the work, in the way they can articulate the work that they're doing (S2P L103-112, 461-463).

A teacher from School 2 expanded on the influence of NAPLAN data in assisting teachers to focus more specifically on the skills students needed to attain, as a key element in the feedback provided. The teacher explained the process:

> how we marked on just say writing as an example, on the criteria, the NAPLAN criteria. You can sit down with a student and say, 'ok I gave you a 2 for structure because you didn't have a conclusion. You only put in these language features so you've got this out of six', and I think the students respond to it quite well because they can see how they can improve their work. It's not a 'good work', 'you've done well', 'it was all right'.
>
> They see it more clearly. They ask how NAPLAN's marked and they ask—they're very inquisitive about all this but all the technical language that goes along with it, they soak it up. It's all soaked up and then they understand it a lot better when it comes to sitting down and saying, 'ok so you got 30 out of 50, did you edit, did you do this?' and you go through the marks and it's plain and simple for the students to see. It's clear … not 'oh you got 30 out of 50 but it was alright but it wasn't great' (S2T56a L322-329, 344-350, 352-353).

Participants from School 3 were consistent in identifying the role of the principal in providing detailed feedback to students and parents with the release of the NAPLAN results. Each student in Year 3 and Year 5 was sent a personalised letter in the mail from the principal, along with the results package from ACARA. In the letter were comments of congratulations and comments of encouragement. In each letter, the principal highlighted the areas for development based upon NAPLAN results, after referencing other school-based assessments to ensure consistency. The purpose of this time consuming process was to acknowledge the children's efforts and to ensure parents were informed and could share with their child the areas where the child excelled, as well as areas to be worked upon. References in the letter were also made to the learning group of the child, which were detailed in the earlier section on differentiation in this chapter.

Some participants from School 4 commented upon the influence of NAPLAN data on the language used with students when discussing feedback. A Year 5/6 teacher from School 4 recognised the development in the following reflection:

> I guess it's got me using the language a little bit more as well. I think, in terms of when the children are doing a piece of writing, I'm using the language that they're looking for. I'm using that in my feedback with the kids … and I know what to look for more in what they do. I guess before, because I hadn't taught a NAPLAN year and I hadn't really put a lot of focus—I taught Year 6 so I've looked at the NAPLAN results and I've looked at them the following year to see how the kids have gone but not really—and so now you sort of look for specific things cause you know more what they're really being asked to do. So I guess from me it's sort of guided the way that I give feedback to the kids because I know more what I need to feedback on (S4T56a L324-337).

A Year 3 teacher from School 5 noted the influence of NAPLAN data when providing a skills focus in feedback to students in an indirect manner, not over-emphasising NAPLAN data for her students. This participant discussed at length the increased sense of focus and purpose NAPLAN had provided for her and her colleagues in designing learning experiences and outcomes for their students:

> I like one-on-one conversations with my students and I will often call them to my desk and I might say, look Sam, at the beginning of the year you weren't using a lot of full stops and capital letters as effectively and now—if I feel that there's something I know is going to benefit this student in NAPLAN, I will say to them, I know that if you improve on this, and that will really help you—it's that feedback you're constantly giving the student about their learning and about the quality of their work that, without ever having to use the word NAPLAN, it's that constant feedback you're giving (S5T3 L393-402).

Overall, comparing responses across sites, participants from Schools 1, 2 and 3 made the most references and provided the richest descriptions of the influence NAPLAN data had in strengthening a skills focus by teachers in their feedback to students.

5.8.3 RQ 4 minor theme 3: engagement of students in their learning.

Thirty-two participants made 94 references to the influence of NAPLAN data on the engagement of students with their learning. This represented 40 per cent of all references to the major theme of student feedback. Forty-three per cent of all references by participants from School 1 to student feedback were associated with engagement in learning, 42 per cent School 5, 41 per cent School 2, 35 per cent School 4 and 34 per cent School 3.As illustrated in Figure 5.17, 33 per cent of references to the influence of

NAPLAN data on student engagement were made by participants from School 1, 31 per cent School 2, 15 per cent School 3, 12 per cent School 5 and ten per cent School 4.

Participants from all schools provided examples of references regarding the influence of NAPLAN data on student engagement in their learning. Participants from Schools 1 and 2 provided the most comprehensive references to this topic in number and content.

A Year 5/6 teacher from School 1 provided some reflections on the increased ownership by students of their learning progress, within the context of considering the influence of NAPLAN data on student feedback. The comment below describes a perceived increase in engagement by students in their learning, which was shared by other participants from School 1:

> I think that they have been made aware of their own learning styles, their own practices, their areas of strengths, their areas of weakness and for them to be more motivated in their own learning. That it's not just up to the teacher, I've got to be aware of, what I may need to practice. So if the teacher is communicating that, hopefully the children are then reflecting and hopefully taking steps in achieving their best or asking for help if they need it, or doing their own work at home to try and extend themselves. With the students I have seen in my classrooms, children asking for particular work, I would like to practice this, can you give me some activities on how to do that, or they've done their own independent work. They've come and shown me and you can just see that they're wanting to learn more and do more because you've just happened to communicate what's to be expected and they've just gone out and shown the enthusiasm for learning. To improve on something that they're not so good at or

> to extend themselves at the other end as well—being able to see that happen (S1T56a L316-323, 334-343).

The principal of School 2 similarly discussed her perceptions of the influence of NAPLAN data on student feedback and engagement by students in their learning:

> It made students more aware of their own work. It made them more independent. I think it made them understand what they had to do to be successful ... and the children actually ended up having a greater student voice out of it, because they had a say in what needed to be taught as well (S2P L132-135, 391-393).

A Year 3 teacher from School 2 described how after analysing the students' results from NAPLAN, she decided to create a series of tutorials for students, from which they could choose. While these were eight-year-old students, they exercised judgement regarding their own attainment of particular skills. The teacher described the process:

> last year I did go through some things with the students that they couldn't do and then I was calling them tutorials and letting them choose as well. They're very good at choosing actually, even Year 3s. Yes, and we've got this thing about, to be a learner, there's always things you don't know and so if you're a good learner you know that you need to know something. And because I call them tutorials and I told them that's university kind of stuff they're very proud to come to a tutorial (S2T3a L254-257, 261-265).

A Year 5/6 Teacher from School 2 described the influence of NAPLAN data on the practice of quite specific learning-goal setting by students:

> Feedback has had massive, massive [effects on] student outcomes, I think that has really pushed students themselves. The goal setting—all that sort of thing. We did goals at the beginning of the year and we amend them throughout the year and it's even little things. The kids write down, I want to improve my multiplication and division and then they come back and cross out and say, division, long division, it's getting more specific (S2T56a L407-417).

Comparing responses across sites, participants from Schools 4 and 5 made fewer and less specific references to the influence of NAPLAN data on student engagement.

In Figure 5.18, the frequency of references by participants from each school on the three minor themes associated with student feedback is presented as percentages of the total references made by participants from each school.

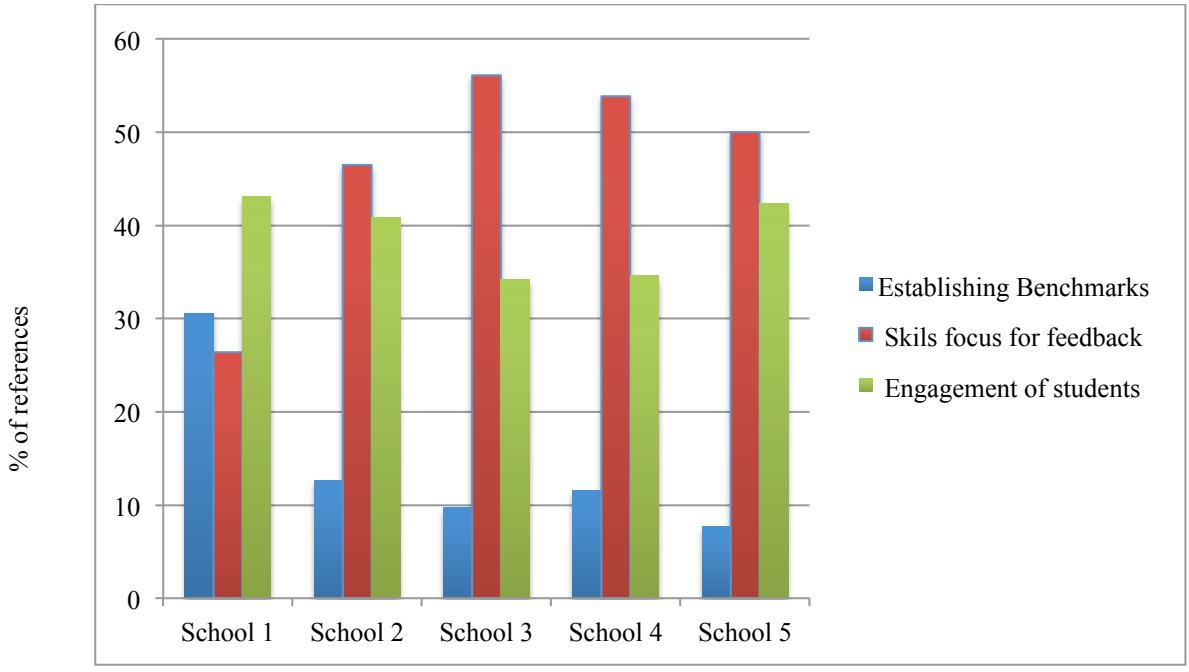


Figure 5.18. RQ 4 student feedback: minor themes.

5.9 Major and Minor Themes for RQ 5

The major theme to emerge from RQ 5 was the influence of NAPLAN data on school leadership. As illustrated in Figure 5.19, participants made 533 references associated with the influence of NAPLAN data on school leadership. Twenty-nine per cent of all references to the theme of leadership were by participants from School 3, 20 per cent School 4, 18 per cent School 1, 17 per cent School 2 and 16 per cent School 5.

Within this major theme of leadership, participants identified four minor themes. First was the influence of NAPLAN data in assisting school leaders and teachers in their planning. The second minor theme to emerge was the influence NAPLAN data had on aspirations for learning achievements. The third minor theme identified within the major theme of leadership was the use of NAPLAN data in goal setting. The fourth minor theme that emerged was the influence of NAPLAN data upon processes and expectations of accountability.

5.9.1 RQ 5 minor theme 1: planning.

Thirty-five participants made 243 references to the influence of NAPLAN data in assisting school leaders and teachers in their planning. This represented 46 per cent of all references to the major theme of leadership. Fifty-four per cent of references by participants from School 4 to leadership were associated with planning, 52 per cent School 3, 51 per cent School 5, 36 per cent School 2 and 31 per cent School 1.

As illustrated in Figure 5.19, 33 per cent of references to the use of NAPLAN data in leader planning were made by participants from School 3, 23 per cent School 4, 18 per cent School 5, 14 per cent School 2 and 12 per cent School 1.

Within the minor theme of planning, four components emerged, presented in Figure 5.19. The first component within the theme of planning emerged from participant references to the use of NAPLAN data and leadership of learning. The second component within the theme of planning emerged from participant references to the intergrated use of NAPLAN data within exisiting school planning processes. The third component emerged from references to whole-school approaches to learning, which included the use of NAPLAN data. The fourth component to emerge from participant references was the limited use of NAPLAN data in leadership planning processes.

5.9.1.1 Planning component 1: leadership of learning.

Participants made 82 references to the use of NAPLAN data by school leaders and teachers in their leadership of learning. This represented 34 per cent of all participant references to the minor theme of planning. Forty-eight per cent of all references to planning by participants from School 5 were about the elements of leadership of learning, 38 per cent School 3, 30 per cent School 1, 25 per cent School 4 and 24 per cent School 2.

Thirty-seven per cent of references about the use of NAPLAN data by school leaders and teachers in planning their leadership of learning were made by participants from School 3, 26 per cent School 5, 17 per cent School 4, 11 per cent School 1 and ten per cent School 2.

	Research Question 5													
	Major theme: Leadership												Major Theme Reference Totals per School	% Major Theme References per School
	Minor themes													
	Planning			Learning Achievements			Goal Setting			Accountability				
Participants		% Minor	%		% Minor	%		% Minor	%		% Minor	%	Total	
	References	theme	School	References	theme	School	References	theme	School	References	theme	School	School	
S1	30	12%	31%	34	37%	35%	14	21%	14%	20	15%	20%	100%	98	18%
S2	33	14%	36%	16	18%	18%	12	18%	13%	30	23%	33%	100%	91	17%
S3	80	33%	52%	18	20%	12%	20	30%	13%	35	27%	23%	100%	153	29%
S4	56	23%	54%	11	12%	11%	11	16%	11%	26	20%	25%	100%	104	20%
S5	44	18%	51%	12	13%	14%	10	15%	11%	21	16%	24%	100%	87	16%
Totals	243	100%		91	100%		67	100%		132	100%			533	100%
%	46%			17%			13%			25%					

Figure 5.19. References to minor themes for RQ 5.

	Research Question 5														
	Minor theme: Planning													Sub Minor Theme reference totals per school	% Sub Minor Theme references per School
	Sub minor themes														
	Leadership of learning	% Sub Minor theme	% School	Integrated Planning Processes	% Sub Minor theme	% School	Whole School approaches	% Sub Minor theme	% School	Limited use	% Sub Minor theme	% School	Total School %		
	References			References			References			References					
S1	9	11%	30%	7	18%	23%	13	15%	43%	1	3%	3%	100%	30	12%
S2	8	10%	24%	8	20%	24%	17	20%	52%	0	0%	0	100%	33	14%
S3	30	37%	38%	15	38%	19%	34	40%	43%	1	3%	1%	100%	80	33%
S4	14	17%	25%	4	10%	7%	6	7%	11%	32	86%	57%	100%	56	23%
S5	21	26%	48%	6	15%	14%	14	17%	32%	3	8%	7%	100%	44	18%
Totals	82	100%		40	100%		84	100%		37	100%			243	
%	34%			16%			35%			15%					

Figure 5.20. References to components of the minor theme of planning.

School leader participants from School 1 described the influence of NAPLAN data on their leadership of learning. The objectivity of the data was particularly important for the leaders from School 1 in prioritising the immediate learning needs of students, as described below by the former assistant principal:

> It has had an enormous effect. It has really made us focus on the learning and the leadership required to develop that learning and so it's very much integrated into our goals set and the annual improvement plan. So in my leadership, that's given me I believe more authority to come in say this is why we need to do it. It's also probably made me think a lot deeper about the importance of focusing on the needs of children (S1FAP L72-75, 38-41).

The principal from School 1 reflected on her increased emphasis on a culture of professional learning, and her increased expectations of teachers to engage in ongoing learning:

> I think I'm just much more focused on professional learning, on us as professional learners and I have a greater expectation of staff (S1P L92-93).

The principal from School 2 considered the influence of NAPLAN data in her leadership and planning of the learning agenda, saying that NAPLAN had 'emphasised the importance of the principal as an instructional leader' (S2P L91 notes).

The principal from School 3 also noted the importance of NAPLAN data in establishing the learning agenda at the school from a leadership perpsective:

> From my point of view, NAPLAN data is for me, a very serious part of the planning of where the school's moving to. So definitely it does feature in the planning, in my leading, what I filter through to the staff.

> We noticed that there was a need with reading, we implemented programmes that would help, resources. With boys, our Year 5 boys were not scoring on reading so then we thought 'we've got to get material suited to them'. Boys' education surfaced and then the rewards are when you see the growth in those boys over the years (S3P L323-327, 30-35).

The principal from School 5 described the influence of NAPLAN data on his role as a leader of learning, which he shared strategically with other members of the school's leadership team:

> I think obviously you're a leader for learning so obviously one of your responsibilities then becomes that you have to then help the staff to build their capacity for teaching so that the teaching and learning strategies that they're using in the classroom will actually help the kids. I think it's a leadership for learning. And because we had targeted data this year we all have roles that we have to play as leaders of learning as an executive (S5AP L334-342).

5.9.1.2 Planning component 2: intergration within existing planning processes.

Participants made 40 references to the integrated use of NAPLAN data by school leaders and teachers within existing school planning processes. This represented 16 per cent of all participant references to the minor theme of planning. Twenty-four per cent of all references to planning by participants from School 2 were about the elements of integration, 23 per cent School 1, 19 per cent School 3, 14 per cent School 5 and seven per cent School 4.

Thirty-eight per cent of references to the integrated use of NAPLAN data by school leaders and teachers within exisiting school planning processes were made by participants from School 3, 20 per cent School 2, 18 per cent School 1, 15 per cent School 5 and ten per cent School 4.

Participants from all schools made references to the integrated use of NAPLAN data by school leaders and teachers within exisiting school planning processes. The richest descriptions came from participants from Schools 1, 2 and 3. The assistant principal from School 1 explained the influence of NAPLAN data in the school's established planning cycle:

> Now each coordinator that's in charge of—whether it be English or mathematics, take on the role of analysing that data further and they do categorise them in the strengths and the areas of need and then when they've done their analysis we generally have a staff meeting and we display these results and our findings and then basically our annual plan for the following year, takes those areas of need and we consider that in our annual plan. It informs our whole-school strategic planning. It allows all teachers to be quite transparent and the school to be quite transparent with its direction and it sets the agenda for meetings and authentic programming across the school (S1AP L8-14, 432-435).

School leader participants from School 1 described the influence of NAPLAN data on their leadership of learning. The objectivity of the data was particularly important for the leaders from School 1 in prioritising the more immediate learning needs of students, as described below by the former assistant principal:

> It has had an enormous effect. It has really made us focus on the learning and the leadership required to develop that learning and so it's very much integrated into our goals set and the annual improvement plan. So in my leadership, that's given me I believe more authority to come in say this is why we need to do it. It's also probably made me think a lot deeper about the importance of focusing on the needs of children (S1FAP L72-75, 38-41).

The principal from School 1 identified NAPLAN data as a factor in the annual discernment undertaken in allocating teachers to particular grades and classes for the following academic year:

> One thing we do try and do at this school when we're planning for the next year, when we're looking at teachers to go on different grades, we're really planning to have those teachers that will work really well together and that will professionally develop each other as much as possible (S1P L665-669).

School 3 leaders spoke extensively of the influence of NAPLAN data in the established annual school review and improvement planning processes, represented in the following comment from the School 3 assistant principal:

> It drives it. It drove it for us really. We had a look at the results, we analysed it and analysed it, we looked at all the areas, we took it seriously and then we worked out, well why is this group doing this, and we looked at the boys and we looked at the girls and we looked at all the different break ups of NAPLAN and decided on what was best for these children and how we were going to meet their needs (S3AP L121-128).

5.9.1.3 Planning component 3: whole-school approaches.

Participants made 84 references to the use of NAPLAN data by school leaders and teachers in planning whole-school approaches to learning. This represented 35 per cent of all participant references to the minor theme of planning. Fifty-two per cent of all references to planning by participants from School 2 regarded the elements of whole-school approaches, 43 per cent School 1, 43 per cent School 3, 32 per cent School 5 and 11 per cent School 4.

Forty per cent of references to the use of NAPLAN data by school leaders and teachers in planning whole-school approaches to learning were made by participants from School 3, 20 per cent School 2, 17 per cent School 5, 15 per cent School 1 and seven per cent School 4.

Participants referred to the influence of NAPLAN data by school leaders and teachers in planning whole-school approaches to learning. School 3 participants provided detailed descriptions and explained that NAPLAN influenced the decision to restructure the school's organisation. In close consultation with parents, School 3 moved from a traditional seven-grade primary school to an arrangement where students from all year groups were placed in ability groups for core subjects, in a manner similar to secondary school organisation. (This initiative was discussed earlier in the chapter in association with RQ 1.) The whole-of-school approach to specific areas of learning was a dominant feature of discussion with participants from School 3, and was reportedly influenced by their analysis of NAPLAN data, as commented by the assistant principal:

> So we used that data then to inform, actually the restructuring of the whole school. We had a dedicated timetable and I think that helps because if a teacher's not feeling very confident in teaching maths or in teaching whatever, they'll

> leave it for the day and then there would be another day they'd leave it and then there would be another day they'd leave it. We put all the support wherever the need was. If it was numeracy, we put all the support in the numeracy sessions. And everyone did numeracy at the same time (S3AP L11-12, 25-29, 42-44).

The school 3 principal cited the improvement in NAPLAN results and overall student progress as indicating the approach's effectiveness:

> It was a whole school, Kinder to [Year] 6 approach, and the results just started to show and they've been strong ever since (S3P L170-173).

A Year 3 teacher from School 3 articulated the influence of NAPLAN on whole-school approaches to learning, professional goal setting by teachers and strategic planning:

> We've had so many meetings and professional development days based on—here's our NAPLAN, how do we continue to improve their results and it's basically everything—our PPPR, in everything, that's the focus. In our SRIs and the other thing, it's basically, we've got these weaknesses, how do we strengthen that and we've got these really high achievers, how do we extend them and make it work for them (S3T34a L96-104).

Participants from School 2 also described the influence of NAPLAN data on their whole-school approach to learning. The assistant principal highlighted that NAPLAN helped them identify the need for students to become more skilled in finding inferential meanings in written text. As a result, the following action was taken, as described by the School 2 assistant principal:

> we developed a whole-school plan where teachers would have a story prepared, a particular set of pictures, we'd look at some inferential questions and that would go across the whole school at the same time (S2AP L30-33).

A Year 5/6 teacher from School 2 explained the influence of NAPLAN in creating a more cohesive learning sequence for students as they transitioned to their next grade in the new school year:

> having a unified approach to NAPLAN, that would affect the students because they can see there's a consistency. When we adopt processes that the school puts in place, I think it's really important that the students see us united. They see it, not different from class to class, so it makes the transition easier. It makes the work easier because if it is all consistent, you're all building to the same thing (S2T56a L427-433).

Comparing participant responses across sites, using NAPLAN data in systematic broadly understood whole-school approaches to learning was most evident in Schools 1, 2 and 3.

5.9.1.4 Planning component 4: limited use of NAPLAN data in planning.

Participants made 37 references to the limited use of NAPLAN data by school leaders and teachers in planning. This represented 15 per cent of all participant references to the minor theme of planning. Fifty-seven per cent of all references to planning by participants from School 4 were about the elements of limited use, seven per cent School 5, three per cent School 1, one per cent School 3 and zero per cent School 2.

Eighty-six per cent of references concerning the limited use of NAPLAN data by school leaders and teachers in planning, were made by participants from School 4, eight

per cent School 5, three per cent School 1, three per cent School 3 and zero per cent School 2.

The School 4 assistant principal observed that the former principal (who had responsibility for the school between 2008 and 2012) purposefully emphasised the level of importance he perceived NAPLAN data had in that school's context. These thoughts are presented in the following comment:

> I think at first it was something that was feared and it was very reassuring when the former principal set the guidelines saying that we weren't going to be driven by NAPLAN data. Obviously because our results, that's one of the reasons I'm here, but I found it quite reassuring that he said, okay we will work towards improving this but we're certainly not going to let it dictate, takeover the way that we're going. So we use the data and try and use it to inform teaching but it certainly won't, because I know it's been the history in some schools where you work towards teaching to the test and the rest of it so that wasn't—that set the ground rules here very nicely. I think there was a much more relaxed attitude then. Perhaps too relaxed (S4AP L6-16, 30-31).

The former assistant principal, who was at the school between 2008 and 2012, described the context of School 4 at the time NAPLAN came into being in the following quotation. This highlights the perceived priorities at the time, as well as the attitude of the leadership team to the capacity of NAPLAN data to influence their decision making:

> And that was the beginnings of—because we had to change the culture within the school, with the teachers role as teachers because … the nature of this school was we were trying to meet the emotional needs of students and until those emotional

> needs were met students weren't ready to engage in learning. So teachers were actually—they were totally focused on the behaviours, more so than the learning and we had to then change that culture and make the focus about learning, but we had to work on behaviours first and we did that through building the relationships with the students—it was about the rapport that you had. You have to look at the data in the context of the school and as much as we're having this conversation about NAPLAN and essentially trying to discern its importance and significance in changing teaching and learning and improving student outcomes—I do have to strongly question how important it is in terms of the leadership (S4FAP L60-62, 63-71, 206-212).

The former principal, with 30 years experience as a principal in Catholic primary schools, described the focus he promoted in the midst of NAPLAN during 2008 and 2012:

> We had to fight against that (NAPLAN) and keep reminding ourselves that oral was still the most important thing. We had to fight to not teach to the test and to spend too much time practising for the test. We also spent a lot of staff meetings analysing all those kind of things which took us away from some of the richer learnings that we should have been having and professional development for teachers ... and the teachers don't always have time to go away after dinner at night to look at this boring stuff—and that's just the reality of it (S4FP L53-61, 307-309).

Comments from other School 4 participants reflected these sentiments and observations were also made that NAPLAN analysis and use of data had been sporadic, without a coordinated, concerted and systematic approach by the school leaders.

5.9.2 RQ 5 minor theme 2: learning achievements.

As illustrated in Figure 5.19, twenty-five participants made 91 references to the influence NAPLAN data had had on aspirations for learning achievements. This represented 17 per cent of all references to the major theme of leadership. Thirty-five per cent of references by participants from School 1 about leadership were associated with aspirations for learning achievements, 18 per cent School 2, 14 per cent School 5, 12 per cent School 3 and 11 per cent School 4. Thirty seven per cent of references about the influence NAPLAN data had on aspirations for learning achievements were made by participants from School 1, 20 per cent School 3, 18 per cent School 2, 13 per cent School 5 and 12 per cent School 4.

Participants from Schools 1, 2 and 3 provided the most numerous and comprehensive references regarding the influence of NAPLAN data on aspirations by teachers and students on learning achievement. School 1 participants emphasised this aspect most prominently. The principal from School 1 highlighted the influence of NAPLAN data in shifting the thinking of many staff members regarding their aspirations for the children they taught. The figure of 15 per cent ‘special ed’ students is notable here. This refers to the percentage of students at the school who receive additonal commonwealth government funding, due to their limited intellectual capacity or another profound disability that impedes normal learning. The average percentage of funded special needs students in NSW Catholic primary schools is approximately 4.5 per cent

(CECNSW, 2014). The School 1 principal explained her perceptions of the influence of NAPLAN data in the context of learning achievement:

> You've really got to move and I've really tried hard to do this with teachers, you've got to try and move that thinking, ok, there's so many special ed, we've got 15 per cent—you've got to move that thinking and I love the way our regional advisor says, whether they're special needs or not, they've got to be able to buy a house, they've got to be able to buy a car. There is that tendency that you've got to work with staff to not make excuses for results and to have high expectations of your kids (S1P L176-185).

The assistant principal from School 1 identified the influence of NAPLAN data in promoting teacher aspirations for students' learning achievements, describing NAPLAN data as a constructive diagnostic tool that provided guidance for future action, as opposed to a defeatist attitude that can become pervasive in the light of poor results. As a leader, the assistant principal highlighted not only improved student learning outcomes, but also increased teacher capacity:

> It influences it in the way that—how can we improve student's outcomes and not in the way—'oh gee, we're really bad at [that]'. And it doesn't bring me down. We know where our kids are at and what they're capable of so in the fact that to influence me we've got two areas of need and that's building our teacher capacity and improving our student outcomes (S1AP L499-504).

The principal from School 2 explained the influence of NAPLAN data in the context of aspirations for learning achievement. NAPLAN provided a lens through

which to consider some fundamental questions concerning expectations of students and possible preconceived limitations:

> Again, it questions the whole idea of looking at your programme, have I been putting ceilings on the programme, has it been too easy what we've been giving this child, have we stopped the opportunity for growth there. If you didn't have that information, you wouldn't have probably even started to have that conversation because by looking at the child, they're doing really well (S2P L609-615).

The School 5 principal commented on aspirations for learning achievment influenced by NAPLAN in a compettive sense, in comparison to other primary schools in the immediate local area.

5.9.3 RQ 5 minor theme 3: goal setting.

As illustrated in Figure 5.19, twenty-four participants made 67 references to the use of NAPLAN data in setting goals. This represented 13 per cent of all references to the major theme of leadership. Fourteen per cent of references by participants from School 1 on leadership were associated the use of NAPLAN data in setting goals, 13 per cent School 2, 13 per cent School 3, 11 per cent School 4, and 11 per cent School 5. Thirty per cent of references to the use of NAPLAN data in setting goals were made by participants from School 3, 21 per cent School 1, 18 per cent School 2, 16 per cent School 4 and 15 per cent School 5.

School 1 participants described the influence of NAPLAN data on their own personal and professional goals, which they described as having an eventual impact on student learning achievement. Central to the goals described was an improved capacity

to use data in support of student learning. NAPLAN was cited as a factor influencing these intentions.

School 2 participants described an evolution in their goal settting since the advent of NAPLAN, which is consistent with the scholarly literature (Fullan et al., 2006; Hargreaves & Shirley, 2009). Participants described the practice of setting targets after the initial iterations of NAPLAN data, which were based upon percentages of students achieving at specific band levels, as reported from NAPLAN. Participants from School 2 reflected on the development of more meaningful goal setting strategies, which focused on improving teaching practice in the more recent iterations of the NAPLAN data.

School 3 participants described NAPLAN data as influential in their goal setting as a school, and perceived the data as a credible basis upon which to set goals and evaluate progress. These sentiments are captured in the four commentss below from School 3 leader and teacher participants:

> The NAPLAN data drives it. The goal setting of course, even our action research (S3AP L193-194).

> Knowing what we're doing, we are setting our bars higher, our objectives, our goals, are much higher. I think it's had a big impact really, it's had a big impact (S3T56c L160-163).

> The second goal is always about the needs right now and NAPLAN is a very strong instrument that tells us in black and white where we're at (S3P L284-287).

> I think that's the biggest thing that we look at when it comes to kids achieving and it's through NAPLAN, as well as other things, but it's mainly NAPLAN that

> we look at – ok right we've got weaknesses here, here and here, how do we strengthen them and that obviously gets those targets (S3T34a L75-80).

School 3 participants also observed the manner in which NAPLAN data provided a common purpose for shared goal setting among teachers for improving student learning outcomes. School 4 participants reported that personal goal setting was something refined by the new principal who commenced in 2013, after the period of testing relevant to this research. Participants did reflect on the importance they saw in hindsight regarding the need to include NAPLAN data in their personal goals for professional growth.

The School 5 principal described the use of NAPLAN data in setting goals and targets for Year 5 students, based upon their school-based assessment. NAPLAN data in this case was used as an external reference for the teachers' professional judgement, as described below:

> I don't look for anything too much in Year 3, but Year 5 is where we really plot and I start to think, now that kid I reckon is going to be about there and that kid's about there and then we just look at the end and see how close we were, were we surprised, were we disappointed or we got one (S5P L474-480).

Other participants from School 5 reported goal setting in relation to NAPLAN data as a more recent, but important phenomenon. A Stage 2 teacher described how NAPLAN data had assisted in motivating her to create quite specific professional short term goals throughout the year that were explicitly related to student learning progress.

5.9.4 RQ 5 minor theme 4: accountability.

As illustrated in Figure 5.19, thirty-five participants made 132 references to the use of NAPLAN data in processes and expectations of accountability. This represented 25 per cent of all references on the major theme of leadership. Thirty-three per cent of references by participants from School 2 on leadership were associated with the use of NAPLAN data in processes and expectations of accountability, 25 per cent School 4, 24 per cent School 5, 23 per cent School 3 and 20 per cent School 1. Twenty seven per cent of references to the use of NAPLAN data in processes and expectations of accountability were made by participants from School 3, 23 per cent School 2, 20 per cent School 4, 16 per cent School 5 and 15 per cent School 1.

Participants commented upon the influence of NAPLAN data on the accountability aspect of leadership in various ways. Participants from all schools nominated similar characteristics of accountability associated with NAPLAN data. A sense of accountability among individual teachers for the importance of the work they were doing with students was emphasised by participants from all schools as a positive influence of NAPLAN data. Importantly, participants from Schools 1, 2, 3 and 5, more often expressed this sentiment. School 4 participants provided a number of negative reflections on the level of accountability they perceived associated with NAPLAN data, which, will be discussed in the section later in this chapter titled, ‘NAPLANENZA’. Participants from Schools 1, 2, 3 and 5 described the accountability associated with NAPLAN data as a positive and motivating influence. NAPLAN data were perceived to have influenced a greater level of ownership among staff for the learning of all students in the school. Participants also named the Sydney Catholic Education Office consistently in association with accountability and NAPLAN data, particularly in terms of planning.

Participants from all schools reflected on the competitive edge NAPLAN data had brought to primary education. Participants from Schools 1, 2, 3 and 5, commented upon this positively.

School 2 participants provided rich and insightful comments regarding the influence of NAPLAN data on the accountability of teachers and leaders. The principal of School 2 described the underlying sense of accountability to parents and the broader community she experienced, and felt resonated with her teachers. In her comment below, there is also a sense of shared accountability as fellow educators in the same school:

> you would say, look, as a staff we have decided, we have collectively made a decision that we're going to change our approach to teaching and I've noticed that perhaps you seem to not be taking up with that approach very quickly or easily, what can you tell me about that. So that's the way the discussion would go but it was always—NAPLAN, even though you wouldn't say NAPLAN results impacted every day of your school, it indirectly does have a great contribution to what goes on in the school because there is an element of accountability to it. For me as a leader I think you can't escape the fact that NAPLAN results do have an impact on the way your school is viewed. On the way your school is either successful or non-successful. I think you can't get away from that (S2P L211-222, 225-229).

Interestingly, a Year 5/6 teacher from School 2 positively observed the increased accountability she felt NAPLAN engendered for school leaders, which would ultimately lift standards for the students:

> The thing that I've really liked about the results is it does place a pressure on principals and on the executive—I think to really have a look at how their school's performing and because of that pressure you have to put things in place to rectify any weakness and that can only be a good thing for the kids I think (S3T56a L193-198).

In School 4, where NAPLAN data was not overly emphasised by the school leaders, an interesting comment was made by the assistant principal about the influence NAPLAN data can have on accountabilty for school leaders:

> I think you do need a certain amount of pressure on staff, no this is our core business and this is a part of our core business and you do need that—good teachers will do it anyway but there's some teachers who need to be gently pushed towards that (S4AP L493-496).

The School 4 principal also commented upon the influence of NAPLAN data on her leadership accountabilities, especially when discussing challenges and strategic plans for improved learning outcomes for the students with her superiors in the Catholic Education Office. School 4 participants were the only ones who referred to the explicit use of NAPLAN data in dealing with performance-related issues with staff.

A highly experienced teacher in School 5, who had leadership responsibilities, described the influence of NAPLAN data on her own sense of accountability:

> It's huge. It very much drives you, it drives you to be a better teacher and it drives you to work harder in a sense or work smarter but it makes you more accountable to the parent community, to your students … we were very well aware as a team that our results in NAPLAN for a period of time, hadn't been

> quite up there, in comparison to the schools in our local area and we were always quite—we thought what are we doing as a team to make that better, we needed to improve that I think sometimes that little bit of competition makes you strive to work as a team to build, to raise that and it also too, raises the status of the school and I think it does. Cause there's nothing better than being out in conversation and hearing someone say, oh, that school was top five in the state in NAPLAN and you think, oh well that's where I teach. It makes you feel good as an educator that you're working in a strong school. That definitely helps (S5T3 L196-200, 232-251).

In Figure 5.21, the frequency of reference by participants in each school to the four minor themes is presented as percentages of the total references made by participants from each school.

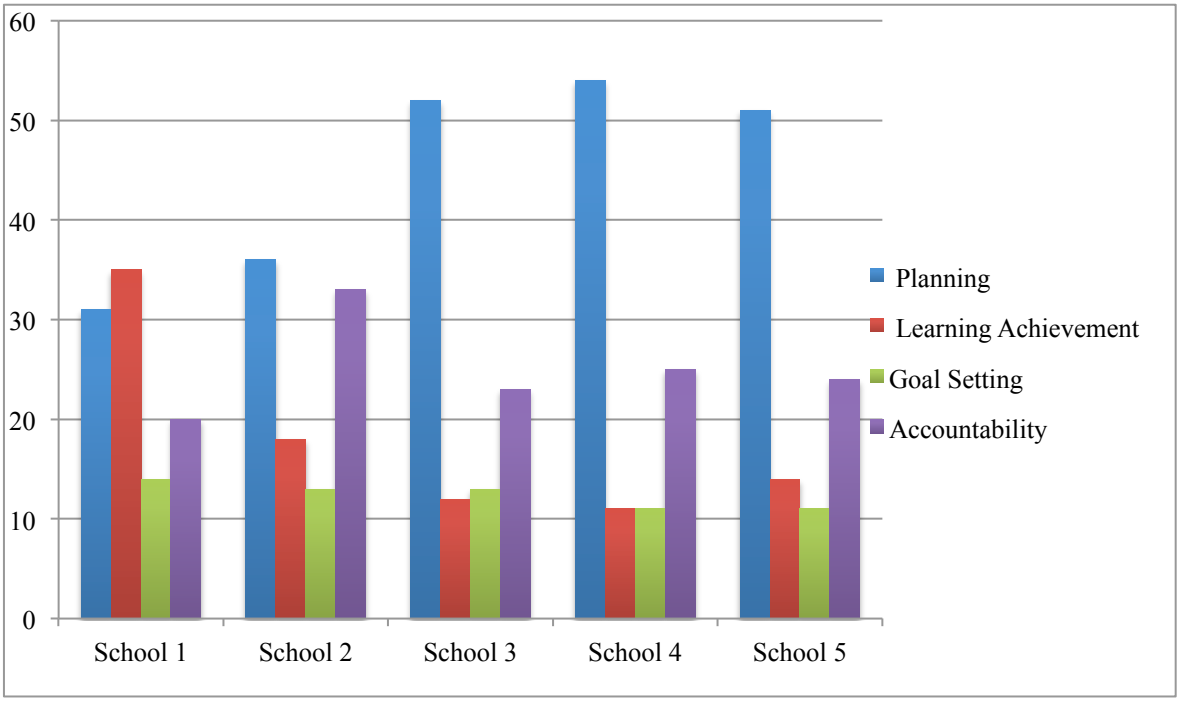


Figure 5.21. RQ 5 leadership: minor themes.

5.10 NAPLANENZA

The researcher has coined the term 'NAPLANENZA' to categorise participant responses that were negative regarding the whole testing and public reporting regime associated with NAPLAN. While such comments did not dominate participant responses, 52 negative references were identified. Debate in the Australian media continues surrounding the benefit of NAPLAN data when weighed against the anxiety it causes students. This data is presented within this context.

Twenty participants made 52 references to the negative influence of NAPLAN data. Sixteen references were made by participants from School 2, 14 from School 3, ten from School 1, ten from School 4 and two from School 5.

NAPLANENZA can be classified by five main symptoms. Firstly, there was real concern expressed by participants about the prolonged anxiety experienced by some students. Cases of highly anxious children seeking practice NAPLAN questions early in Year 3 were cited by a participant from School 2:

> they're asking for tests in the first week of Year 3. The kids came in and went, it's NAPLAN year and I thought, gosh this is what Year 3's about! (S2T3b L208-210)

The same teacher observed two students lose confidence in their ability to learn and take risks after NAPLAN results were released. A teacher from School 3 cited the example of a student who spent their whole school holidays practising for NAPLAN. The parents of two students with cognitive needs in School 1 approached the principal for NAPLAN preparatory assistance when the children were in Year 2.

The second symptom of NAPLANENZA is the anxiety manifested among parents, which is inevitably transferred to their children and teachers. A teacher from School 1 described the abundance of NAPLAN preparatory books in local bookstores, which sold well. Concerns regarding acceptance into the more popular secondary Catholic schools also drove this anxiety among parents, as NAPLAN results were reportedly used by many schools as a determining factor when accepting new enrolments. Teachers from School 5 commented on requests by parents for NAPLAN practice activities for their children to complete over the school holiday period.

The third symptom is the pressure experienced by teachers, with Year 3 and Year 5 classes in particular. This was reported by participants from most schools, despite the common rhetoric that NAPLAN is a whole-school responsibility. Many also commented upon the unrealistic expectations of parents in regard to their child's capacity.

Associated with this pressure was the fourth and most common symptom of NAPLANENZA among teachers, which was compromised pedagogy. Participants in all schools reflected with varying degrees of passion on the narrowing of the curriculum, overt and covert practice test sessions with students, the delay between the test and the results, and the inherent disadvantage experienced by ESL learners in the NAPLAN testing regime, and the appropriateness of children as young as eight-years-old sitting for 40 minute blocks in silence to complete written tests. A teacher from School 2 expressed her abhorrence with the whole NAPLAN regime, citing failed experiences in the USA and UK with elements of large - cohort testing regimes and reports of detrimental effects such regimes had on quality education.

The fifth symptom of NAPLANENZA identified by participants was characterised by their concerns around erroneous perceptions and misconceptions of

their students, perpetuated among the wider community by the limitations of information presented on the *My School* website. Teachers with classes made up of students with abnormal percentages of special needs expressed their concern in regard to the reality of results represented on the *My School* website. Students from some non-English speaking backgrounds were also at a perceived disadvantage, according to some participants.

5.11 Conclusion

This chapter presented interview data in relation to each of the five RQs. Various themes, minor themes and their components emerged and the responses by participants from each school were discussed, with examples provided to highlight the different emphases presented. In Table 5.2, the various themes and components identified by participants have been ranked by school in descending order, according to the richness of detail in the described influences of NAPLAN data on student learning outcomes. This analysis presents the researcher's interpretation and comparison of participant responses by school, as a summary of the observations made throughout this chapter. The analysis reported in Table 5.2 is presented graphically in the following five figures. Figures 5.22–5.26 present schools ranked according to the detail of participant descriptions using NAPLAN data to inform pedagogy in ways perceived to influence improved student performance as measured by NAPLAN.

The next chapter, Chapter 6, will discuss the findings in light of the scholarly literature and the RQs.

Table 5.2

Schools Ranked According to Detail of Participant Descriptions of Using NAPLAN Data in Ways Perceived to Influence Improved Student Performance

	Theme/Minor theme /component	School 1	School 2	School 3	School 4	School 5	
RQ 1 Informing Pedagogy	pedagogical frameworks	5	4	4	2	2	
	grouping students	4	3	5	2	2	differentiation
	differentiating teaching programmes	4	4	5	1	2	
	individualized learning experiences	4	5	4	2	1	
	programming for explicit teaching	5	4	4	2	2	explicit teaching practices.
	specific learning outcomes	5	4	3	3	1	
	explicit teacher practice	5	5	3	1	1	
	language of NAPLAN questions	5	5	3	4	4	
RQ 2 Professional Learning	learning discourse building teacher capacity	5	5	3	1	2	Learning discourse
	professional collegial support	4	4	5	1	2	
	developing skills in data literacy	3	5	4	2	2	
	learning discourse teaching practice	5	5	3	2	2	
	knowing students	4	5	4	1	2	
	parent engagement	4	1	5	2	4	
	PLC teaching practice	5	4	4	1	2	Professional Learning Communities
	PLC programme development	5	4	4	1	2	
	PLC deep professional learning	4	4	5	1	2	
	PLC organisation and leadership	5	5	2	1	3	
	Learning time	5	4	3	1	2	
	Expertise	5	1	4	3	2	
RQ 3 Assessment	formative assessment	5	4	4	2	2	nature of assessment
	SMART and formative assessment	5	4	4	2	2	
	NAPLAN style assessments	5	4	4	2	2	
	assessment matrices	5	4	4	2	2	management and use of assessment data
	external validity	5	5	5	2	2	
	diagnostic processes	5	5	5	2	2	
RQ 4 Student feedback	establishing benchmarks	5	4	4	1	2	
	skills focus for feedback	4	5	4	2	2	
	engagement of students	5	4	3	3	3	
RQ 5 Leadership	leadership of learning	5	2	5	1	3	planning
	integrated planning processes	5	5	3	1	2	
	whole school approaches	4	4	5	1	2	
	limited use	1	1	1	5	4	
	learning achievements	5	4	2	1	3	
	goal setting	4	4	5	1	2	
	accountability	5	5	5	1	5	

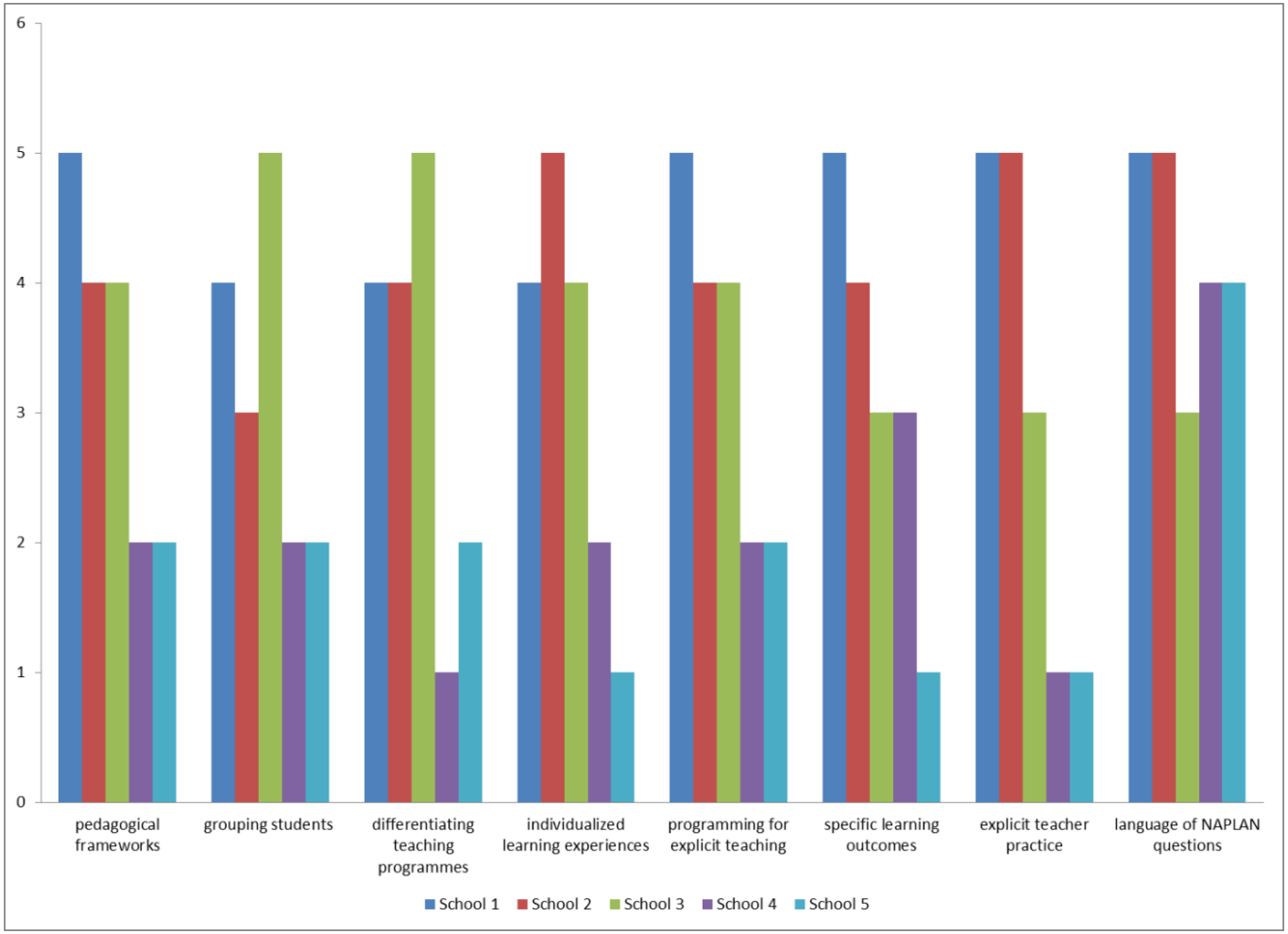


Figure 5.22. RQ 1 Schools ranked according to detail of participant descriptions of using NAPLAN data to inform pedagogy in ways perceived to influence improved student performance.

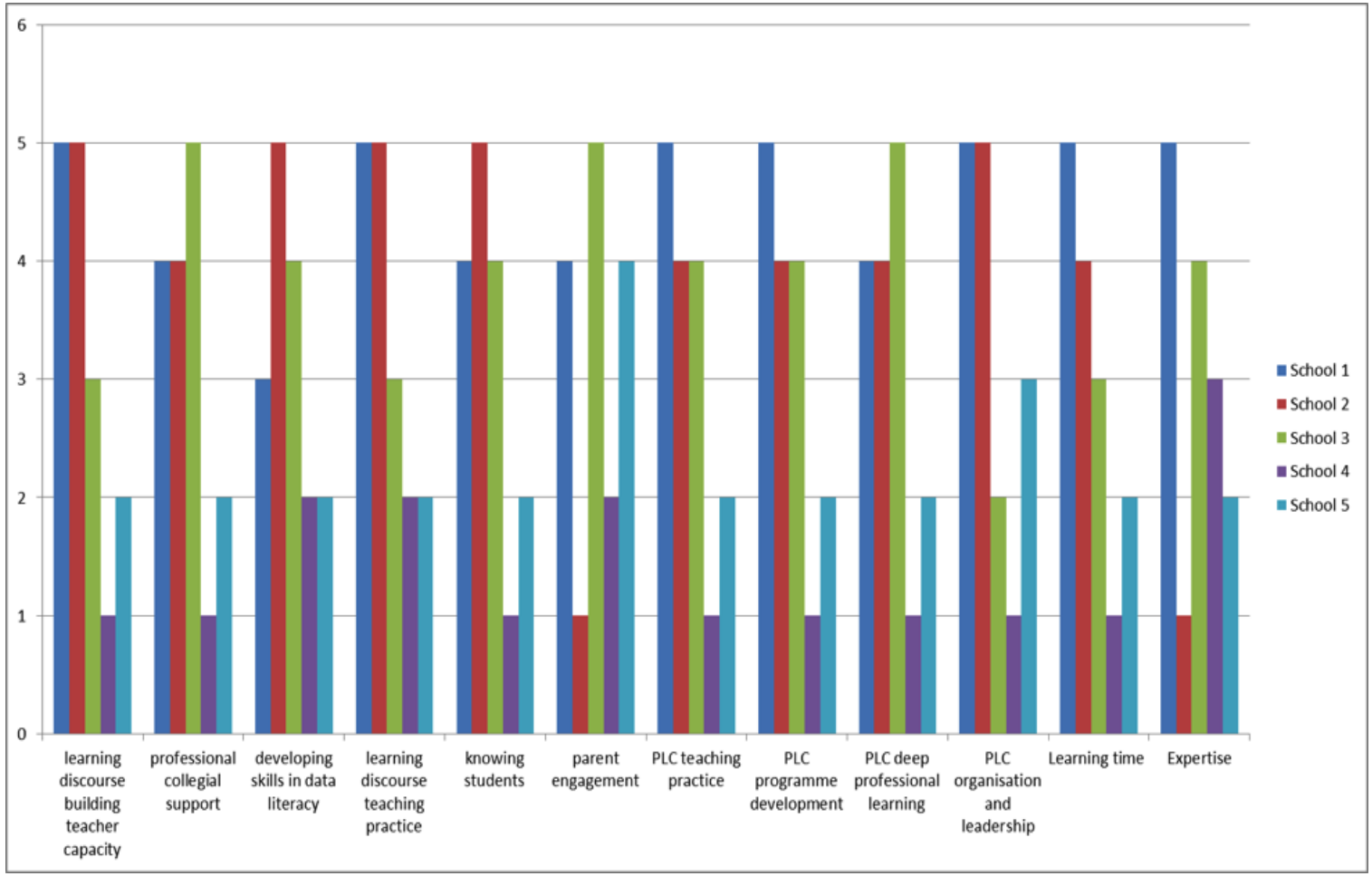


Figure 5.23. RQ 2 Schools ranked according to detail of participant descriptions of using NAPLAN data to inform professional learning in ways perceived to influence improved student performance.

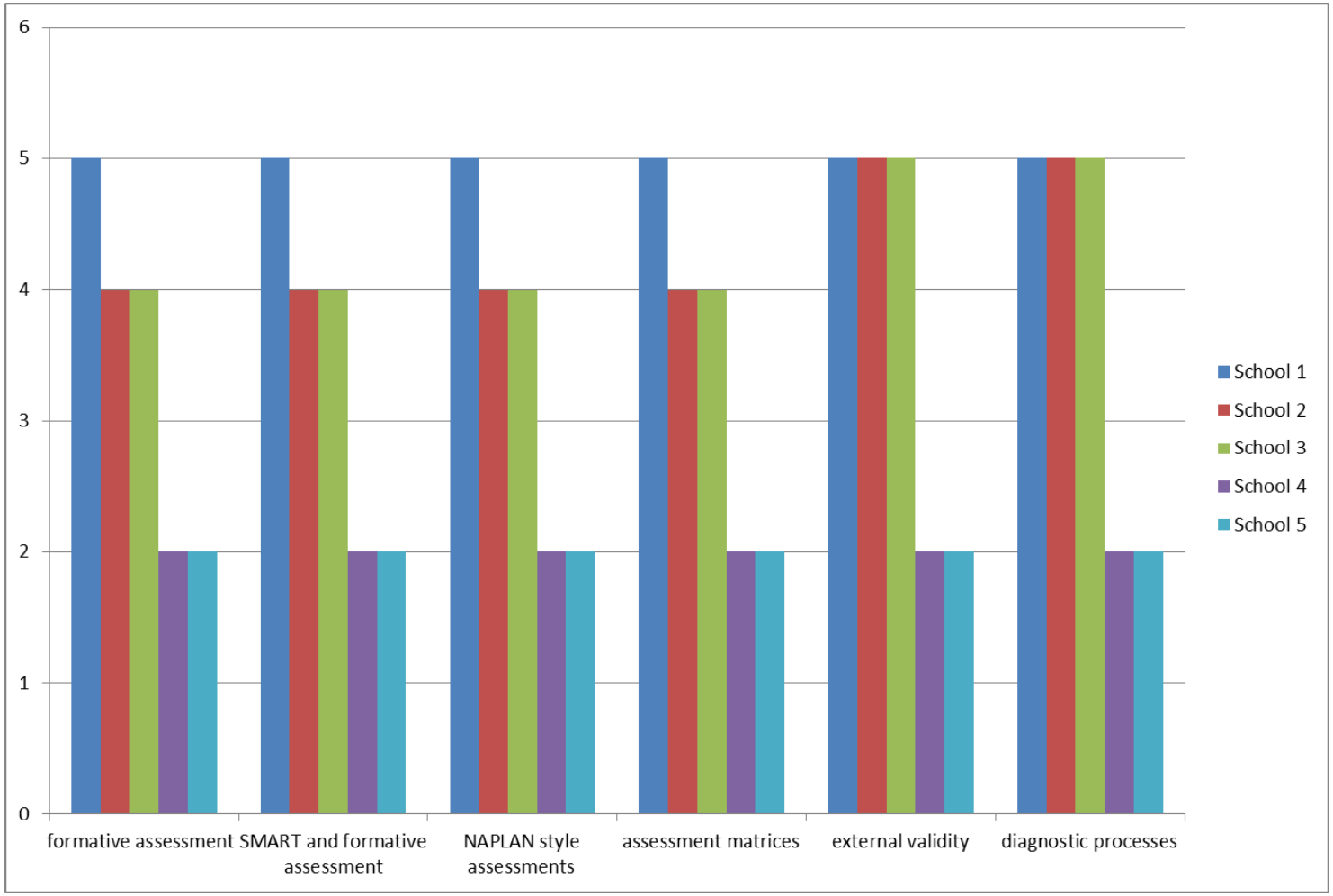


Figure 5.24. RQ 3 Schools ranked according to detail of participant descriptions of using NAPLAN data to inform assessment in ways perceived to influence improved student performance.

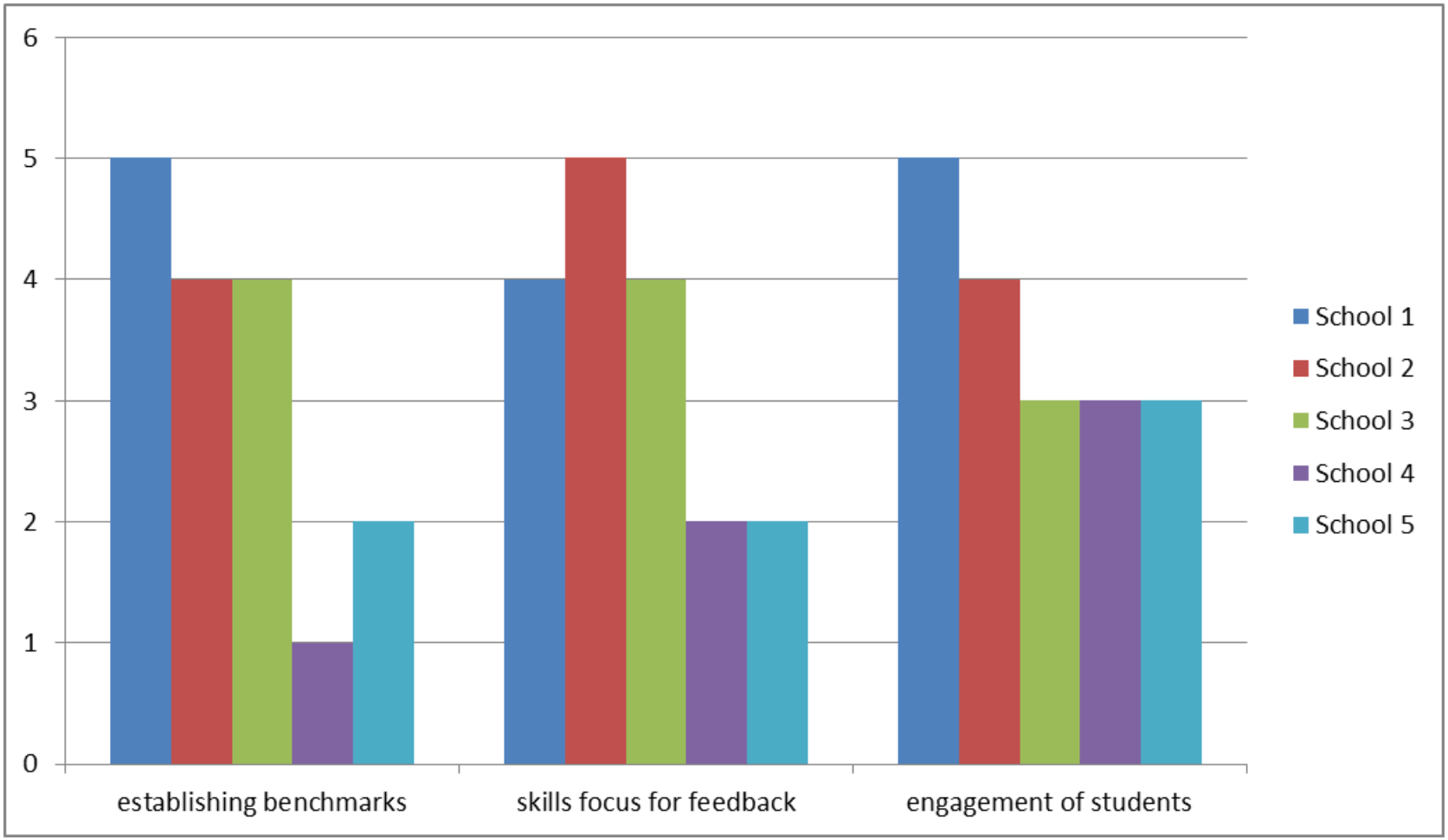


Figure 5.25. RQ 4 Schools ranked according to detail of participant descriptions of using NAPLAN data to inform student feedback in ways perceived to influence improved student performance.

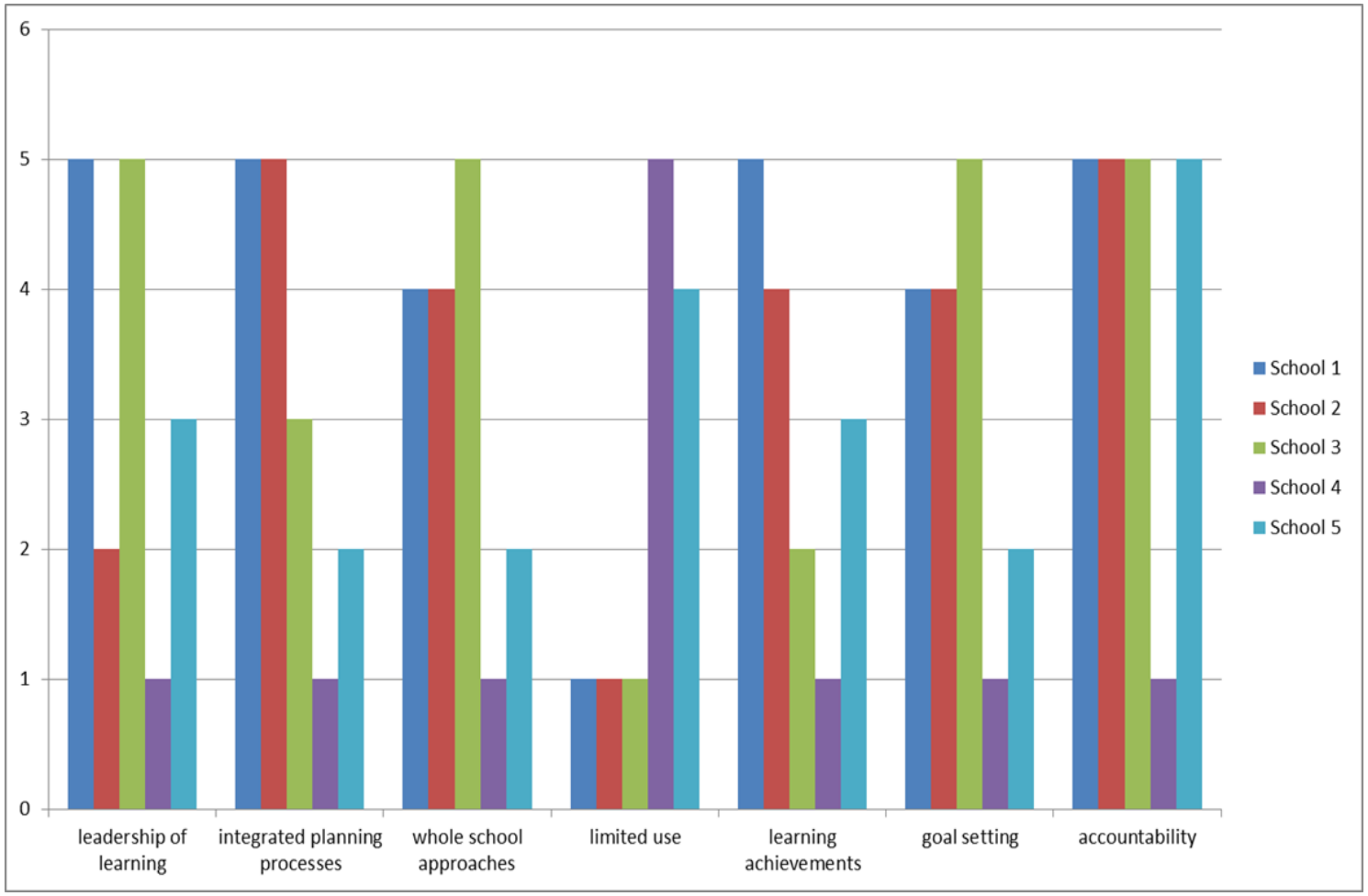


Figure 5.26. RQ 5 Schools ranked according to detail of participant descriptions of using NAPLAN data to inform leadership in ways perceived to influence improved student performance.

Chapter 6 Discussion of the Research Findings

6.1 Introduction

This chapter discusses the data presented in Chapters 4 and 5, and analyses the research findings in the context of the five RQs. The five RQs were designed to explore the themes identified in the review of the scholarly literature, as discussed in Chapter 2. The focus for the RQs, along with the four themes from the scholarly literature, are represented diagrammatically in Figure 6.1. The first theme identified through the scholarly literature was leadership. RQs 1 and 5 are most closely associated with the theme of leadership. The second theme was mentoring, monitoring, and professional development and this theme was most closely associated with RQs 2 and 5. The third theme was teacher practice, which related to RQs 1, 2 and 5. The fourth theme was assessment, which related to RQs 3, 4, and 5.

Participant responses to the interview questions were categorised according to the major and minor themes that emerged from the interview data. They are illustrated in the previous chapter, in Figure 5.3

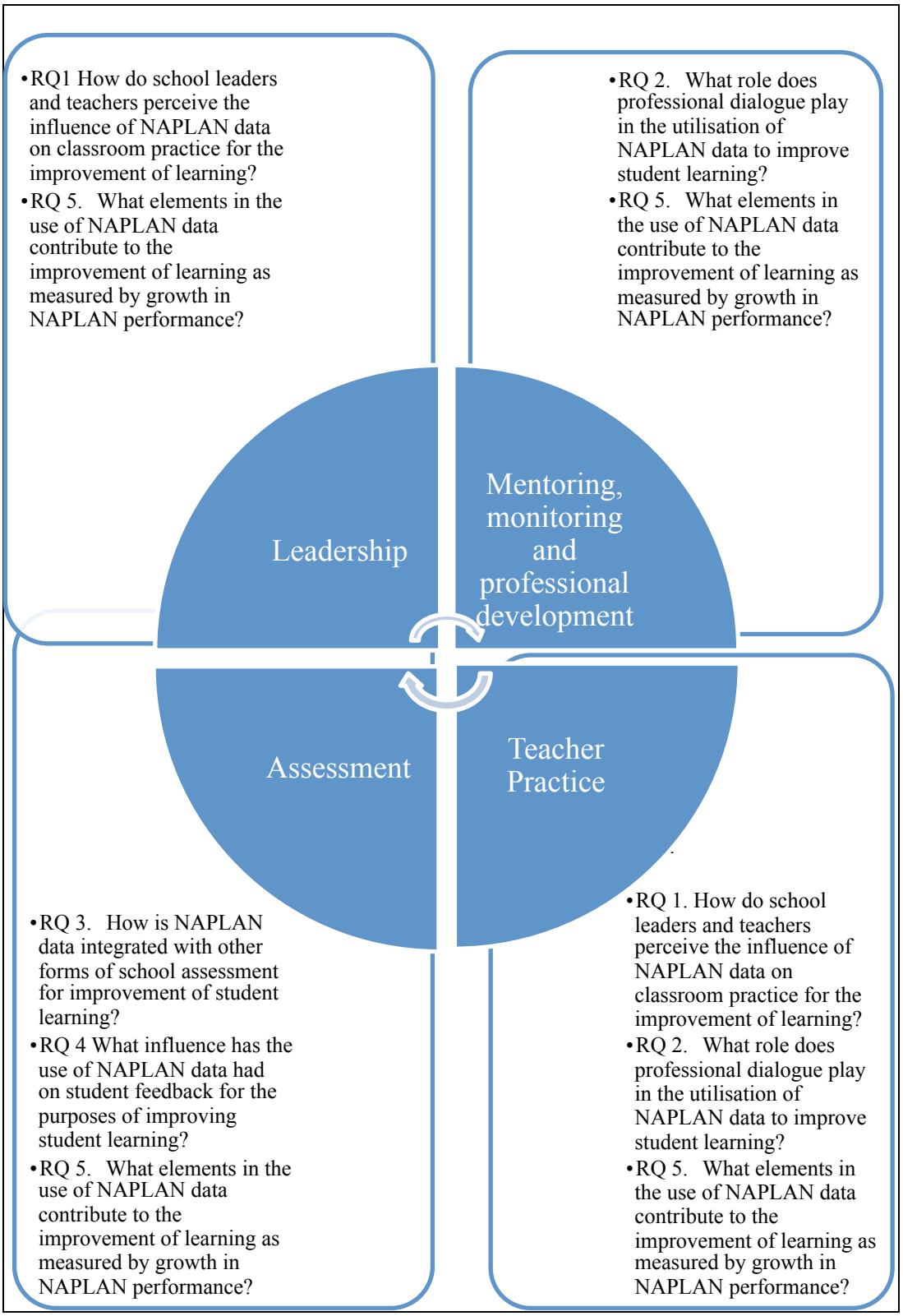


Figure 6.1. The four themes from the scholarly literature and the five RQs.

6.2 Discussion of Findings

The findings will be discussed within the context of each RQ. In the discussion of the findings, reference will be made to participant responses from the five schools. As discussed in Chapter 4, when describing the quantitative first phase of the research (document analysis), five schools were chosen for the research from a group of 38 Catholic primary schools in the inner western region of the Sydney Archdiocese. Average student gain in the domains of reading and numeracy were examined for each school in the region, in comparison with the average student gain made by students in 60 schools serving SSSB from across Australia, and with all Australian SSSS in the previous Year 3 NAPLAN test. As described in Chapter 4, this analysis involved examining six individual graphs for each of the 38 schools; three for reading and three for numeracy across the period between 2008 and 2012, totalling 228 graphs. Each graph presented two points of comparison, totalling 12 points of comparison for each school. The nature of the average student gain by the students from the schools chosen for this research between the years 2008 to 2012 is reproduced from Chapter 4 in Figure 6.2. Patterns of student gain emerging from the My School website analysis. Following is Figure 6.3, reproduced from Chapter 4, which illustrates graphically the differences between the schools according to the chosen measures.

	School variables									Total	Consistency in pattern of
	Δ L		2010	2010	2011	2011	2012	2012	2010-12	Occurrences	average student gain
	CSC		SSSB	SSSS	SSSB	SSSS	SSSB	SSSS	>	>	in Reading and Numeracy
	STR										above comparative subsets
	DSP										per year 2010-12
SCHOOL 1 1		Reading	A	A	A	A	A	A	6	**11**	83%
		Numeracy	A	A	A	A	A	E	5		
2	STR	Reading	A	A	A	A	A	E	5	**10**	66%
		Numeracy	A	E	A	A	A	A	5		
3		Reading	A	A	B	B	A	A	4	**10**	66%
		Numeracy	A	A	A	A	A	A	6		
4	CSC	Reading	B	B	A	A	A	A	4	**8**	33%
		Numeracy	A	A	A	A	B	E	4		
5	STR, CSC	Reading	A	A	A	A	E	B	4	**8**	66%
		Numeracy	A	A	A	A	B	B	4		
SCHOOL 2 6		Reading	A	A	B	A	A	B	4	**8**	66%
		Numeracy	A	A	B	A	A	B	4		
7	CSC	Reading	A	A	A	E	A	B	4	**8**	33%
		Numeracy	E	B	A	A	A	A	4		
8		Reading	A	A	B	B	A	E	3	**8**	50%
		Numeracy	A	A	E	A	A	A			
9	Δ L	Reading	A	A	A	A	B	E	4	**7**	17%
		Numeracy	B	B	A	E	A	A	3		
10	Δ L, CSC	Reading	A	E	A	B	A	A	4	**7**	33%
		Numeracy	A	B	B	A	A	B	3		
SCHOOL 3 11		Reading	B	A	B	A	A	B	3	**7**	33%
		Numeracy	B	A	A	B	A	A	4		
12	CSC	Reading	A	A	B	B	A	A	4	**6**	33%
		Numeracy	B	B	B	E	A	A	2		
13		Reading	A	A	A	E	B	B	3	**6**	17%
		Numeracy	B	B	A	A	A	B	3		
14	STR	Reading	A	B	B	B	A	E	2	**6**	33%
		Numeracy	A	A	A	E	A	E	4		
SCHOOL 5 15		Reading	B	B	B	B	A	A	2	**6**	33%
		Numeracy	B	B	A	A	A	A	4		
16	Δ L	Reading	B	B	A	E	B	B	1	**5**	17%
		Numeracy	E	E	A	A	A	A	4		
17	Δ L, STR	Reading	A	A	E	B	E	B	2	**5**	17%
		Numeracy	A	A	B	A	B	B	3		
18	Δ L, DSP	Reading	A	A	B	B	B	B	2	**5**	17%
		Numeracy	A	B	A	A	B	B	3		
19	Δ L	Reading	A	A	B	B	B	B	2	**5**	17%
		Numeracy	A	E	A	A	B	B	3		
20	Δ L	Reading	B	E	B	B	B	B	0	**5**	0%
		Numeracy	E	A	A	A	A	A	5		
21	Δ L	Reading	A	A	B	B	B	B	2	**5**	17%
		Numeracy	A	E	B	B	A	A	3		
22		Reading	E	B	E	E	A	B	1	**5**	17%
		Numeracy	E	E	A	A	A	A	4		
SCHOOL 4 23		Reading	B	A	B	B	A	B	2	**5**	17%
		Numeracy	B	B	A	A	A	B	3		

Figure 6.2. Patterns of student gain emerging from the *My School* website analysis.

As can be seen from the information presented:

- School 1students achieved learning gains above the chosen comparisons on 11 occasions, with consistency across reading and numeracy of 83 per cent.
- School 2 students achieved gains above the chosen comparisons on eight occasions, with consistency across reading and numeracy of 66 per cent.
- School 3 students achieved gains above the chosen comparisons on seven occasions, with consistency across reading and numeracy of 33 per cent.
- School 4 students achieved gains above the chosen comparisons on six occasions, with consistency across reading and numeracy of 17 per cent.
- School 5 students achieved gains above the chosen comparisons on five occassions with consistency across reading and numeracy of 33 per cent.

In this chapter, the findings of the research will be presented, reflecting the major themes and the emphases made by participants in the research regarding their use of NAPLAN data to improve student-learning outcomes as measured in NAPLAN performance.

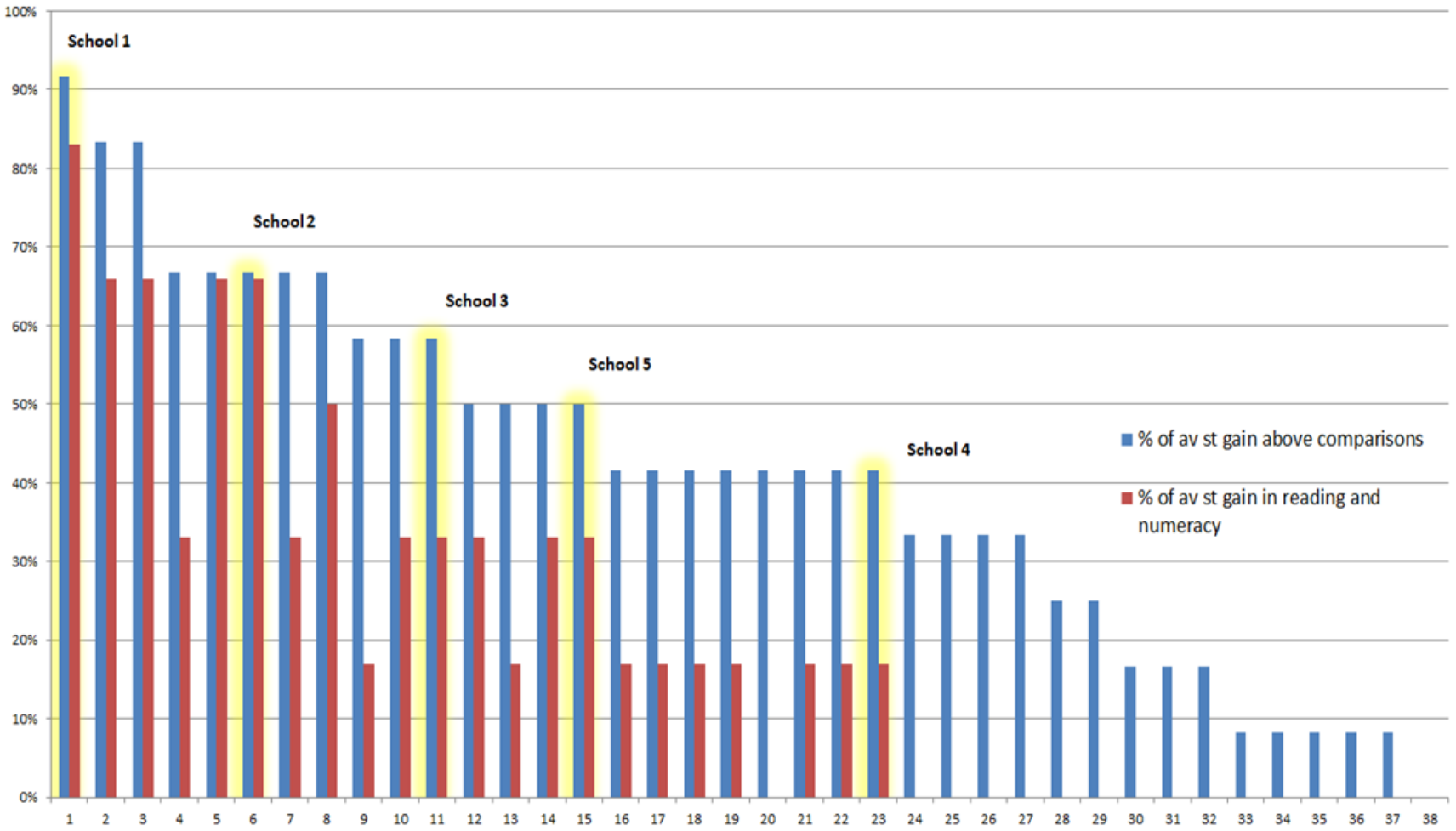


Figure 6.3. Occurences (%) of average student gain above SSSB and SSSS and consistency in average student gain above SSSB and SSSS in reading and numeracy in same year.

6.2.1 RQ 1.

RQ 1 sought to explore the influence of NAPLAN data on the pedagogy used by participants in the school: how do school leaders and teachers perceive the influence of NAPLAN data on classroom practice for the improvement of learning?

Three minor themes emerged within the context of the major theme of informing pedagogy. The first was pedagogical frameworks, the second was differentiation and the third was explicit teaching practices.

The findings clearly revealed the importance of including NAPLAN data within the context of a school-wide pedagogical approach. Schools 1, 2 and 3, which demonstrated the most consistent learning gain by students among the chosen schools as measured by average student gain in NAPLAN over the period 2008 to 2012, were all involved in the IDEAS process, in collaboration with the University of Southern Queensland. As explained in the literature review, the IDEAS framework focuses on parallel leadership that is initiating, discovering, envisioning, actioning and sustaining (Crowther, Ferguson & Hann, 2009). Participants from each of these schools identified the importance of IDEAS in their use of NAPLAN data to inform pedagogical approaches. A 2012 research report by the University of Southern Queensland on the IDEAS project in schools of the inner western region of the Sydney Archdiocese, described the use of the IDEAS process by schools. In the report, School leaders pointed out that IDEAS was not necessarily a direct vehicle for achieving enhanced NAPLAN results. Rather, the professional processes that IDEAS activated, the new vision-based direction that IDEAS stimulated and the pedagogical strategies that IDEAS spawned, facilitated a new, dynamic school environment that contributed to clearer goals,

heightened aspirations and enhanced working relationships (Andrews, Crowther , Morgan, & O'Neill, 2012).

Crowther's IDEAS model requires school leaders to become confident in promoting the use of data within a parallel leadership model. Participants reported the benefits of IDEAS in their school's use of the NAPLAN data, as expressed by the principal from School 3 who said, 'then with the NAPLAN data, we were skilled in good pedagogy through the IDEAS programme' (S3P L210-212).

In research on school leadership within the context of external testing in the Canberra Goulbourn Diocese in NSW, Pettit (2009) identified the need for greater collaboration among educators at the school level regarding NAPLAN data analysis. Participants in this research described the IDEAS process as highly effective in achieving this exact purpose when using NAPLAN data.

Using external large scale standardised testing data as a reliable and credible source of student performance data within the context of a more holistic approach to pedagogy (such as exists within a pedagogical framework like IDEAS), is echoed in the ideal described by Hargreaves and Shirley (2009), following their empirical study of models of education since 1945. Key elements in their new model for educators, were the pursuit of high standards, collaborative practices among teachers and action based upon broad evidence of student performance. Timperley (2009) reported from her research in New Zealand, that data from large scale external testing informed teaching and learning, when teachers identified relevance in their own school and classroom pedagogical contexts.

Participants from Schools 1 and 2 also mentioned two additional school-wide approaches to pedagogy, in which NAPLAN data played a role. Language Features of

Text Types (Canavan, 2004), was reported by participants as a highly successful school wide pedagogical approach to literacy, which had been in existence before the advent of NAPLAN. Participants described data from NAPLAN as useful in creating baselines of student performance and critical external reference points to assist in judging student progress. Participants reported the use of NAPLAN data in the context of the pedagogical approach known as Understanding by Design. Wiggins & McTighe, (2005) identify three stages in curriculum design. Stage 1 requires teachers to identify the desired results, stage 2 requires teachers to determine acceptable evidence, which will indicate the desired results have been achieved, and stage 3 involves teachers planning the learning experiences and instruction. Participants from Schools 1and 2 in this research described the importance of NAPLAN data within the scope of this approach to teaching and learning in their schools.

Therefore, the first finding from this research is that NAPLAN data was more effectively used by participants, to enhance student-learning outcomes, when clearly placed within the holistic context of a school-wide pedagogical approach or framework.

The second minor theme to emerge within the context of informing pedagogy was the use of NAPLAN data in processes for differentiating learning experiences for students. Differentiating the curriculum for students in educational settings that, experience large-cohort standardised testing regimes such as NAPLAN is seen by some educators as counter intuitive. Yet, to meet the different needs of students who are at different stages in their learning development, differentiation is essential. McTighe & Brown (2005), suggest educators must and can address standards required by governments, districts and schools while remaining responsive to the educational needs of individual students. They propose an approach based on research findings from

student achievement studies, in which educators become expert in understanding the content requirements of their state or district, proficient in the design and implementation of processes that precisely assess and feedback student progress, and skilled in designing research based differentiated instructional strategies and interventions. McTighe and Brown (2005) assert that "standards and differentiation not only can co-exist, they must co-exist if schools and districts are to achieve the continuous improvement targets imposed upon them" (p. 242).

Thirty-two per cent of participant responses in this research (within the major theme of informing pedagogy) described aspects of using NAPLAN data to assist in various strategies involving differentiation. Foremost among participant responses concerning differentiation were strategies addressing the grouping of students (30%) and individualised learning (47%).

Research into differentiated instruction (Tomlinson et al., 2003) identifies key characteristics of effective differentiation. Among them are within-class grouping of students and grouped classes. Similar arguments are presented by Fullan et al., (2006), who assert that analysis of student performance data, to guide the grouping of students, enhances the personalisation and precision of learning experiences and better serves students' learning needs.

Research on successful school leadership (Leithwood et al., 2006) identifies direct action on organisational structures as prominent in influencing teacher performance and student learning outcomes. While Leithwood names the grouping of students as an example of organisational structure, inconsistency in research findings concerning grouping of students is noted.

Within the minor theme of differentiation, participants from Schools 1 and 3 provided the most comprehensive descriptions of using NAPLAN data with student grouping arrangements, while participants from School 2 provided the richest descriptions of using NAPLAN data in the formation of individualised learning experiences. In each of these three schools, the advent of NAPLAN and the data generated precipitated the purposeful differentiation practices now in place. Important features of the groups in Schools 1 and 3 were the dynamics involved in regularly moving students between groups, based upon their progress. This agility and flexibility was apparent in both settings, and the transparency engendered appreciated by teachers and reportedly by students. A comment representative of the benefit to students of grouping for differentiation purposes experienced by participants from School 1 is presented below:

> I could definitely see a shift in the children. They really like maths because they're in groups which are working at their level (S1T34a L181–182).

In School 3, the organisational structure of the school was changed to better facilitate differentiated learning. This major initiative was undertaken after the first iteration of NAPLAN results from the 2008 tests and involved comprehensive consultation with the school community.

School 3 participants reported improved learning gains for students after the restructuring of class year level groups to multi-age staged groupings, which were based on learning needs, identified through school-based assessment data and other external data, including NAPLAN. These observations are consistent with findings by Miller (1990), Gayfer (1991) and Anderson and Pavan (1993), as cited by Tomlinson et al.

(2003), which provide empirical evidence of superior performance in standardised tests by students in multi-age groupings, compared to students in single-grade classes. The statement below captures the rigorous approach by School 3 participants in the processes used for grouping students to enhance differentiation:

> The Year 3 and the Year 5 teachers had to look at the data, they had to bring all their assessments and they had to group and regroup and they had to show their data and they had to show the NAPLAN data and where the needs were and they had to totally analyse all of that in order to put the groups together (S3AP L397-402).

The findings from participants in Schools 4 and 5 indicated that the influence of NAPLAN data on the differentiation of learning through student grouping was limited by comparison with participants from Schools 1 and 3.

The second finding therefore from this research is that when NAPLAN data was used by participants to assist in differentiation through grouping of students according to learning needs, improved student learning outcomes were observed.

Forty-seven per cent of participant responses concerning the influence of NAPLAN data in informing pedagogy through differentiation were related to individualised learning plans. Participants from all schools identified the influence of NAPLAN data on the creation of individual learning profiles. Participants from Schools 4 and 5 noted that NAPLAN data had been used in the past as a guide to trends at a cohort level, but expressed a more recent commitment to using NAPLAN as one tool to assist the creation of more individualised learning experiences.

In Schools 1, 2 and 3, using NAPLAN data to create individualised learning experiences was well developed. School 1 identified the use of NAPLAN data as one source of diagnostic data used to shape programmes and learning experiences. School 2 participants identified the role NAPLAN data had played in teachers identifying needs among gifted learners, and learners with a language background other than English. A comment that captures this shift in thinking, influenced by NAPLAN data, among teachers in all five schools is presented below:

> this discussion has helped us to understand that it's not about getting the programme done so that you're delivering content. It's about delivering what each student actually needs (S2P L376-378).

School 3 participants used NAPLAN data as a foundation in creating a data profile for each child in the school, displayed on a data wall in the staff room. The influence of NAPLAN data on individualised approaches to learning was evident across all five schools.

Participants from Schools 1, 2 and 3 closely linked the influence of NAPLAN data on individualised learning plans for students, with the influence NAPLAN data had had on the differentiation of teaching programmes. School 1 described the use of NAPLAN data to design authentic learning tasks to address areas where proficiency was lacking with individual students and groups of students. Authentic learning experiences are described in the scholarly literature as involving active participation by the learner rather than passive, are problem based and engaging (Hung et al., 2006; Nicaise et al., 2000). School 2 participants identified the influence of NAPLAN data in the development of specified differentiated programmes, as described below:

> The obvious need highlighted by NAPLAN led to the use of use of Bloom's Taxonomy and the Williams Model to plan programs that allowed students to work at different levels with a variety of open ended tasks (S2P L46-55).

Using NAPLAN data, School 3 participants identified reading among the boys at the school as an area to be developed, and instituted a comprehensive boys' education programme, with reported positive learning outcomes for students. Participants from Schools 4 and 5 provided limited reference to the influence of NAPLAN data on the differentiation of teaching programmes.

The third finding from this research is that when NAPLAN data was used by participants to assist the development of individualised learning strategies and to differentiate the curriculum, improved student learning outcomes were observed.

The third minor theme to emerge within the context of the influence of NAPLAN data on informing pedagogy was that of explicit teaching practices. Sixty-one per cent of all participant responses in the context of the major theme of informing pedagogy were associated with the minor theme of explicit teaching. Participants described the influence of NAPLAN data on explicit teaching practices in four ways. Firstly in programming, secondly in identifying specific learning outcomes, thirdly in actual teacher practices in the classroom and fourthly through a specific focus on the language of NAPLAN test questions.

In the context of explicit teaching, 39 per cent of participant responses across the five schools reported the influence of NAPLAN data on the development of programmes, which provided learning experiences that were designed to explicitly and specifically develop proficiency in skills among students that NAPLAN data and other

school assessment data had identified. Schools 1, 2 and 3 reported this influence most consistently and with the richest descriptions. Research by Fullan et al. (2006) and Timperley (2009), highlight improved student learning outcomes as a result of dynamic and agile programming practices—where teachers frequently collaborate, reflect and make informed decisions based on a variety of data sources and observations in response to short to medium term learning needs of the students. In School 1, participants cited NAPLAN data as an important influence in programming in the areas of mathematics and reading.

With the successive iterations of NAPLAN data, participants observed an increase in collaboration among all teachers working in all year levels, and particularly in response to sustained trends in student competence levels that NAPLAN had identified. The School 2 principal noted the influence of NAPLAN in changing the paradigm for teachers from a set programme mindset, which was quite static and established at the beginning of the academic year, to a mindset that was far more responsive to the ongoing learning progress of students. This sentiment is captured below, where the principal describes her insight into the first iterations of NAPLAN data:

> We needed to move away from what we called ‘tick a box teaching’, where we merely delivered a set curriculum, to a more diagnostic approach to teaching where teachers were able to plan, modify and adjust programs to meet the needs of the students. We needed to make teaching the intellectual activity that it is required to be, and move away from a factory- product based approach to teaching (S2P L27-32).

School 3 participants highlighted the positive influence of NAPLAN data on collaboration among teachers. Participants from Schools 4 and 5 identified collaborative programming practices in the light of NAPLAN and other data, as an area for further development.

Twenty-eight per cent of participant responses within the theme of explicit teaching were associated with specific learning outcomes. The influence of NAPLAN data on the design and language of specific learning outcomes was reported most strongly by participants from Schools 1 and 2, and is consistent with research findings (Cizek, 2006; Timperley, 2005) that such capacity among teachers in their use of data has positive effects on student achievement of learning outcomes.

Participants from all five schools described their use of the NAPLAN SMART data analysis package in the design of specific learning tasks. Participants from Schools 1 and 2 used the SMART data analysis package by applying the principles of UBD (Wiggins & McTighe, 2005) to ensure learning outcomes were precise in meeting student needs. Participants observed that this enhanced their students' learning outcomes, which is consistent with the findings of Kirkup et al., (2005) which details the importance of precision in learning outcome design. The quotation below illustrates the influence of NAPLAN data analysis in the School 2 context of the design of specific learning outcomes:

> because we're not teaching things that the children already know—it opened up time for you to teach the areas that they didn't have a clear understanding in (S2P L381-383).

Participants from Schools 2, 3 and 4 all made observations concerning the tension between the specificity of highly technical learning outcomes in the light of NAPLAN and other assessment data, and more general learning outcomes they observed evoking greater interest among students, due to the nature of the topic being explored. Examples of disengagement were described when the skills-based language of learning outcomes alienated students from the context of new knowledge.

In light of the influence of NAPLAN data described by participants on explicit teaching through programming and the design of specific learning outcomes, the fourth finding of this research is stated. From the evidence provided by participants and supported in the scholarly literature, the fourth finding is that when NAPLAN data was used collaboratively by teachers (with other forms of data and observation) to inform and shape engaging learning programmes directly, purposeful teaching practices and specific learning outcomes, student learning outcomes were enhanced.

The influence of NAPLAN data on the minor theme of explicit teaching was further described by participants in two components, identified as teacher practice and the language of NAPLAN questions. Ten per cent of all references to explicit teaching were associated with descriptions of NAPLAN data's influence on teacher practice. Participants from School 1 identified the influence of NAPLAN data in the development of their practitioner enquiry approach to teaching practice, which was consistent with the definition and understandings described by Dana & Yendol-Hoppey, (2014). The School 2 principal highlighted the influence of NAPLAN on reflective teaching practices, as illustrated in the following quotation:

> but I think NAPLAN has helped teachers to see that their teaching is an intellectual activity, it's not something you do, it's something you think about,

> you reflect, you act, it's explicit. So it's intellectualised the whole process of teaching, that's what I think (S2P L446-450).

School 3 participants also identified NAPLAN data as a stimulus for discussion on teaching practice, while participants from Schools 4 and 5 identified this use of the data for this purpose as limited, but to be developed in future.

Twenty-three per cent of participant responses to the influence of NAPLAN data on explicit teaching practices were associated with a specific focus on the language of NAPLAN questions. Observations by participants associated with the language of NAPLAN questions need to be considered with reference to the scholarly literature. Research findings on the effects of large-scale standardised tests asserting the negative impacts on education associated with practices described as 'teaching to the test' (Lobascher, 2011; Mills, 2008; Volante, 2004) need to be balanced with research that identifies benefits of large-scale standardised testing to learning achievement (Phelps, 2005, 2012; Sloane & Kelly, 2003). Participants from all schools described activities with students using NAPLAN questions within the context of the programmed curriculum, rather than teaching to the test. Anderson (2009) described research findings on the positive effects of such practice in the Australian context in teaching numeracy. Lobascher, (2011) reported research in the UK and the USA which identified improvement in the quality of literacy instruction by teachers and improvements in literacy standards, as a result of standardised testing .

In approximately 80 per cent of references from Schools 1 and 2, participants described their use of NAPLAN styled questions to improve student capacity with comprehension skills and understanding of inferential meaning within the context of the

curriculum. Approximately 50 per cent of School 3 and 4 participant references described the use of NAPLAN questions for warm-up activities at the beginning of lessons, or general practice drills for the NAPLAN tests. Fifty per cent of School 5 participant references described the use of NAPLAN questions to improve comprehension skills.

The fifth finding of this research was supported by observations from the participants and the scholarly literature. This research found that when NAPLAN data assisted in identifying literacy inferential comprehension skills in need of development, a specific focus on the language of NAPLAN questions within the context of the programmed curriculum led to observed improved learning outcomes by participants.

6.2.2 Summary of Findings for RQ 1

The research findings associated with RQ 1 are listed below. Participants observed improved learning outcomes as measured by performance in NAPLAN, for students when teachers used NAPLAN data:

1. Within the holistic context of a school-wide pedagogical approach or framework.
2. To assist in differentiation through grouping of students according to learning needs
3. To assist in the development of individualised learning strategies and to differentiate the curriculum.
4. Collaboratively and with other forms of data and observation, to directly inform and shape engaging learning programmes, purposeful teaching practices and specific learning outcomes.
5. To assist in identifying literacy inferential comprehension skills in need of development, and addressing these needs through a specific focus on the language of NAPLAN questions within the context of the programmed curriculum.

6.2.3 RQ 2

RQ 2 sought to investigate the role of professional dialogue in the use of NAPLAN data to improve student learning. The second RQ was: what role does professional dialogue play in the utilisation of NAPLAN data to improve student learning?

The research findings from RQ 2 were described most often by participants as dialogue relating to professional learning. This is consistent with the major theme from

the scholarly literature presented in Chapter 2, which was titled mentoring, monitoring and professional development. Of all the themes identified in participant responses to the interview questions, professional learning was the most commented upon, with 697 references as illustrated in Figure 5.12.

Four minor themes emerged within the theme of the professional learning. The minor themes were learning discourse, PLCs, learning time and expertise. Underpinning participant responses (categorised as describing professional learning) were the observations that NAPLAN data was an important stimulus for discussion. It was widely regarded by teachers and school leaders as a credible and trustworthy source of information among many others sources relating to student achievement.

Of the participant references to the major theme of professional learning, 48 per cent were associated with conversations of a professional nature among colleagues and parents to which NAPLAN data contributed. Participants described these conversations most often in ways categorised into six components. Most dominant among these components across the five schools were conversations involving the building of teacher capacity (22%). Cizek, (2001, 2006) suggests in his research in the US context that teacher capacity is enhanced through conversations associated with large scale external testing and the resultant data. Research by Hattie (2005) suggests that the key question to answer in relation to student performance data is "What data would support a teacher to enhance teaching and learning?" (p. 14). Hattie asserts that once the appropriate data is identified and obtained, processes need be in place for teachers to use that data to make a difference to student learning outcomes. This finding aligns with participant observations in this research and most obviously in the nature of the professional discourse. Participants in this research described the importance of conversations

involving the engagement of parents with their child's learning (24%), consistent with research findings by Fullan et al., (2006) in Canada and the US. Fullan reported that students were found to have made greater progress with their learning and teachers were more effective, when teachers were actively reaching out to parents, caregivers and families. Participant descriptions of data conversations among teachers that concentrated on knowing the students as individual learners (19%) was also consistent with research findings reported by Sharratt & Fullan, (2012), where 75 percent of teachers engaged in their study indicated their greatest motivation in using student performance data was their emotional connection to their students as learners. The other three components of the reported professional conversations were teaching practice (14%), professional collegial support (12%) and development of data literacy skills (10%). Participants from Schools 1, 2 and 3 provided approximately 70 per cent of all references to the minor theme of learning discourse. The frequency of these references is illustrated in Figure 5.13.

Participants provided rich descriptions of the importance of professional conversations, which were collaborative in nature when discussing NAPLAN data. Such experiences reportedly led teachers and school leaders to seek other varied forms of data, with which to compare with NAPLAN data. Participants from School 1 identified professional conversations referring to NAPLAN data trends that were a catalyst for embarking on a systematic numeracy project, with support from the Sydney Catholic Education Regional Office. Similar practices are evident in the UK, with the use of standardised testing data to promote learning in English primary schools (Kirkup et al., 2005). The professional conversations that included NAPLAN data reportedly provided direction and purpose for teachers in meeting student needs and provided an appropriate

way for teachers to become more data literate in an enhanced information-rich professional environment. This is consistent with findings reported in the Australian context with NSW Higher School Certificate data (DeCourcy, 2005) and in the UK context in socioeconomically disadvantaged areas (Muijs et al., 2004).

The engagement of parents in the learning discourse that involved NAPLAN data was characterised by conversations in which parents compared schools based on NAPLAN results. In the opinion of participants, this over-emphasised the importance of NAPLAN tests and their data. Participants also described conversations with parents as an opportunity for teachers and school leaders to emphasise NAPLAN data as one piece of evidence, which provided an indication of a student's progress.

The first finding in relation to RQ 2 is that participants perceived NAPLAN data as a credible stimulus for broader data-based professional dialogue among participants. The professional data-based dialogue described positively influenced the building of teacher capacity, the engagement of parents in their child's learning, the knowledge level of individual students among teachers, teacher classroom practice, professional collegial support and the development of data literacy skills.

The second minor theme to emerge from participant responses associated with RQ 2 was the use of NAPLAN data in professional dialogue within identified PLCs. DuFour, (2004, 2007) asserts PLCs have become an increasingly popular construct in schools for the purposes of professional learning, as discussed in Chapter 2. There were 181 references by participants to PLCs, with 70 per cent of these from teachers and school leaders in Schools 1, 2 and 3. Participant references were categorised into four components that describe the use of NAPLAN data in the dynamic of PLCs. The manner in which NAPLAN data influenced professional dialogue in PLCs, which participants

described as experiences of deep professional learning, accounted for 34 per cent of all references to this minor theme. Participants from Schools 2, 3, 4 and 5 commented most often on this aspect of NAPLAN data in association with PLCs. Other components describing the experience of participants in this context were programme development (28%), teacher practice (25%), organisation and leadership (13%). School 1 participants provided the highest number of references to this minor theme, and 38 per cent of these references described the use of NAPLAN data within PLCs for the purpose of informing and improving teacher practice. Participants from Schools 1, 2 and 3 identified the use of NAPLAN data within PLCs for programme development as the single second most dominant component.

Participants described in detail four organisational characteristics of effective PLCs and their associated use of NAPLAN data. The first was to form PLCs with teachers who worked with children at the same stage level, meaning Kindergarten to Year 2 (Stage 1), Years 3 and 4 (Stage 2) or Years 5 and 6 (stage 3). Interestingly, in their study of the best performing school systems in the world, Barber & Mourshed (2007) highlight the creation stage level PLCs as a successful practice in Japanese schools for professional learning purposes. The second organisational characteristic participants reported, was to include a member of the school executive in the PLC. Third was the provision of formal release time for teachers to meet in their PLC (at least once every 10 weeks for up to a full day). Fourth was to ensure the PLC had a scheduled and formalised meeting time every week or fortnight, for approximately 60 minutes. The need for time for teachers to engage effectively in using NAPLAN data in the context of PLCs was widely observed by participants.

The second finding from this research in relation to RQ 2 is that participants observed improvements in teacher practice, programming and student learning, when teachers were engaged in deep professional learning and dialogue, using NAPLAN data in the context of PLCs. Desirable characteristics included structures with teachers at the same stage level forming PLCs, scheduled weekly or fortnightly meetings, allocated release time of between two to four days per year for each teacher and involved a member of the school's executive.

The third minor theme associated with RQ 2 that emerged from participant responses was the provision of time for professional learning. References to time comprised thirteen per cent of the total references to the major theme of professional learning. The scholarly literature is replete with evidence supporting the importance of providing time for teachers to engage in effective professional learning using student achievement data. Axworthy (2005) makes the observation based upon research into the use of data from the Western Australian Literacy and Numeracy Assessments, which preceded NAPLAN. Barber & Mourshed (2007) found that in the world's best performing school systems, ten percent of teacher working time was used for professional development. In the context of the United States, Bernhardt (2009) suggests professional learning associated with using student performance data needs to be embedded in the working week of teachers. Participant responses from Schools 1, 2 and 3 identified clearly the provision of time by school leaders for professional learning using NAPLAN data.

School 1 participants described the changes made to existing briefings and meetings for staff that were included in their industrially agreed hours of work, with a noted shift to focusing on NAPLAN data and student learning profiles. School 1's

allocation of time was equivalent to approximately 40 hours per teacher, or five eight-hour days throughout the school year.

School 2 participants identified the time provided to teachers to use NAPLAN data in a dynamic programming process, where teachers were withdrawn from classes in groups for eight half-day sessions throughout the year. School 2's allocation of time was equivalent to approximately 32 hours per teacher, or four eight-hour days throughout the school year.

School 3 participants identified eight dedicated staff meetings per year, which were for 90 to 120 minutes in duration. This included NAPLAN data as a key reference point. Each teacher from School 3 was also provided with a full day per year for guided evaluation of programmes in light of NAPLAN data and other data sources. School 3's allocation of time was equivalent to approximately 24 hours per teacher, or three eight-hour days throughout the school year.

Participants from Schools 4 and 5 did not report specific blocks of time allocated to professional learning with a focus on NAPLAN data.

The third finding from the research in relation to RQ 2 is that the three schools that demonstrated the most consistent average learning gains between 2008 and 2012 in reading and numeracy provided blocks of time for teachers to engage in professional learning and dialogue using NAPLAN data. The time allocated was equivalent to between three and five eight-hour days per teacher per annum.

The fourth minor theme to emerge that was associated with RQ 2 was the use of external and internal expertise by teachers and school leaders to assist with the interpretation of NAPLAN data, and creating strategies to address areas of need identified using NAPLAN data, in alignment with other school-initiated assessment

data. Participants from Schools 1, 3, 4 and 5 described using expertise from four main sources. These sources were: advisors and consultants from the Sydney Catholic Education regional office; advisors from the Sydney Catholic Education central office; tertiary and private education consultancies; and internal expertise from among existing staff members. School 1 participants described the engagement of professional expertise from advisors in the Sydney Catholic Education Regional Office in relation to using NAPLAN data in 94 per cent of references. School 2 participants did not mention external expertise, but the School 2 principal herself was well informed and highly competent. Along with the assistant principal, she drove much of the professional learning. Schools 3 and 5 drew on external expertise outside the Sydney Catholic Education Office, using university academics and private education consultancies (39% of references of participant references from participants in both schools). School 3 participant references were associated with using advisors from the regional office (28%) and using internal expertise among existing staff members (33%). School 5 participant references were associated with utilising Advisors from the Regional Office (43%), and using internal expertise among existing staff members (13%).

School 4 participant references were associated with using advisors and consultants from the regional office (36%), advisors from the central office (45%), university academics and private education consultancies (4%) and internal expertise among existing staff members (14%).

Considering the various sources from which participants drew expertise, the fourth finding in relation to RQ 2 is that the majority of participants recognised the need for accessing expertise in using NAPLAN data to improve student learning. While the sources varied across the five schools, it is noteworthy that School 1, which

demonstrated the most consistent average learning gain between 2008 and 2012 in reading and numeracy, sought external expertise from their regional office consultant and advisors.

6.2.4 Summary of Findings for RQ 2

The research findings associated with RQ 2 are listed below. Participants observed improvements in teacher practice, programming and learning outcomes for students (as measured by NAPLAN) when school leaders and teachers used NAPLAN data:

1. as a credible stimulus for broader data based professional dialogue among participants. The professional data based dialogue described, positively influenced the building of teacher capacity, the engagement of parents in the learning of their child, the level of knowledge of individual students among teachers, teacher classroom practice, professional collegial support and the development of data literacy skills.
2. to engage in deep professional learning and dialogue in the context of PLCs. Desirable characteristics included structures with teachers at the same stage level forming PLCs, scheduled weekly or fortnightly meetings, allocated release time for each teacher and involved a member of the school's executive.
3. to collaborate and build capacity during allocated blocks of time, equivalent to between three and five eight-hour days per teacher per annum.
4. to develop skills in conjunction with external and internal experts and notably from the regional Sydney Catholic Education Office.

6.2.5 RQ 3

RQ 3 sought to explore how NAPLAN data was integrated with other forms of school assessment in a manner that improved student-learning outcomes. RQ 3 therefore was: how is NAPLAN data integrated with other forms of school assessment for improvement of student learning?

The major theme to emerge from the interview data associated with RQ 3 was the influence of NAPLAN data on student assessment. Participants made 426 references to the major theme of assessment, which were categorised under the minor themes of nature of assessments (200 references) and management and use of assessment data (223 references).

Within the minor theme of nature of assessments, participant descriptions were categorised into three components. These were: formative assessment practices, SMART and formative assessment, and NAPLAN-style assessments. Sadler (1989), Black & Wiliam (1998) and Nicol & Macfarlane-Dick (2006) report in research over three decades empirical evidence demonstrating improved standards of student performance when formative assessment practices are used consistently to readily and specifically identify gaps in learning and establish appropriate learning strategies.

Participant references to the component of formative assessment practices represented 61 per cent of all references to the minor theme of nature of assessments. Participants from Schools 1, 2 and 3 described in detail the implementation of formative assessment practices, using NAPLAN data in the creation of pre-test and post-test experiences before and after programmed units of learning. Participants from Schools 1 and 2 described highly organised pre-testing and post-testing experiences, closely

aligned with NAPLAN data on a weekly or fortnightly basis. This approach was consistent with research describing effective classroom formative assessment strategies in large-scale standardised testing environments in the US (Ainsworth & Viegut, 2006; Reeves, 2007). In Schools 1, 2, and 3 matrices of skill sets for individual students were constructed using a variety of assessment sources, including NAPLAN data as a key reference point. An ingenious strategy described by a Stage 2 teacher from School 1, which captures well formative assessment in action, is presented below:

> and I know at one point she gave some examples of Year 7 NAPLAN test to some of our good maths students and it became a real teaching tool in a way for them. Ok we can't do this, what can we do about it, breaking the processes down so it became intelligible for the kids (S1P L501-505).

Participants from Schools 4 and 5 lacked clarity and depth in their descriptions of formative assessment practices in their school settings, and generally made broad references to the associated use of NAPLAN data for this purpose.

Participants described how NAPLAN data influenced the creation of formative assessment tasks through their use of the SMART data analysis package, which represented 19 per cent of all references to this minor theme. A Stage 2 teacher from School 2 highlighted her use of the SMART data analysis package, which was indicative of descriptions by participants in School 1 and 2. She said 'When you look at it, it tells you what the child has actually understood, what the child doesn't know and of course, then you can push them along' (S1T34b L408-410). Another description from the assistant principal of School 2 demonstrates the manner in which the SMART data analysis package was used as a formative assessment tool:

> The SMART data analysis package is very explicit. It also has areas where you can find teaching strategies for a particular area. So you can go in there and say, 'oh I can use that particular thing in my warm up because this is what my students need'. So it's a great resource and it is very useful (S2AP L289-294).

These descriptions were indicative of those by participants from Schools 1 and 2, where evidence of average learning gain was strongest among the five chosen schools. The formative assessment practices described by participants from Schools 1 and 2 were consistent with research as presented in the scholarly literature (Black and Wiliam 1998; Wiliam 2007) where benefits to student achievement levels as a result of formative assessment practices are presented. Wiliam (2007) emphasises that effective formative assessment needs to occur in real time in the classroom context, minute by minute, and day-by-day with a clear initial focus on the content to be covered followed by carefully designed processes. The SMART data analysis package was critical for participants in Schools 1 and 2 in using NAPLAN and school based assessment data in the design of formative assessment experiences.

Participants from School 3 described the use of the SMART data analysis package as being in the domain of the school executive, while teachers from School 3 described using strategies from the package as warm-up activities with students at various stages of the learning cycle.

Participants from Schools 4 and 5 reported use of the SMART data analysis package to assist with formative assessment as being limited or growing.

The first finding from this research in response to RQ 3 is that using NAPLAN data in the creation of pre-test and post-test formative assessment experiences for units

of learning of approximately one to three weeks duration, was strongly represented in descriptions by participants from the three schools, where students demonstrated the most consistent average learning gains in reading and numeracy as measured by NAPLAN between 2008 and 2012.

Participants described the influence of NAPLAN data in the creation of school-based assessments, which used NAPLAN-style language in questions and stimuli. References to NAPLAN-style assessments represented 20 per cent of all references to the minor theme nature of assessments. Practices of this nature in large-scale testing contexts are discussed in detail in the scholarly literature and a variety of views and findings are presented. Using similar language and stimuli from large-scale standardised tests can be viewed as a step towards narrowing the curriculum and children's right to a broad education, where learning is motivated by discovery of new knowledge and insights. These are among the concerns expressed in research on large-scale testing in the UK by Alexander (2010), in the US by Jones (2007), and in Australia (Polesel, Rice & Dulfer, 2013). An alternative view is that aligning school-based assessments with large-scale standardised tests in a way that is authentically integrated with learning programmes is beneficial to teachers and students in identifying the skills requiring development. Ainsworth & Viegut (2006) assert the benefits for student learning outcomes when assessment experiences from the classroom to the state level are aligned. Guskey (2007) suggests there is the need for greater alignment of quality classroom assessments and high quality corrective instruction with large scale state level assessments.

Participants from Schools 1, 2 and 3 described in detail ways in which classroom-based formative assessments were linked to NAPLAN-style questions for a

variety of purposes. For example, the style of the language used in NAPLAN questions was identified in School 1 as a challenge for their students, who mostly were from language backgrounds other than English, whose parents spoke another language in the home. Efforts described by participants from Schools 1, 2 and 3 to use NAPLAN-style questions is illustrated in the comment below from a Stage 2 teacher from school 3:

> I think we've tried to align our school-based assessments to the NAPLAN. You know just so that we can get—it's no good having school-based assessments that are totally different to that, so we are focusing in on those skills that have been tested in the NAPLAN but also we have some other tests that look at other things that we're doing in class, of course we have to assess what we're doing in class. But I think maybe it has, we're trying to maybe blend them together (S3T34b L306-313).

Participants from School 4 and School 5 described a growing influence of NAPLAN on assessments and acknowledged that such practices were not consistent among teachers.

The second finding in response to RQ 3 is that participants from the three schools, in which students demonstrated the most consistent average learning gains in reading and numeracy in NAPLAN between 2008 and 2012, described the use of NAPLAN-style school-based assessments for two main purposes. Firstly, to assist students in developing confidence in understanding the language used in NAPLAN tests; and secondly, to assist in aligning relevant school-based assessment of specific student skills, with those present in NAPLAN assessments.

The second minor theme to emerge from RQ 3 was the influence of NAPLAN data on the management and use of student assessment data. Issues and challenges for educators associated with the wealth of student assessment data are evident in the scholarly literature (Bernhardt, 2007, 2009; Earl & Katz, 2002; Phelps, 2012). Participant descriptions of the influence of NAPLAN data on the management and use of assessment data were associated with the creation of assessment matrices (29%), as a source of external validity in measuring student achievement (59%), and as complementary to diagnostic processes with students (27%).

The participant references from all five schools on the influence of NAPLAN data in the development of assessment matrices consistently described the purpose of tracking individual student progress and achievement through a variety of assessment strategies. The influence of NAPLAN data in each school was noted by participants as emphasising the need for teachers to source many different types of data, with the aim of creating authentic student assessment profiles that were not overly reliant on NAPLAN results. Participants from Schools 1, 2 and 3 described the existence for three to four years of highly organised assessment matrices, which were computer-based single repositories of all student data (including NAPLAN data) and were accessible by all teachers. School 4 participants described the development of assessment matrices in their context as growing in cohesion and coordination, but not inclusive of NAPLAN data, which resided in another repository. School 5 participants described a comprehensive student achievement tracking system instituted during 2012.

The third finding in response to RQ 3 is that participants from the three schools in which students demonstrated the most consistent average learning gains in reading and numeracy in NAPLAN between 2008 and 2012, described the positive influence of

NAPLAN data in creating and sustaining highly organised assessment matrices. These were for the purpose of profiling individual student learning progress through a variety of assessment tasks.

Participants from each school made reference to the influence of NAPLAN data as a source of external validity to the professional judgement by school leaders and teachers regarding student achievement. Timperley & Parr, (2010) promote the clear identification of standards assessed in large-scale testing to support student learning in research conducted in the New Zealand context. Kirkup etal. (2005), found from their research in the UK that effective use of data in primary schools facilitated tracking of achievement, target setting, identification of strengths and weaknesses and comparisons with other schools. Leaders from Schools 1, 2 and 3 described in the detail the influence of NAPLAN data in making informed decisions in relation to the learning agenda, judgement of student performance, teacher expectations of individual student ability, the progress of particular programmes and interventions, the accuracy of feedback to students and parents, and the nature of school-based assessment experiences. Participants emphasised NAPLAN data as one source among many to inform their decision making. However, they underscored its uniqueness as a source that was external to the school. Participants from all schools identified NAPLAN data as an important external lens to assist in determining student progress, in comparison with student progress in other schools.

The fourth finding in response to RQ 3 is that participants from the three schools in which students demonstrated the most consistent average learning gains in reading and numeracy in NAPLAN between 2008 and 2012 described in detail the positive influence of NAPLAN data in providing information they perceived as external,

objective and valid. This assisted in making informed decisions that impacted on student learning.

Participants from each school described ways in which NAPLAN data was used with other school-based assessment data in diagnostic processes to identify student learning needs. The use of standardised test results, in conjunction with school-based assessments, to promote learning growth is referred to in the scholarly literature. Ainsworth & Viegut (2006) and Stiggins & Chappuis (2005) discuss in detail requisites in the nature of classroom assessment, feedback and student self monitoring which have proven success for learners which is reflected in large-scale test scores. School 1 participants described the use of NAPLAN data to assist in identifying areas of weakness for individual students, and to also establish literacy standards that students at particular grade levels would normally be expected to achieve. School 2 participants described the use and influence of NAPLAN data in the encouragement of individual student voices in the learning process. The principal of School 2 described the influence of NAPLAN data in this context:

> But through NAPLAN and through the emphasis on using the data and interpreting the data, then it helped you to look at what we were collecting through a different lens and having the conversation, is this important, what are we going to do with it, what's the point of it? Again, it opened up a real conversation with teachers. We started this thing called a HIGS Report, which was 'How am I Going at school?' and through the HIGS reports the children had their input in it and then the teacher gave some input of how the child was performing and we'd send the workbooks home (S2P L440-445, 554-558).

School 3 participants provided many anecdotes describing the use of NAPLAN data in conjunction with other data for diagnostic processes that were concentrated on the individual child. These processes were consistent with findings in the research literature that asserted the learning benefits associated with highly personalised approaches to data use (Sharratt & Fullan, 2012).

School 4 participants described the use of NAPLAN data in diagnostic processes that were broadly applied at a whole-school level. The assistant principal observed that NAPLAN data 'had a part, probably not the part it deserves' (S4AP L180-181). School 5 participants described their use of NAPLAN data in diagnostic processes most often at a cohort level, rather than an individual student level.

The fifth finding in response to RQ 3 is that participants from the three schools in which students demonstrated the most consistent average learning gains in reading and numeracy in NAPLAN between 2008 and 2012 described the use of NAPLAN data in association with school-based assessment data in diagnostic processes centred on the individual learner.

6.2.6 Summary of Findings for RQ 3

The research findings associated with RQ 3 are listed below.

Participants described ways in which NAPLAN data was integrated with other forms of school-based assessment data for improvement of student learning. Practices described by participants from the three sites in which students demonstrated the most consistent average learning gains in reading and numeracy in NAPLAN between 2008 and 2012 included:

1. The use of NAPLAN data in the creation of pre-test and post-test formative assessment experiences for units of learning of approximately one to three weeks duration.
2. The use of NAPLAN-style school-based assessments to assist students in developing confidence in understanding the language used in NAPLAN tests, and to assist in aligning relevant school-based assessment of specific student skills, with those present in NAPLAN assessments.
3. Creating and sustaining highly organised computerised assessment matrices, for the purpose of profiling individual student learning progress through a variety of assessment data including NAPLAN.
4. The use of NAPLAN data as a source of external, objective, valid and reliable information, to inform decisions that impacted on student learning.
5. The use of NAPLAN data in association with school-based assessment data in diagnostic processes centred on the individual learner.

6.2.7 RQ 4

RQ 4 sought to explore the influence, if any, on the use of NAPLAN data by teachers on student feedback for the purposes of improving student learning. Therefore, RQ 4 asked: what influence has the use of NAPLAN data had on student feedback for the purposes of improving student learning?

Participant responses associated with RQ 4 emerged under the major theme of student feedback. Participants described the use of NAPLAN data in processes associated with student feedback; these were grouped into three minor themes. The first minor theme to emerge was the use of NAPLAN data in association with establishing benchmarks for student achievement (17%). The second minor theme to emerge was the

use of NAPLAN data in focusing on skills during feedback with students (43%). The third minor theme to emerge was the use of NAPLAN data by teachers to engage students in the feedback process (40%). Participants from Schools 1, 2 and 3 provided 78 per cent of all references to the influence of NAPLAN data on student feedback, which is an indication of the depth and breadth of participant responses from those three schools. Participants from Schools 1 and 2 provided 61 per cent of all references to the influence of NAPLAN data on student feedback. Mok (2013), and Rowe (2006), identify in their research the importance of quality feedback to students as one of the stronger influences on student learning and achievement. Hattie & Timperley (2007), reported from extensive research involving 6,972 effect sizes of 196 studies from 12 meta-analyses, that the average effect size on student learning and achievement attributed to quality feedback was double that of the typical effect of other education strategies and interventions.

In the context of student feedback, participants from School 1 described the use of NAPLAN data in the establishment of benchmarks in the most detail. Participants highlighted the use of the NAPLAN student performance bands and associated activities from the SMART data analysis package to assist in creating specific profiles and benchmarks for student achievement. These benchmarks were constantly evaluated through the use of regular class assessment in the form of pre and post test experiences. Guskey (2007) highlights the positive effects of similar practices on student achievement demonstrated in educational research over the past 40 years. Mok (2013) promotes the benefits to learning achievement based on research, of using large scale assessment data to augment school based assessment in her model titled Self-directed Learning Oriented Assessment. Mok states, “Providing evidence with external reference will also help

students to have a better understanding of where they are, or to develop metacognition; thus assessment *of* learning helps support assessment *as* learning" (p. 23). Comprehensive research by Hattie (2005) identifies the strong influence on learning achievement when teachers explicitly communicate to students the learning intentions, success criteria, and how the success criteria will be assessed. Participants in Schools 2 and 3 made similar observations concerning the use of NAPLAN data to assist with creating benchmarks, but the breadth and depth of descriptions were less in comparison with School 1. Descriptions by participants from School 1outlined the influence of NAPLAN data in creating a matrix of skills of which all teachers and students were aware. These were designed to explain clearly the level of performance expected of students at various stages of their leaning, from Kindergarten to Year 6. Participants identified the importance of the benchmarks being applied in short term learning periods, in association with pre-tests and post-tests. Research by Stiggins (2007) describes the positive influence on student achievement using similar assessment for learning practices. The benefits participants reported included greater precision in the design of learning experiences and the stated learning outcomes. School 4 participants did not report the use of NAPLAN data in association with benchmarking. School 5 participants limited their description of using NAPLAN use in this way to comparisons between Year 3 student performance and Year 5 student performance at a cohort level.

The first finding in response to RQ 4 is that practices associated with providing feedback to students (described by participants from the three schools in which students demonstrated the most consistent average learning gains in reading and numeracy between 2008 and 2012) involved the use of NAPLAN data in establishing benchmarks for student achievement. This use of NAPLAN data was reported most consistently by

participants from School 1, which demonstrated the most consistent average learning gains in reading and numeracy between 2008 and 2012 of the five schools selected for this research.

A focus on student skills by teachers was the second, and most dominant, minor theme to emerge from participant responses that referred to the influence of NAPLAN data on student feedback. Participants from all five schools described ways in which NAPLAN data had influenced the nature of the feedback they provided to their students. Most consistent were reflections that highlighted the benefits of the NAPLAN data language. The terminology used in the NAPLAN SMART data analysis package, when applied to the classroom setting, assisted teachers and students in communicating with consistently specific terms. Participants reported a greater sense of confidence among teachers and students in their work together when using the terminology in feedback discussions. Participants also reflected on the influence of NAPLAN data on the increased understanding and awareness among teachers of the importance of 'really deep and good feedback' (S2P L105). Reeves (2007) and Marzano (2007) identify accurate and specific feedback as a proven prime influence on improved student achievement based on analysis of research conducted by Fuchs and Fuchs (1986), Timperley (2007), and Kluger and DeNisis (1996). Marzano's own research identified two important characteristics of effective feedback, which are relevant to participant descriptions associated with this minor theme. 'Feedback must provide students with a way to interpret even low scores in a manner that does not imply failure. Feedback must help students realise that effort on their part results in more learning (as evidenced by higher scores).' (p.105). Examples from participants from all schools highlighted improved

accuracy in the feedback they provide students throughout the academic year, and at grade levels other than those involved in the NAPLAN tests.

The second finding in relation to RQ 4 is that participants from all five schools observed improvement in the quality of feedback to students when teachers used terminology associated with NAPLAN data consistently in feedback discussions with students, based upon classroom assessments and learning tasks undertaken throughout the year. These observations were most evident in references made by participants from Schools 1 and 2, in which students demonstrated the most consistent average learning gains in reading and numeracy between 2008 and 2012.

The third minor theme to emerge from participant responses concerning the influence of NAPLAN data on student feedback was the engagement of students in their learning. Participants from all schools referred to the influence of NAPLAN on the engagement of students in their learning. Participants from Schools 1 and 2 made 64 per cent of the references to the influence of NAPLAN data on student feedback and the engagement of students in their learning. Participants from Schools 1 and 2 observed students becoming more aware of 'their own learning styles, their own practices, their areas of strength, their areas of weakness' (S1T56a L316-317), with the more detailed feedback they received as influenced by NAPLAN data. The concept of a learner's self-awareness is presented in the scholarly literature as supporting student-learning achievement. Davies (2007) states, "The research is clear: Students learn and achieve more when they are deeply involved in the process of classroom assessment, and teachers who use quality classroom assessment practices have more students learning and achieving at higher levels." (p. 52). As mentioned earlier in this chapter, Black and Wiliam (1998) conducted an overview of research involving studies completed across

the world where improved levels of student achievement were evident because of the practices by teachers consistent with assessment for learning principles. As Stiggins (2007) explains, in assessment for learning, "the student's role is to strive to understand what success looks like and to use each assessment to try and understand how to do better the next time." (p. 72). Participants described establishing dynamics for students that allowed them to choose certain learning activities to strengthen self-identified areas for development. A Year 3 teacher from School 2 described how she had set up a tutorial system for the students to achieve this purpose, which she judged as motivational for the students:

> Yes, and we've got this thing about, to be a learner, there's always things you don't know and so if you're a good learner you know that you need to know something. And because I call them tutorials and I told them that's university kind of stuff they're very proud to come to a tutorial (S2T3a L261-265).

The principal from School 2 reflected on the influence of NAPLAN data on student engagement. In her judgement, this had assisted students in becoming more aware of the purpose of their work, more independent in completing tasks and experiencing greater clarity in understanding regarding what they had to do to be successful learners. She reflected that 'the children actually ended up having a greater student voice out of it, because they had a say in what needed to be taught as well' (S2P L391-393).

School 2 participants described the creation of the student learning journal HIGS, and the integrated nature of their use of NAPLAN data, which supported student engagement in learning through the process of goal setting. The influence and support of

goal setting to motivation in learning is discussed in the scholarly literature. Davies (2007) cites research by Csikszentmihalyi (1997) that indicates when students move closer to achieving a goal, part of the the brain linked to motivation is triggered. Davies makes the observation based on her own research that "When students co-construct criteria and self-assess using those criteria, they are able to identify next steps to take in their learning: This is feedback that feeds-forward to further learning." The specific goals written by students in Years 5 and 6 are reflected by a School 2 Stage 3 teacher who said 'The kids write down, "I want to improve my multiplication and division and then they come back and cross out and say, division, long division", it's getting more specific' (S2T56a L414-417).

Participants from Schools 3, 4 and 5 made fewer and less specific references to the influence of NAPLAN on student engagement. The third finding in response to RQ 4 is presented below.

The third finding in response to RQ 4 is that participants from the two schools in which students demonstrated the most consistent average learning gains in reading and numeracy between 2008 and 2012 described the use of NAPLAN in feedback processes with students that supported their engagement with learning.

6.2.8 Summary of Findings for RQ 4

The research findings associated with RQ 4 are listed below.

Participants from Schools 1 and 2, in which students demonstrated the most consistent average learning gains in reading and numeracy between 2008 and 2012, described in greatest detail ways in which NAPLAN data assisted teachers in their feedback to students. In their judgement, improved student learning outcomes were

supported by the use of NAPLAN data in student feedback. Processes and practices included:

1. The creation of richly descriptive benchmarks for achievement of specific learning outcomes in suggested time frames, which was done in collaboration with students and teachers using NAPLAN data as one source of information.
2. Teachers and students becoming familiar with the terminology associated with NAPLAN data as presented in the SMART data analysis package, and consistently using this terminology in feedback discussions based upon classroom assessments and learning tasks undertaken throughout the year.
3. Motivating students to engage with their learning through reflection and formative assessment practices in an environment that encouraged self-awareness of learning strengths and areas for development based on a range of assessment information including NAPLAN data.

This concludes the discussion of findings associated with RQ 4.

6.2.9 RQ 5

RQ 5 sought to explore elements in the use of NAPLAN data that contributed to student learning, as measured by NAPLAN data. RQ 5 asked: what elements in the use of NAPLAN data contribute to the improvement of learning as measured by growth in NAPLAN performance?

The major theme to emerge from the 533 participant responses in relation to RQ 5 was leadership. School leadership is identified in the scholarly literature as a major influence on student achievement. Leithwood et al. (2006) make seven strong claims about successful school leadership as a result of their research. The first claim is that school leadership is second only to classroom teaching as an influence on student learning. Collaborative planning and organisational skills are essential according to Leithwood as is a leader's ability to respond to the contexts in which they work. Earl and Fullan (2003) conducted research on the use of large scale testing data by school leaders in Canada and the UK. They found that school leaders who were able to embrace, with their teachers, external data to promote school improvement rather than rejecting it as a means of government or district surveillance, identified resultant improvements in teaching and learning. Smeed (2014), designed a process described as a "controlled, rapid approach to curriculum change" (p.30), which has been successfully implemented in some Queensland schools since 2009 and is designed to support school leaders bring about curriculum change which is results driven, using internal and external student performance data. Within this major theme of leadership, four minor themes emerged that describe participant responses associated with the role of NAPLAN data on leadership, which influenced student learning outcomes. The greatest numbers of references (46%) were to the influence of NAPLAN data in assisting school leaders and

teachers in their planning. The second greatest number of references (25%) that emerged in the context of leadership was the influence of NAPLAN data upon processes and expectations of accountability. The influence NAPLAN data had on aspirations for learning achievements (17%) and the use of NAPLAN data in setting goals (13%) also emerged as minor themes from participant descriptions of using NAPLAN in relation to leadership.

Participants made 243 references to the minor theme of planning within the context of the major theme of leadership. Participants from Schools 2, 3, 4 and 5 described their use of NAPLAN data in the context of leadership most often in association firstly with planning, and secondly with accountability. School 1 participants described their use of NAPLAN data in leadership most often in association with aspirations for learning achievements and then with accountability.

Participants described the influence of NAPLAN data for planning purposes in the context of leadership in four main ways. Descriptions by participants from Schools 1, 2 and 3 highlighted the influence of NAPLAN data on planning at a whole-school level and in planning associated with leadership of learning. School 5 participants emphasised the same two components in reverse order. Participants from Schools 1, 2, 3 and 5 all described ways in which NAPLAN data influenced their leadership and planning when integrated with existing planning processes. School 4 participants were strong in their views that NAPLAN data had little influence (in their context) on planning and leadership, with 57 per cent of responses about the minor theme of planning identified as describing limited use. Participant responses, according to these four components of the minor theme of planning in the context of the major theme of leadership, were presented in Figure 5.33.

Participants provided extensive and rich descriptions of the influence of NAPLAN data on leaders' planning, which influenced whole-school approaches that involved teachers from all year levels, as well as students and parents. Among the most striking were narratives by participants from School 3, which involved the influence of NAPLAN data on the restructuring of the school's organisation to a stage-based learning model with a host of differentiated learning groups. The School 3 principal stated 'So we used that data then to inform, actually the restructuring of the whole school' (S3AP L11-12) and made the observation 'It was a whole school, Kinder to [Year] 6 approach and the results just started to show and they've been strong ever since' (S3P L170-173). School 2 participants described the influence of NAPLAN data on their planning of whole-school approaches to learning, which were particularly supportive of students as they transitioned from one grade to the next in the new school year with a different teacher.

Another component of leadership and planning described by participants concerned integrating NAPLAN data with existing planning processes included the allocation of teachers to particular classes and the creation of specific annual improvement plans for particular areas of learning. Interestingly, Hartnell-Young (2009) conducted research on improved student performance in government schools in Victoria, which highlighted the importance of using data in the effective allocation of resources, including allocation of teaching staff. Participants from Schools 1, 2 and 3 referred to the use of NAPLAN data in the school review and improvement processes. The existence of such processes in support of schools as learning communities is evident in the scholarly literature (Cuttance, 2005; Hopkins, 2005; Masters, 2012; Turkington, 2004). The Sydney Catholic Education Office has, since the mid-1990s, had an evolving

school improvement framework (CEO, 2014), which is mandatory for all 148 schools in the Archdiocesan system. The influences of NAPLAN data in systematic, integrated and broadly understood, whole-school approaches to learning were most evident in Schools 1, 2 and 3.

The third component that featured second most strongly in participant descriptions was the influence of NAPLAN data on planning, with the purpose of providing leadership in learning. The leaders from School 1 described how NAPLAN data had encouraged a more focused approach on improving the learning of students and enriching the professional learning of teachers. Leaders from Schools 2, 3 and 5 all described ways in which the NAPLAN data influenced their decision-making in strategising for improvement of student learning or teacher professional learning. School 4 participants referred to this component of planning more broadly, with NAPLAN data as a factor for consideration among many in strategic decisions affecting the learning agenda.

There were 37 participant references to the limited use of NAPLAN data in leadership and planning, with 86 per cent of those from School 4. The School 4 leaders and teachers were consistent in their opinion that the NAPLAN data had little to offer the teachers or students in leadership and planning processes. Of the five schools selected for this research, School 4 students demonstrated the least consistent average student gain in the domains of reading and numeracy between 2008 and 2012.

The first finding in relation to RQ 5 is that participants from the three schools in which students demonstrated the most consistent average learning gains in reading and numeracy between 2008 and 2012, provided rich descriptions of the positive influence of NAPLAN data on leadership when integrated with whole-school planning processes,

and strategies aimed at at improving professional learning, teacher capacity and pedagogy.

The second minor theme to emerge from participant descriptions of using NAPLAN data by leaders that influenced student learning outcomes was associated with aspirations by teachers and students for learning achievement. A major UK study found that among seven strong claims about successful school leadership, school leaders improved teaching and learning indirectly and most powerfully through their influence on staff motivation, commitment and working conditions (Leithwood et al., 2006). As mentioned, the most dominant description by participants from School 1 referred to the use of NAPLAN data in exercising leadership associated with building aspirations for learning achievement. Studies reported in the scholarly literature (Muijs et al., 2004; Rubie-Davies et al., 2006) describe examples when high expectations by teachers—of students in schools serving low socio-economic communities and students with high learning needs—strongly influenced the high level of achievement of learning outcomes. This context is similar to the reality of School 1's context. As the principal explained, 'There is that tendency, that you've got to work with staff, to not make excuses for results and to have high expectations of your kids' (S1P L183-185). The assistant principal from School 1 described the motivational aspect of the NAPLAN data in building teacher confidence and capacity, which in her judgement had a positive influence on student learning outcomes. The School 2 principal described a scenario where a student had exceeded expectations in NAPLAN: this led teachers to question if they had put ceilings on their programmes and limited opportunities for growth. Participants from Schools 1, 2 and 3 made 75 per cent of the references to this minor theme, with the richest descriptions coming from School 1.

The second finding in response to RQ 5 is that participants from the three schools in which students demonstrated the most consistent average learning gains in reading and numeracy between 2008 and 2012 described the influence of NAPLAN data in promoting aspirations for learning achievement among students and teachers. This finding was most comprehensively described by participants from School 1, which demonstrated the most consistent average learning gains in reading and numeracy between 2008 and 2012 of the five schools chosen for the research.

The third minor theme to emerge was the influence of NAPLAN data on goal setting and leadership. The scholarly literature presents a range of research supporting the use of external assessment data, considered reliable and valid by school leaders and teachers (Cizek, 2009) to support the formulation of specific goals associated with improved learning outcomes (Fullan et al., 2006; Guskey, 2007; Hattie & Timperley, 2007; Kirkup et al., 2005).

Specific references by participants to goal setting comprised 13 per cent of all references to the use of NAPLAN data in association with leadership. References to this minor theme from participants from Schools 1, 2 and 3 represented 69 per cent of those made about this minor theme. The situation described by participants in Schools 4 and 5 was that the use of NAPLAN data in goal setting exercises was a new experience and was not present during the testing period of interest in this research.

Participants from Schools 1, 2 and 3 described the nature of their goal setting with reference to NAPLAN data as concentrated on personal and professional goals associated with their practice as teachers. Goals were discussed in relation to student achievement of learning outcomes. In contrast, School 2 participants recognised a maturing in their goal setting associated with NAPLAN data. In earlier iterations of

NAPLAN data, School 2 participants described goals articulating percentages of students at certain achievement levels in NAPLAN bands. School 2 participants found these goals were disassociated from their work with NAPLAN data and other school-based assessment data. The focus of School 2's goal setting was consciously changed to teacher practice and team work, which is consistent with suggested approaches in the scholarly literature (DuFour, 2004; Kirkup et al., 2005; McTighe & Brown, 2005).

School 3 participants enthusiastically described their use of NAPLAN data in goal-setting practices. Clear in their comments was the high level of trust placed in NAPLAN data as a source of information to formulate their goals.

The third finding in response to RQ 5 is that participants from the three schools in which students demonstrated the most consistent average learning gains in reading and numeracy between 2008 and 2012, described the influence of NAPLAN data in personal, professional goal setting exercises as being focused on improving teacher practice and student learning outcomes.

Accountability was the fourth minor theme to emerge from participant descriptions of the use of NAPLAN data, by leaders that influenced student learning outcomes. Interestingly, the majority of references by participants from Schools 1, 2, 3 and 5 about accountability demonstrated a positive perception of NAPLAN's influence. Increased ownership by teachers for the learning undertaken by all students in the school, a heightened sense of professional responsibility, motivation to be a better teacher, greater unity among teachers and benefits of competition with other schools were all mentioned consistently by participants from Schools 1, 2, 3 and 5. Participants from the five schools referred to the Catholic Education Office in the context of accountability and leadership in a constructive manner.

School 4 participants described the positive influence of NAPLAN data in similar ways to participants from the other schools, but those sentiments were not as representative. School 4 participants alone described using NAPLAN data in association with processes with underperforming teachers. A number of negative responses by School 4 participants to the influence of NAPLAN data are addressed in the following section, 'NAPLANENZA'.

The fourth finding in response to RQ 5 is that participants from the four schools in which students demonstrated the most consistent average learning gains in reading and numeracy between 2008 and 2012 described in the richest detail the positive influence of NAPLAN data to support understandings of accountability. These understandings included teacher ownership of the whole school's learning agenda, teacher professional responsibility, teacher professional collegiality, the school as a competitor in the educational marketplace, and the school as a member of the Archdiocesan system of Catholic schools in Sydney.

6.2.10 Summary of Findings for RQ 5

The research findings associated with RQ 5 are listed below.

Participants described ways in which school leaders and teachers used NAPLAN data for leadership purposes. In their judgement, improved student learning outcomes as measured by NAPLAN were supported by the use of NAPLAN data in association with leadership when it was:

1. Integrated with whole-school planning processes and strategies aimed at improving professional learning, teacher capacity and pedagogy.
2. Appropriately contextualised with other assessment data to promote aspirations for learning achievement among students and teachers.

3. Purposefully and specifically included in personal, professional goal setting exercises focused on improving teacher practice.
4. Recognised and accepted as strengthening understandings of accountability by teachers to students for their learning.

6.3 NAPLANENZA

Negative comments by participants describing the influence and use of NAPLAN data accounted for two per cent of all references associated with all five RQs. Aspects of large-cohort, standardised testing in the UK, US and Australia (including NAPLAN), received criticism in the scholarly literature, as discussed in Chapter 2.The five characteristics or 'symptoms' of NAPLANENZA described by participants in this research were: extended periods of anxiety experienced by students, anxiety manifested by parents, pressure on teachers of Year 3 and Year 5, narrowing the curriculum, and misrepresentation of student performance as reported on the *My School* website. While these comments were small in number, they touch on important issues identified in the scholarly literature.

Research in the US and UK relevant to the symptoms of NAPLANENZA, is cited by Polesel et al. (2012). These include the findings of Perrone (1991), Wheelock et al. (2002), Brown et al.(2004) and Triplett and Barksdale (2005) which demonstrate increased levels of anxiety, stress and fear experienced by students in high stakes testing regimes in the United States. Also cited is Stiggins (1999), who highlights the pressure testing places on students when there is inadequate support and Schroeder (2006), who asserts that high stakes testing can have detrimental effects upon student-teacher

learning relationships. Polesel et al. identify research, which indicates influences of high stakes testing which limit the breadth of the curriculum (Peters and Oliver, 2009) and detract from the quality of learning experiences (Paris, 2000; Anagnostopoulos, 2003; Au, 2008).

As discussed in Chapter 2, Alexander (2010) argues the Cambridge Primary Review (Alexander, & Armstrong, 2010), demonstrated emphatically the destructive outcomes of high stakes testing in the UK on the breadth of the curriculum and learning experiences as well as a potential decrease in development of literacy skills among students. This assertion was similar to the arguments of Mills (2008) in the UK and Jones (2007) in the US context. However, the Cambridge Primary Review did recommend greater use of teacher assessment, whilst maintaining summative assessment uncoupled from assessment for accountability purposes (Alexander & Armstrong 2012, p.30).

In the Australian context, Lingard (2010) warns against NAPLAN data becoming a tool of a neo-liberalist political agenda, asserting the importance of informed teacher judgement and quality pedagogy in promoting successful learning outcomes for students. Smeed (2012) advocates the intelligent use of student performance data, including data from NAPLAN, by leaders and teachers in a holistic educational approach. Klenowski and Wyatt-Smith (2012) suggest further research needs to be undertaken on the impact of high stakes testing on teaching practice.

In the context of the findings already presented in this chapter, a further finding addressing NAPLANENZA is made.

Participants from all schools described positive influences and experiences of NAPLAN data in school communities, when the data was carefully and appropriately

integrated and communicated as one source of data among many, to enrich a school's learning environment, along with the learning experiences for each student.

Chapter 7 Recommendations

This chapter presents the review of the research findings and the recommendations from this study. The findings are discussed in association with the major RQ and the five minor RQs, which are restated below.

The major RQ asked: how do teachers and school leaders working within the large-cohort centralised testing regime of NAPLAN in Australia utilise NAPLAN data to improve student learning outcomes as measured in NAPLAN performance?

The five other research questions, designed to explore the major research question were:

- RQ1. How do school leaders and teachers perceive the influence of NAPLAN data on classroom practice for the improvement of learning?
- RQ2. What role does professional dialogue play in the utilisation of NAPLAN data to improve student learning?
- RQ3. How is NAPLAN data integrated with other forms of school assessment for improvement of student learning?
- RQ4. What influence has the use of NAPLAN data had on student feedback for the purposes of improving student learning?
- RQ5. What elements in the use of NAPLAN data contribute to the improvement of learning as measured by growth in NAPLAN performance?

The findings from this research are based on the review of the scholarly literature, the analysis of relevant documentation on the *My School* website and the rich descriptions provided by the school leaders and teachers who participated in the interviews.

7.1 Review of the Major Findings and Answering the RQs

In the findings (as discussed in the last chapter), the practices described by all schools associated with NAPLAN data clearly varied in rigour, in the richness of their description and in the breadth of participant representation. Some practices were isolated to the three schools that demonstrated the most consistent average student gain in reading and numeracy in the period from 2008 to 2012. The following discussion reflects a synthesis of the findings, illustrated in Figure 7.1.

7.1.1 Using NAPLAN data with school initiated assessment data to improve student learning.

NAPLAN data was described by participants in this research as influencing improved student learning outcomes as measured by NAPLAN data, when it was carefully and successfully integrated with other school-initiated assessment data and used in a range of processes and organisational structures affecting the school's learning climate. The use of integrated student assessment data—that is NAPLAN data and school initiated assessment data—occurred most obviously in Schools 1, 2 and 3. Important to note in the finding from this research is the emphasis on integration of NAPLAN *with* school-initiated assessment data in a complementary manner. Presented in Figure 7.1, are the five themes that emerged associated with each of the RQs. Participants clearly identified in these five themes, practices and structures that were more strongly influenced by NAPLAN data in ways that led to improved student learning outcomes. In the sections to follow in this chapter, findings and recommendations for each theme will be described.

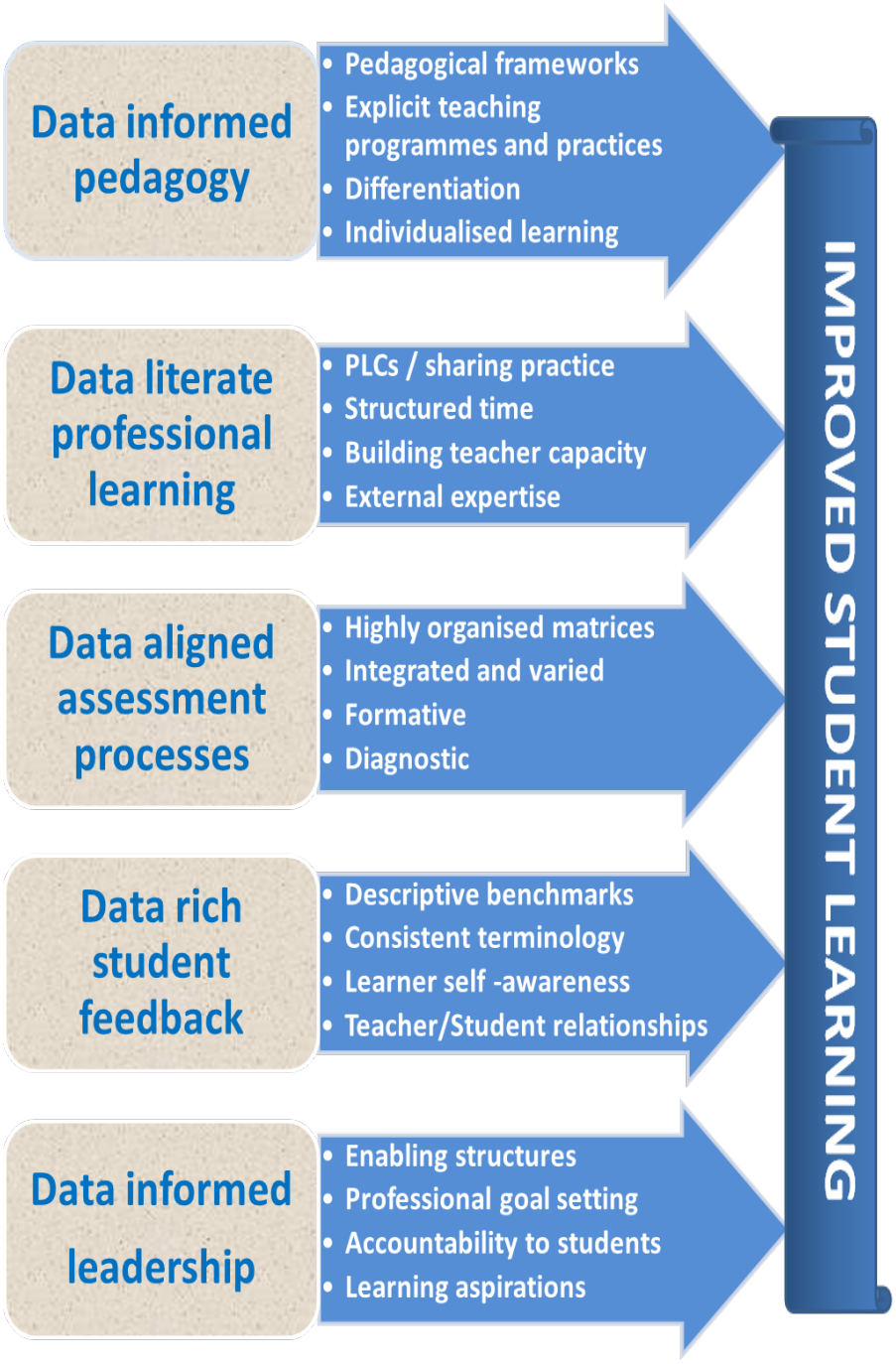


Figure 7.1. Using NAPLAN data with school-initiated assessment data to improve student learning.

7.1.2 Data-informed pedagogy.

Participants reported the use of NAPLAN data to inform pedagogy in ways they judged had influenced improved student learning outcomes. Firstly, the importance of pedagogical frameworks as platforms providing a constructive context for the effective use of NAPLAN data was evident. RQs 1, 2 and 5 explored the use of NAPLAN data in association with teacher practice:

- RQ1. How do school leaders and teachers perceive the influence of NAPLAN data on classroom practice for the improvement of learning?
- RQ2. What role does professional dialogue play in the utilisation of NAPLAN data to improve student learning?
- RQ5. What elements in the use of NAPLAN data contribute to the improvement of learning as measured by growth in NAPLAN performance?

Participants from the three schools where average student gain was most consistently reported as above the average student gain of schools in the chosen sub-sets, described in rich detail the importance of pedagogical frameworks in their use of NAPLAN data and school-initiated assessment data. The development of a school-wide pedagogical framework in these three schools was done in cooperation with the University of Southern Queensland, using the IDEAS process (Crowther et al., 2012; Crowther, Ferguson, & Hann, 2009). Interestingly, the IDEAS process was used to develop a school-wide pedagogy in School 4, but participants made little mention of NAPLAN data within that context.

It is clear from this research that the process of collaboratively developing a school-wide pedagogical framework provided the opportunity for school leaders and teachers to become more reflective in their teaching practice. In Schools 1, 2 and 3, NAPLAN data was used with school-initiated assessment data as a rich source of information to support programming and reflective teaching practice, within the context of a pedagogical framework. Participants from these three schools consistently described NAPLAN data as reliable and influential in establishing base line data for groups of students. Participants from these three schools observed that the creation of a school-wide pedagogical framework supported their development of language associated with learning, which facilitated integration of NAPLAN data in a balanced and appropriate manner.

The influence of data from large-scale assessments on teacher practice was a major theme within the scholarly literature. This research suggested that NAPLAN data, when integrated with school initiated assessment data within the framework of a school-wide pedagogy, influenced teaching programmes and classroom practices that supported improved student learning outcomes. This was evident in the following ways. Firstly, to enable differentiation of learning experiences through grouping of students according to learning needs. Secondly, to differentiate the curriculum; and thirdly to assist in the development of individualised learning strategies. Collaboratively, and with other forms of data and observation, participants described the use of NAPLAN data to inform and shape engaging learning programmes directly, along with purposeful teaching practices and specific learning outcomes.

Improved learning outcomes for students were observed when teachers used NAPLAN data:

- Within the holistic context of a school-wide pedagogical approach or framework.
- To assist in differentiation through grouping of students according to learning needs.
- To assist in the development of individualised learning strategies and to differentiate the curriculum.
- Collaboratively, and with other forms of data and observation, to directly inform and shape engaging learning programmes, purposeful teaching practices and specific learning outcomes.
- To assist in identifying literacy inferential comprehension skills in need of development, and addressing these needs through a specific focus on the language of NAPLAN questions within the context of the programmed curriculum.

The first two recommendations arise from these findings.

Recommendation 1.

It is recommended that policies at system or district level assist school leaders in demonstrating annually how large-scale assessment data is used to support student learning. Ideally, school leaders would include educational rationale for grouping arrangements of students, evidence of differentiated learning experiences, and evidence of individualised learning experiences. Schools would be encouraged to identify in their annual improvement plan targeted literacy strategies, which are grounded in the curriculum, informed by analysis of large scale assessment data from the previous year.

System or district support should be provided to schools in establishing structures and processes that facilitate meeting these requirements.

Recommendation 2

It is recommended that school systems or districts provide resources and support for primary schools to develop a school wide approach to pedagogy and assessment that includes the use of large-scale assessment data. Evidence of collaborative processes that engaged the voices of teachers, students and parents could be required. A published statement describing the school wide approach to pedagogy and assessment would ideally be produced and made available to school stakeholders and the community.

7.1.3 Data literate professional learning.

The use of NAPLAN data in the context of professional learning was described by participants as influencing student learning outcomes. This theme is closely associated with RQ 2, which asked: what role does professional dialogue play in the utilisation of NAPLAN data to improve student learning?

Evident in the scholarly literature was the importance of professional dialogue in the use of large-scale testing data. For teachers, such external data needs to be considered as relevant and valid (Timperley, 2009), which was certainly the case in Schools 1, 2 and 3, and reported as increasingly so in Schools 4 and 5. Teachers and school leaders also need to be data literate, and be familiar with the nature and meaning of a range of data types (Hattie, 2005).

The nature of data-informed and data literate professional learning, as described by participants in the most successful three schools, was characterised by four main

features. Firstly, professional learning needs informed by NAPLAN and school initiated assessment data, which concentrated on sharing teacher practice to improve student learning outcomes. The second feature of the data-informed and data literate professional learning was that it occurred in formally established professional learning communities (DuFour, 2004), in year level PLCs that occurred during regular and substantive blocks of time provided by the school leaders, and were informed by external expertise. The data-informed and data literate professional learning described was judged by participants to have positively influenced the building of teacher capacity, the engagement of parents in their child's learning, the level of knowledge of individual students among teachers, teacher classroom practice, professional collegial support and the development of data literacy skills. As emphasised in Figure 7.1, the provision of time was a practice most evident in Schools 1, 2 and 3. School 1's allocation of time was equivalent to approximately 40 hours per teacher, or five eight-hour days throughout the school year. School 2's allocation of time was equivalent to approximately 32 hours per teacher, or four eight-hour days throughout the school year. School 3's allocation of time was equivalent to approximately 24 hours per teacher, or three eight-hour days throughout the school year. Participants from Schools 4 and 5 did not report specific blocks of time allocated to professional learning with a focus on NAPLAN data.

Participants observed improvements in teacher practice, programming and learning outcomes for students when school leaders and teachers used NAPLAN data:

- As a credible stimulus for broader data based professional dialogue among participants. The professional data based dialogue described positively influenced the building of teacher capacity, the engagement of parents in the

learning of their child, the level of knowledge of individual students among teachers, teacher classroom practice, professional collegial support and the development of data literacy skills.

- To engage in deep professional learning and dialogue in the context of PLCs. Desirable characteristics included structures with teachers at the same stage level forming PLCs, scheduled weekly or fortnightly meetings, allocated release time for each teacher and involved a member of the school's executive.
- To collaborate and build capacity during allocated blocks of time, equivalent to between three and five eight-hour days per teacher per annum.
- To develop skills in conjunction with external and internal experts and notably from the regional Sydney Catholic Education Office.

The third and fourth recommendations arise from these findings.

Recommendation 3.

It is recommended that government and system leaders re- allocate resources to enable adjustments to staffing formulae and professional development days. These measures would facilitate a requirement for school leaders to provide structured time equivalent to world's best practice for teachers to engage in professional learning to increase understanding of the complementary nature of large scale assessment data as a source of external, objective, reliable and valid information, when integrated with other school initiated assessment data. In the Australian context, a particular focus on average student gain should be made as the preferred measure for schools to compare with SSSS and SSSB.

Recommendation 4

It is recommended that primary schools be encouraged to establish Professional Learning Communities consisting of teachers working at the same stage level. Expectations for each PLC should include quarterly reports or presentations to school leaders and colleagues, which demonstrate evidence of analysis of school initiated assessment data and large-scale assessment data. Resultant or planned actions to build teacher capacity, increase knowledge of individual students, and improve classroom teaching practice should be required.

7.1.4 Data-aligned assessment processes.

Schools are data-rich environments and one of the challenges facing school leaders and teachers presented in the scholarly literature is how to make sense of the available data. This is a particular challenge for schools situated in an environment of a state or national large-scale testing regimes, such as NAPLAN in Australia. The third RQ asked: how is NAPLAN data integrated with other forms of school assessment for improvement of student learning?

This research suggested that NAPLAN data influenced improved student learning outcomes when it was carefully aligned with school-initiated assessment data. As presented in Figure 7.1, the creation and maintenance of highly organised computerised assessment matrices for profiling individual student learning progress through a variety of assessment data, including NAPLAN data was evident in Schools 1, 2 and 3. First, and importantly for the three most successful schools, was the emphasis on the external and nationally standardised nature of NAPLAN data, and that it was included as an important source of information within assessment matrices. The matrices

provided teachers with a single data referral point in Schools 1, 2 and 3, which was comprehensive and highly organised. The matrices tracked student progress in a wide range of curriculum areas over time. The integration of NAPLAN data with a variety of other assessments is the second element, which describes the alignment of NAPLAN, and school-initiated assessment data. As illustrated in Figure 7.1, when NAPLAN data was included within a wide range of school-initiated assessment data, including teacher observation, it was suggested that the richness of the information on each individual student and groups of students influenced improved student learning outcomes. Second was the use of NAPLAN data in the creation of formative assessment experiences for learning units of approximately one to three weeks duration. The third element was the use of NAPLAN-style school-based formative assessments to assist students in developing confidence in understanding the language used in NAPLAN tests, and to assist in aligning relevant school-based assessment of specific student skills with those present in NAPLAN assessments. The fourth element was the use of NAPLAN data in association with school-based assessment data in diagnostic processes centred on the individual learner. The need to develop literacy in inferential comprehension skills was identified in all five schools through NAPLAN data analysis.

Participants described ways in which NAPLAN data was integrated with other forms of school-based assessment data for improvement of student learning. Practices described by participants from the three schools in which students demonstrated the most consistent average student gain in reading and numeracy between 2008 and 2012, included:

- The use of NAPLAN data in the creation of pre-test and post-test formative assessment experiences for units of learning of approximately one to three weeks duration.
- The use of NAPLAN-style school-based assessments to assist students in developing confidence in understanding the language used in NAPLAN tests, and to assist in aligning relevant school-based assessment of specific student skills, with those present in NAPLAN assessments.
- Creating and sustaining highly organised computerised assessment matrices, for profiling individual student learning progress through a variety of assessment data including NAPLAN.
- The use of NAPLAN data as a source of external, objective, reliable and valid information, to inform decisions that affected student learning.
- The use of NAPLAN data in association with school-based assessment data in diagnostic processes centred on the individual learner.

Recommendations 5 and 6 arise from these findings.

Recommendation 5.

It is recommended that system and school leaders, collaborate to provide professional learning opportunities for teachers to further develop formative assessment experiences in the context of the school curriculum that are aligned with stage specific skills. In the Australian context, formative assessment experiences should be informed by analysis of school initiated assessment data, analysis of NAPLAN data, terminology used in NAPLAN tests, and activities detailed in the SMART data analysis package.

Recommendation 6.

In the context of the Sydney Archdiocesan System of schools, it is recommended system and school leaders establish for use in all primary schools a computerised assessment matrix, with capacity for profiling and reporting individual student learning progress through a rich variety of assessment data, including NAPLAN data. The assessment matrix should have capacity built to provide school leaders and teachers with diagnostic reports on individual students that can be understood by parents.

7.1.5 Data-rich student feedback.

Clear in the scholarly literature, and widely accepted among researchers, is the importance of feedback by teachers to students to support learning outcomes (Hattie, 2008; Hattie & Timperley, 2007). The third RQ asked: what influence has the use of NAPLAN data had on student feedback for the purposes of improving student learning?

This research suggested four ways in which NAPLAN data influenced student feedback for improved student learning. First was in the creation of richly descriptive benchmarks for achieving specific learning outcomes in suggested time frames, created in collaboration with students and teachers using NAPLAN data as one source of information. Second was when teachers and students became familiar with the terminology associated with NAPLAN data as presented in the SMART data analysis package, and consistently used this terminology in feedback discussions based upon classroom assessments and learning tasks undertaken throughout the year. Third was when students were motivated to engage with their learning through reflection and formative assessment practices in an environment that encouraged self-awareness of learning strengths and areas for development, based on a range of assessment

information, including NAPLAN data. Fourth was the use of NAPLAN data with school initiated assessment data, which assisted in strengthening teacher student relationships

Participants from Schools 1 and 2, in which students demonstrated the most consistent average student gain in reading and numeracy between 2008 and 2012, described in greatest detail ways in which NAPLAN data was used to assist teachers in their feedback to students. In their judgement, improved student learning outcomes were supported by the use of NAPLAN data in student feedback. Processes and practices included:

- The creation of detailed benchmarks for achievement of specific learning outcomes in suggested time frames, which was done in collaboration with students and teachers using NAPLAN data as one source of information.
- Teachers and students becoming familiar with the terminology associated with NAPLAN data as presented in the SMART data analysis package, and consistently using this terminology in feedback discussions based upon classroom assessments and learning tasks undertaken throughout the year.
- Motivating students to engage with their learning through reflection and formative assessment practices in an environment that encouraged self-awareness of learning strengths and areas for development, based on a range of assessment information including NAPLAN data.

Recommendation 7 arises from these findings.

Recommendation 7.

In the Australian context, it is recommended that educational sector and system leaders establish as a priority before NAPLAN goes online in 2017, cross-sectoral

professional learning opportunities for school leaders and teachers, which focus on the skills involved in providing quality feedback to students about their learning. A key element of this professional learning should be developing capacity to use assessment data in feedback conversations and written reports. An essential characterisitc of feedback associated with assessment is that the language used be consistent with the language of the Australian curriculum, and NAPLAN data and analysis as contained in the SMART data analysis package.

7.1.6 Data-informed leadership.

The theme of leadership was strongly represented in participant feedback in response to RQ 5, which asked: what elements in the use of NAPLAN data contribute to the improvement of learning as measured by growth in NAPLAN performance?

Within the four themes from the review of the scholarly literature, the importance of leadership was clear. Reflected in descriptions by participants of the use of NAPLAN data was the influence of leadership at various levels in the schools.

Drawing attention to Figure 7.1, successful use of NAPLAN data was evident in the schools with a leadership mindset informed by data (Hargreaves & Shirley, 2009), and which used data as a driver for improved student achievement (Fullan et al., 2006). Clearly, the use of NAPLAN data was most successful when it was well integrated in various leadership processes. For such integration to occur, leaders had to be confident, well informed and judicious regarding the type of information different sources of data provided. In this research, leaders who articulated what information they valued from NAPLAN data were the same ones with an attitude to all student assessment data that was inquisitive, open, responsive, strategic and inclusive (Reeves, 2007). These attitudes

were most evident in the three schools that reported the highest number of occurrences of average student gain above that of the chosen sub-sets for comparison. Among the top three schools, these attitudes were most obvious and most clearly expressed by teachers and school leaders from school 1. When NAPLAN data was used in conjunction with other forms of student assessment data to inform the decision making, professional judgement and intuition of leaders, the resultant actions were more inclined to be considered as influencing improved student learning outcomes.

As detailed in the model in Figure 7.1, expressions of data-informed leadership, are described in four ways. Firstly, data-informed leadership that is creative in the design of appropriate enabling structures to facilitate improved student learning. Secondly, leadership that uses data in clearly defined professional goal setting processes. Thirdly, leadership that uses data to emphasise the sacred responsibility of each teacher to the young people in their care to educate them as well as they possibly can, using all means at their disposal—including NAPLAN data. Fourthly, leadership that uses data to promote profound aspirations for high levels of learning achievement among students and teachers.

Participants described ways in which school leaders and teachers used NAPLAN data for leadership purposes. Participants from Schools 1 and 2 most richly described the following practices. In their judgement, improved student learning outcomes were supported by the use of NAPLAN data in association with leadership when it was:

- Integrated with whole-school planning processes and strategies aimed at improving professional learning, teacher capacity and pedagogy.

- Appropriately contextualised with other assessment data to promote aspirations for learning achievement among students and teachers.
- Purposefully and specifically included in personal, professional goal setting exercises focused on improving teacher practice.
- Recognised and accepted as strengthening understandings of accountability by teachers to students for their learning.

A further finding addressing NAPLANENZA is made:

- Participants from all schools described positive influences and experiences of NAPLAN data in school communities when the data was carefully and appropriately integrated and communicated, as one source of data among many, for enriching the learning environment of a school and the learning experiences for each student.

Recommendation 8 arises from these findings and the other findings from this research.

Recommendation 8.

In the Australian context, it is recommended that school leaders establish and maintain a culture and climate that is characterised by teachers using NAPLAN data in ways that meet relevant expectations as described in the Australian Professional Standards for Teachers (AITSL 2014).

- as one source of assessment data among many others.
- as a valuable external assessment lens on student achievement.
- to inform strategic planning and annual improvement plans.

- to inform personal, professional goal setting exercises with a particular focus on improving teacher practice.
- as a means to motivate and engage students in their learning.
- to educate teachers about the potential and limitations of large scale testing data.
- to increase the professionalism of teachers.
- to complement school initiated assessment data.

Recommendations 9 and 10 are made for further research.

Recommendation 9

It is recommended further research be conducted on the use of NAPLAN data in schools that have established, since 2008, sustained patterns of measures of average student gain above the average student gain in schools serving SSSB and SSSS.

Recommendation 10

It is recommended further research be undertaken on the use of NAPLAN data by teachers and school leaders to improve student learning outcomes in secondary schools.

7.1.7 NAPLANENZA.

As a footnote, the existence of negativity to NAPLAN among some participants in the research represented two per cent of all references. NAPLANENZA is not included in Figure 7.1. This is not to suggest the concerns expressed were not legitimate, but rather when NAPLAN data is used to support student learning in the ways presented in Figure 7.1, such concerns are lessened. As mentioned in Chapter 3, a limitation of the

study is clearly that the participants are from schools, which have demonstrated varying degrees of success as judged by average learning gain. That there were 52 references by participants consistent with criticism of large scale centralised testing in the scholarly literature, suggests the final recommendation.

Recommendation 11

It is recommended further research be undertaken on the presence and influence if any, of NAPLANENZA in schools demonstrating below average learning gain.

7.2 Limitations of the Study

The limitations of the research relate to the research methodology and data collection processes. In the process of document analysis, the limitations of the information provided on the *My School* website were presented in the discussion in Chapter 3. The nature of the *My School* website and the data it contains was discussed in detail in Section 3.8.

Within the case study methodology, interviews were conducted with participants chosen not at random, but as representative of different contexts within the school settings of the inner western region of the Archdiocese of Sydney. This method of purposive sampling (Cresswell, 2008) can be seen as delimiting the research, in that school leaders and teachers from a range of schools based on varying degrees of successful NAPLAN performance according to average student gain were included. Such a multi-site case study can be seen as limited in how representative it is of the broader reality in schools across the country. As the schools in the research were all

Catholic primary schools from the inner western region of Sydney, there is vulnerability regarding questions of generalisability (Yin, 2003). This possibly relates to non-Catholic primary schools and secondary schools from all sectors, as well as schools in regional or isolated areas. The choice to select the schools based on average student gain, in comparison with average student gain in schools serving SSSB and average gain by SSSS nationally, minimises this limitation. Data gathered using interviews can also have inherent limitations, due to interpretation of questions, perceived biases of the interviewer or simply the respondent's reaction to the interviewer's personality (Burns, 1990).

As stated in Chapter 3, that the chosen schools were relatively successful in comparison with all the schools in the Region on the measure of average learning gain, limits the study. Particular consideration should be given to the levels of negativity by some participants toward large scale testing, which were similar to reports in the literature under the broadly defined neo-liberal economic agenda. For such sentiments to be evident among participants in this study, who were from relatively successful schools in the region based on NAPLAN performance, emphasises its limitation and points to possibilities for future research.

7.3 Concluding Remarks

The major research question asked: how do teachers and school leaders working within the large-cohort centralised testing regime of NAPLAN in Australia utilise NAPLAN data to improve student learning outcomes as measured in NAPLAN performance?

This research has made findings that suggest ways in which teachers and school leaders use NAPLAN data to improve student learning outcomes, as measured by NAPLAN performance using comparisons of average student gain of the chosen schools, with schools serving SSSB, and with SSSS in the period between 2008 and 2012. This research has made 22 findings suggesting that certain practices in using NAPLAN data have contributed to improved student learning outcomes. 11 recommendations for system leaders, school leaders and teachers have been stated.

Bibliography

Australian Curriculum Assessment Reporting Authority. (2010). *My School*. Retrieved from http://www.myschool.edu.au/

Australian Curriculum Assessment Reporting Authority. (2011). *NAPLAN technical summary*. Retrieved from https://senate.aph.gov.au/submissions/comittees/viewdocument.aspx.

Australian Curriculum Assessment Reporting Authority. (2012). *My School*. Retrieved from http://www.myschool.edu.au/

Australian Curriculum Assessment Reporting Authority. (2013a). *Guide to understanding ICSEA*. Retrieved from http://www.acara.edu.au/verve/_resources/Guide_to_understanding_ICSEA.pdf.

Australian Curriculum Assessment Reporting Authority. (2013b). *Guide to understanding student gain*. Retrieved from www.myschool.edu.au

Australian Curriculum Assessment Reporting Authority. (2013c). *Interpreting NAPLAN results*. Retrieved from www.myschool.edu.au.

Australian Curriculum Assessment Reporting Authority. (2013d). *Reliability and validity of NAPLAN*. Retrieved from www.myschool.edu.au.

Australian Curriculum Assessment Reporting Authority. (2013e). *Reporting NAPLAN results on My School*. Retrieved from www.myschool.edu.au.

Australian Institute for Teaching and School Leadership. (2014). *Australian Professional Standards for Teachers.* Retrieved from www.aitsl.edu.au/australian-professional-standards-for-teachers/standards/list

Ainsworth, L. & Viegut, D. (2006). *Common formative assessments: How to connect standards-based instruction and assessment*. SAGE.

Alexander, R. J., & Armstrong, M. (2010). *Children, their World, their Education: final report and recommendations of the Cambridge Primary Review*. Taylor & Francis US.

Alexander, R. (2010). *The perils of policy success, amnesia and collateral damage in systemic educational reform*. Miegunyah Distinguished Visiting Fellowship Program.

Amrein-Beardsley, A., Berliner, D. C. & Rideau, S. (2010). Cheating in the first, second, and third degree: educators' responses to high-stakes testing. *Education Policy Analysis Archives, 18*(14), n. 14.

Anderson, B. & Hatcher, R. (2005). The Blairite vision: school in england under new labour. *Our Schools, Our Selves, 14,* 89–93; 95–102.

Anderson, J. (2009). Using NAPLAN items to develop students' thinking skills and build confidence. *Australian Mathematics Teacher, 65*(4), 17.

Andrews, D., Crowther, F., Morgan, A. & O'Neill, S. (2012). Hitting the bullseye of school improvement: The 'IDEAS' project at work in a successful school system. *Leading and Managing, 18*(2), 1.

Apple, M. W. (2006). Understanding and interrupting neoliberalism and neoconservatism in education. *Pedagogies*, *1*(1), 21-26.

Axworthy, D. (2005). *Turning data into information that improves teaching and learning: the WA experience*. Paper presented at the Australian Council for Educational Research Conference. Retrieved from http://www.acer.edu.au

Bain, A., Walker, A., & Chan, A. (2011). Self-organisation and capacity building: Sustaining the change. *Journal of Educational Administration*, *49*(6), 701-719.

Barber, M. & Mourshed, M. (2007). *How the world's best performing school systems came out on top*. Retrieved from http://www.mckinsey.com

Bartlett, L., Frederick, M., Gulbrandsen, T., & Murillo, E. (2002). The marketization of education: Public schools for private ends. *Anthropology & Education Quarterly*, *33*(1), 5-29.

Bassey, M. (1999a). *Case study research in educational settings*. Buckingham: Open University Press.

Bassey, M. (1999b). Methods of inquiry and the conduct of case study research. In P. Sikes (Ed.), *Case study research in educational settings*. Buckingham: Open University Press.

Becta. (2009). Harnessing technology review 2009. *The role of technology in education skills*. Retrieved from www.becta.org.uk.

Bernhardt, V. (2007). *Translating data into information to improve teaching and learning*. London: Routledge.

Bernhardt, V. (2009). *Data, data, everywhere*. New York: Eye on Education.

Black, P. & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education, 5*(1), 7–74.

Blackledge, D. & Hunt, B. (1991). *Sociological interpretations of education*. London: Routledge.

Blumer, H. (1969). *Symbolic interactionism: perspective and method*. Englewood Cliffs, NJ: Prentice-Hall.

Bourque, M. L. (2005). Leave no standardized test behind. In R. Phelps (Ed.), *Defending standardized testing* (pp. 227–253). New Jersey: Lawrence Erlbaum Associates.

Bourque, M. L. (2009). *A history of NAEP achievement levels: issues, implementation, and impact 1989–2009.* National Assessment Governing Board.

Burns, R. (1990). *Introduction to research methods in education*. Melbourne: Longman Cheshire.

Caldas, S. J. & Bankston, C. (1997). Effect of school population socioeconomic status on individual academic achievement. *The Journal of Educational Research, 90*(5), 269–277.

Campbell, R. & Ahrens, C. (1998). Innovative community services for rape victims: an application of multiple case study methodology. *American Journal of Community Psychology, 26*(4).

Canavan, B. K. (2004). *The teaching of literacy in sydney catholic schools*. Retrieved from http://links-for-teachers.tripod.com/Sub_284_Catholic_Education_Office_Sydney_WEB.pdf

Caracelli, V. J. & Greene, J. C. (1993). Data analysis strategies for mixed-method evaluation designs. *Education Evaluation and Policy Analysis, 15*(2), 195–207.

Catholic Education Office. (2014). *School review and improvement framework*. Retrieved from http://www.ceosyd.catholic.edu.au/About/Pages/sri.aspx

Chase, S. (2005). Narrative inquiry: multiple lenses, approaches, voices. In N. K. Denizin & Y. S. Lincoln (Ed.), *The Sage handbook of qualitative research* (3rd ed., pp. 651–680). Thousand Oaks, CA: Sage.

Childs, S., Fantuzzo, J., McWayne, C. & Perry, M. A. (2004). Multiple dimensions of family involvement and their relations to behavioral and learning competencies for urban, low-income children. *School Psychology Review, 33*(Fall).

Cizek, G.J. (2001). More unintended consequences of high-stakes testing. *Educational Measurement:Issues and Practice, Winter 2001,* 19-27.

Cizek, G.J. & Burg. S. (2006). *Addressing tests anxiety in a high-stakes environment: strategies for classrooms and schools*. Thousand Oaks, CA: Corwin Press.

Cizek, G. J. (2009). Reliability and validity of information about student achievement: comparing large-scale and classroom testing contexts. *Theory into Practice, 48*(1), 63–71.

Craig, W. (2005). Data for school improvement: a practitioner's approach. *Proceedings from Australian Council for Educational Research, Using Data to Support Learning Conference*. Melbourne.

Cresswell, J. (2008). *Educational research* (3rd ed.). New Jersey: Pearson Prentice Hall.

Cresswell, J. (2009). *Research design: qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage.

Creswell, J. & Plano Clark, V. L. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.

Crotty, M. (1998). *The foundations of social research: meaning and perspective in the research process*. London: Sage.

Crowther, F., Andrews, D., Morgan, A. & O'Neill, S. (2012). Hitting the bullseye of school improvement: the 'ideas' project at work in a successful school system. *Leading and Managing, 18*(2), 1.

Crowther, F., Ferguson, M. & Hann, L. (2009). *Developing teacher leaders* (2nd ed.). Thousand Oaks, CA: Corwin Press.

Csikszentmihalyi, M. (1997). *Finding flow: the psychology of engagement with everyday life.* New York: Basic Books.

Cuttance, P. (2005). Quality assurance reviews as a catalyst for school improvement in Australia. In D. Hopkins (Ed.), *The practice and theory of school improvement* (pp. 101–128). Netherlands: Springer.

Dana, N. F. & Yendol-Hoppey, D. (2014). *The reflective educator's guide to classroom research: learning to teach and teaching to learn through practitioner inquiry*. Corwin Press.

Davies, A. (2007). Involving students in the classroom assessment process. In D. Reeves (Ed.), *Ahead of the curve: the power of assessment to transform teaching and learning.* Bloomington, IN: Solution Tree.

DeCourcy, J. (2005). *Using HSC data to give principals leverage*. Paper presented at the Australian Council for Educational Research Conference. Retrieved from http://www.acer.edu.au

Dimmock, C. & O'Donoghue, T. (1997). *Innovative school principals and restructuring: life history portraits of successful managers of change*. London: Routledge.

DuFour, R. (2004). What is a 'professional learning community'? *Educational Leadership, 61*(8), 6.

DuFour, R. (2007). Professional learning communities: a bandwagon, an idea worth considering, or our best hope for high levels of learning? *Middle School Journal, 39*(1), 4.

Earl, L. & Fullan, M. (2003). Using data in leadership for learning. *Cambridge Journal of Education, 33*(3), 383–394. doi: 10.1080/0305764032000122023

Earl, L. & Katz, S. (2002). Leading schools in a data-rich world. In K. Leithwood, P. Hallinger, G. Furman, K. Riley, J. MacBeath, P. Gronn & B. Mulford (Eds.), *Second international handbook of educational leadership and administration* (Vol. 8, pp. 1003–1022). Netherlands: Springer.

Earle, L. (2005). *From accounting to accountability: harnessing data for school improvement*. Paper presented at the Australian Council for Educational Research Conference. Retrieved from http://www.acer.edu.au

Eisner, E. W. (1991). *The enlightened eye: qualitative inquiry and the enhancement of educational practice*. New York: Macmillan.

Fausset, R. & Blinder, A. (2015, 14 April). Atlanta School Workers Sentenced in Test Score Cheating Case. *The New York Times.*Retrieved from http://www. nytimes.com.

Ferrari, J. & Bita, N. (2008, 12 August). Julia Gillard to follow New York on school ranks. *The Australian.* Retrieved from http://www.theaustralian.com.au/news/nation/new-york-state-of-mind-on-school-ranks/story-e6frg6nf-1111117169016

Firefly Education. (2014). *Soundwaves. A whole school approach to spelling.* Retrieved from www.fireflyeducation.com.au.

Fullan, M. (2009). *The challenge of change smart school improvement now!* Thousand Oaks, CA: Corwin Press.

Fullan, M., Hill, P. & Crevola, C. (2006). *Breakthrough.* Thousand Oaks, CA. Corwin Press.

Gage, N. L. (1989). The paradigm wars and their aftermath a "historical" sketch of research on teaching since 1989. *Educational researcher*, *18*(7), 4-10.

Gall, J. P., Gall, M. D. & Borg, W. R. (2005). *Applying educational research: a practical guide* (5th ed.). Boston: Pearson/Allyn & Bacon.

Gavrielatos, A. (2010). *Teachers place moratorium on NAPLAN tests*. Retrieved from http://www.aeufederal.org.au

Gillard, Julia, "Special Address : The Hon Julia Gillard MP, Deputy Prime Minister, Minister for Employment and Workplace Relations, Minister for Education, Minister for Social Inclusion" (2008). http://research.acer.edu.au/research_conference_2008/10

Glesne, C. & Peshkin, A. (1992). *Becoming qualitative researchers: an introduction*. White Plains, NY: Longhman.

Gough, N. (2002). *Blank spots, blind spots, and methodological questions in educational inquiry*. Paper presented at the Higher Degrees by Research Summer School, Deakin University Melbourne.

Guba, E. G. & Lincoln, Y. S. (2005). Paradigmatic controversies, contradictions and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (3rd ed., pp. 191–215). Thousand Oaks, CA: Sage.

Gulek, C. (2003). Preparing for high-stakes testing. *Theory into Practice, 42*(1), 42–50.

Gurr, D., Drysdale, L., Ylimaki, R. M., & Moos, L. (2011). Preparing instructional leaders. In *US and Cross-National Policies, Practices, and Preparation* (pp. 125-152). Springer Netherlands.

Guskey, T. H. (2007). Using assessments to improve teaching and learning. In D. Reeves (Ed.), *Ahead of the curve: the power of assessment to transform teaching and learning* (pp. 15–30). Bloomington, IN: Solution Tree.

Hallinger, P. (2003). School leadership preparation and development in global perspective. *Reshaping the Landscape of Leadership Development: A Global Perspective, Swets & Zeitlinger, Lisse, the Netherlands*.

Hambleton, R. K. (1990). Item response theory: introduction and bibliography. *Psicothema, 2*(1), 97–107.

Hancock, D. R. & Algozzine, B. (2006). *Doing case study research: a practical guide for beginning researchers*. New York, NY: Teachers College Press.

Hanushek, E. A. (2006). School resources. *Handbook of the economics of education, 2*, 865–908.

Hargreaves, A. & Shirley, D. (2009). *The fourth way: the inspiring future for educational change.* Thousand Oaks, CA: Corwin.

Hartnell-Young, E. A. (2009). *Signposts: research points to how Victorian government schools have improved performance*. East Melbourne: Department of Education and Early Childhood Development.

Hattie, J. (2003). *Teachers make a difference: what is the research evidence?* Australian Council for Educational Research: Melbourne.

Hattie, J. (2005). What is the nature of evidence that makes a difference to learning? *Proceedings from Australian Council for Educational Research, Using Data to Support Learning Conference*. Melbourne. Retrieved from http://www.acer.edu.au

Hattie, J. (2008). *Visible learning: a synthesis of over 800 meta-analyses relating to achievement*. London: Routledge.

Hattie, J. & Timperley, H. (2007). The power of feedback. *Review of Educational Research, 77*(1), 81–112.

H. Heck, R., & Hallinger, P. (2014). Modeling the longitudinal effects of school leadership on teaching and learning. *Journal of Educational Administration*,*52*(5), 653-681.

Hill, D. (2004). Books, Banks and Bullets: controlling our minds—the global project of imperialistic and militaristic neo-liberalism and its effect on education policy. *Policy Futures in Education*, *2*(3-4), 504-522.

Hill, P. (2010). Senate References Committee on Education, E. W. R. *Inquiry into the administration and reporting of NAPLAN testing (2010)*. Hansard.

Holmes-Smith, P. (2005). Assessment for learning: using statewide literacy and numeracy tests as diagnostic tools. *Proceedings from Australian Council for Educational Research, Using Data to Support Learning Conference*. Melbourne. Retrieved from http://www.acer.edu.au

Hopkins, D. (2005). *The practice and theory of school improvement: international handbook of educational change* (Vol. 4). Dordrecht: Springer.

Hosmer, D. L. S. (2000). *Applied logistic regression* (2nd ed). New York: John Wiley & Sons, Inc.

Howie, S. & Plomp, T. (2005). International comparative studies of education and large-scale change. *International handbook of educational policy* (pp. 75–99). Springer: Netherlands.

Hung, D., Tan, S. C. & Koh, T. S. (2006). Engaged learning: making learning an authentic experience. In Hung, D. & Khine, M. S. (Eds.), *Engaged learning with emerging technologies* (pp. 29–48). Springer: Netherlands.

Hursh, D. (2000). Neoliberalism and the control of teachers, students, and learning: The rise of standards, standardization, and accountability. *Cultural Logic*, *4*(1), 4-1.

Jensen, B. (2010a, April 15). NAPLAN tests help champion equality in the classroom, *Sydney Morning Herald*.

Jensen, B. (2010b). *What teachers want: better teacher management*. Retrieved from http://www.grattan.edu.au

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, *33*(7), 14-26.

Johnston, R. S. & Watson, J. E. (2005). *A seven year study of the effects of synthetic phonics teaching on reading and spelling attainment*. Scottish Executive Education Department, Information, Analysis and Communication Division.

Jones, B. D. (2007). The unintended outcomes of high-stakes testing. *Journal of Applied School Psychology, 23*(2), 65–86. doi: 10.1300/J370v23n02_05

Kahn, R. & Cannell, C. (1957). *The dynamics of interviewing: theory, technique, and cases*. Oxford: John Wiley & Sons.

Kirkup, C., Sizmur, J., Sturman, L. & Lewis, K. (2005). *Schools' use of data in teaching and learning*. Research Report RR671. National Foundation for Educational Research.

Klein, J. (Producer). (2008, August 29). Interview transcript. *ABC Radio, Sydney*. Retrieved from http://www.abc.net.au

Klenowski, V. & Wyatt-Smith, C. (2012). The impact of high stakes testing: the Australian story. *Assessment in Education: Principles, Policy & Practice, 19*(1), 65–79.

Leithwood, K., Day, C., Sammons, P., Harris, A. & Hopkins, D. (2006). *Seven strong claims about successful school leadership*. Retrieved from http://www.ncsl.org.au/publications

Levin, B., Glaze, A. & Fullan, M. (2008). Results without rancor. *Phi Delta Kappan, 90*(4). Retrieved from http://www.questia.com

Lim, O. A. (Producer). (2010). *Principal stood down over NAPLAN tests*. Retrieved from http://www.theaustralian.com.au/national-affairs/principal-stood-down-over-naplan-tests/story-fn59niix-1225933017188

Lincoln, Y. S. & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.

Lingard, B. (2010). Policy borrowing, policy learning: Testing times in Australian schooling. *Critical Studies in Education*, *51*(2), 129-147.

Linn, R. L. (1997). Evaluating the validity of assessments: the consequences of use. *Educational Measurement: Issues and Practice, 16*(2), 14–16. doi: 10.1111/j.1745-3992.1997.tb00587.x

Lobascher, S. (2011). What are the potential impacts of high-stakes testing on literacy education in Australia? *Literacy Learning: The Middle Years, 19*(2), 9.

Love, N. (2009). *Using data to improve learning for all*. Thousand Oaks, CA: Corwin Press.

Mansell, W. (2009). *The evidence shows testing is unnecessary*. Retrieved from http://www.theindependent.org.uk

Marshall, C. & Rossman, G. B. (1999). *Designing qualitative research.* Thousand Oaks, CA: Sage.

Marzano, R. J. (2004). *Building background knowledge for academic achievement: research on what works in schools.* Alexandria, VA: ASCD.

Marzano, R. J. (2007). Designing a comprehensive approach to classroom assessment. In D. Reeves (Ed.), *Ahead of the curve: the power of assessment to transform teaching and learning* (pp. 103–126). Bloomington, IN: Solution Tree.

Masters, G. (2012). *Measuring and rewarding school improvement*. Australian Council for Educational Research.

Ministerial Council on Education, Employment, Training and Youth Affairs. (2008). *Melbourne declaration on educational goals for young Australians*. Retrieved from www.mceetya.edu.au.

McGaw, B. (2002). *Raising the bar and reducing the failures: a possible dream.* Plenary address. Paper presented at the ACER 2002 Research Conference, Brisbane.

McGaw, B. (2006). *Achievement and equity: where is Australia at?* Keynote address. Paper presented at the Curriculum Corporation 12th National Conference, Brisbane.

McTighe, J. & Brown, J. L. (2005). Differentiated instruction and educational standards: is détente possible? *Theory into Practice, 44*(3), 234–244.

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.

Miles, M. & Huberman, A. (1994). *Qualitative data analysis: a sourcebook of new methods*. Beverley Hills: Sage.

Mills, K. A. (2008). Will large-scale assessments raise literacy standards in Australian schools? *Australian Journal of Language and Literacy, 31*(3), 211–255.

Mounce, H. (2002). *The two pragmatisms: from Peirce to Rorty*. Routledge.

Mok, M. (2013). *Assessment reform in the Asia-Pacific region: the theory and practice of self-directed learning oriented assessment*. Hong Kong: PACE.

Muijs, D., Harris, A., Chapman, C., Stoll, L. & Russ, J. (2004). Improving schools in socio-economically disadvantaged areas—a review of research evidence. *School Effectiveness and School Improvement, 15*(2), 149–175. doi: 10.1076/sesi.15.2.149.30433

Munro, K. T. J. (Producer). (2010, April 11). Parents outraged by strike-breaker plan. *Sydney Morning Herald*.

New South Wales Catholic Education Commission. (2014). CECNSW. Retrieved from stage.cecnsw.catholic.edu.au/statsJMK2htm

Nicaise, M., Gibney, T. & Crane, M. (2000). Toward an understanding of authentic learning: student perceptions of an authentic classroom. *Journal of Science Education and Technology, 9*(1), 79–94. doi: 10.1023/A:1009477008671

Nicol, D. J. & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: a model and seven principles of good feedback practice. *Studies in Higher Education, 31*(2), 199–218.

Onwuegbuzie, A. & Teddlie, C. (2003). A framework for analysing data in mixed methods research. In A. Tashakkori & C. Teddie (Eds.), *Handbook of mixed methods in social and behavioural research* (pp. 351–383). Thousand Oaks, CA: Sage.

Otterman. (2010, May 20). On reading test mixed results under Bloomberg. *New York Times*.

Pettit, P. (2009). *From data-informed to data-led? school leadership within the context of external testing* (EDD). Australian Catholic University, Australia.

Phelps, R. P. (2005). *Defending standardised testing*. Mahwah, NJ: Lawrence Erlbaum Associates.

Phelps, R. P. (2012). The effect of testing on student achievement, 1910–2010. *International Journal of Testing, 12*(1), 21–43.

Plomp, T., Howie, S. & McGaw, B. (2003). International studies of educational achievement. In T. Kellaghan & D. L. Stufflebeam (Eds.), *International handbook of educational evaluation* (pp. 951–978). Netherlands: Springer.

Polesel, J., Dulfer, M. N. & Turnbull, M. (2012). *The experience of education: the impacts of high-stakes testing on school students and their families*. Sydney: Whitlam Insititute.

Polesel, J., Rice, S. & Dulfer, N. (2013). The impact of high-stakes testing on curriculum and pedagogy: a teacher perspective from Australia. *Journal of Education Policy* (ahead-of-print), 1–18.

Popham, W. J. (2001). Teaching to the test? *Educational Leadership, 58*(6), 16–21.

Punch, K. F. (1998). *Introduction to social research: quantitative and qualitative approaches*. London: Sage.

Rasch, G. (1960). *Studies in mathematical psychology: I. Probabilistic models for some intelligence and attainment tests*. Copenhagen: Danish Institute of Educational Research.

Raudenbush, S. W. (2004). *Schooling, statistics, and poverty: can we measure school improvement?* Educational Testing Service.

Redden, G. & Low, R. (2012). My school, education, and cultures of rating and ranking. *Review of Education, Pedagogy, and Cultural Studies, 34*(1–2), 35–48. doi: 10.1080/10714413.2012.643737

Reeves, D. B. (2001). Standards make a difference: the influence of standards on classroom assessment. *NASSP Bulletin, 85*(621), 5–12.

Reeves, D. B. (2007). *Ahead of the curve: the power of assessment to transform teaching and learning*. Bloomington, IN: Solution Tree.

Reid, A. (2005). *Rethinking approaches to national curriculum: beyond the railway gauge metaphor*. Retrieved from http://www.austcolled.eu

Rowe, K. J. (2004). *The importance of teaching: ensuring better schooling by building teacher capacities that maximize the quality of teaching and learning provision—implicatons of findings from international and australian evidence based research*. Paper presented at the Making Schools Better Conference, Melbourne University.

Rowe, K. J. (2006). *Effective teaching practices for students with and without learning difficulties: constructivism as a legitimate theory of learning of teaching?* Retrieved from http://www.acer.edu.au

Rubie-Davies, C., Hattie, J. & Hamilton, R. (2006). Expecting the best for students: teacher expectations and academic outcomes. *British Journal of Educational Psychology, 76*(3), 429–444.

Sadler, D. R. (1989). Formative assessment and the design of instructional systems. *Instructional Science, 18*(2), 119–144.

Santiago, P., Donaldson, G., Herman, J. & Claire, S. (2011). *OECD reviews of evaluation and assessment in education: Australia 2011* (Vol. 2011). OECD Publishing.

Savery, J. R. (2006). Overview of problem-based learning: definitions and distinctions. *Interdisciplinary Journal of Problem-based Learning, 1*(1), 3.

Schochet, P. Z. & Chiang, H. S. (2010). *Error rates in measuring teacher and school performance based on student test score gains*. NCEE 2010–4004. National Center for Education Evaluation and Regional Assistance.

Schochet, P. Z. & Chiang, H. S. (2012). What are error rates for classifying teacher and school performance using value-added models? *Journal of Educational and Behavioral Statistics*, *38*(2), 142–171.

Schwandt, T. A. (1993). Theory for the moral sciences: crisis of identity and purpose. In D. J. Flinders & G. Mills. (Ed.), *Theory and concepts in qualitative research: perspectives from the field* (pp. 5–23). New York: Columbia University, Teachers College Press.

Schwandt, T. A. (2000). Three epistemological stances for qualitative inquiry. In N. K. Denzin & Y. S. Lincoln (Ed.), *Handbook of qualitative research* (2nd ed., pp. 189–213). Thousand Oaks, CA: Sage.

Seidel, T. & Prenzel, M. (2008). Assessment in large scale studies. In Hartig, J, Klieme, E. & Leutner, D. (Eds.), *Assessment of competencies in educational contexts* (pp. 279–304). Munster: Waxman.

Senate References Committee on Education, E. W. R. (2010). Inquiry into the administration and reporting of NAPLAN testing. Retrieved http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Education_E

mployment_and_Workplace_Relations/Naplan13/~/media/Committees/Senate/committee/ee

Sharratt, L. & Fullan, M. (2012). *Putting FACES on the data: what great leaders do!* Thousand Oaks, CA: Sage.

Shepard, L. A. (1997). The centrality of test use and consequences for test validity. *Educational Measurement: Issues and Practice, 16*(2), 5–24. doi: 10.1111/j.1745-3992.1997.tb00585.x

Shepard, L. A. (2008). A brief history of accountability testing, 1965–2007. In Ryan, K. E. & Shepard, L. A (Eds.), *The future of test-based educational accountability* (pp. 25–46). Routledge.

Shepard, L. A. & Dougherty, K. C. (1991). *Effects of high-stakes testing on instruction*. Spencer Foundation.

Shuttleworth, M. (2008). *Case study research design*. Retrieved from http://www.experiment-resources.com/case-study-research-design.html

Sirin, S. R. (2005). Socioeconomic status and academic achievement: a meta-analytic review of research. *Review of Educational Research, 75*(3), 417–453.

Sloane, F. C. & Kelly, A. E. (2003). Issues in high-stakes testing programs. *Theory into Practice, 42*(1), 12–17.

Smeed, J. L., Ehrich, L. C., Kimber, M., & Perry, L. A. (2011). Data-driven accountability in Australia: an unfolding story with lessons for leaders. *The Australian Educational Leader*, *33*(2), 17-20.

Smeed, J. L. (2012). Data analysis skills for teachers. *Australian Council for Educational Leaders*, *1*(1), 1-2.

Smeed, J. L. (2014). A controlled, rapid approach to curriculum change. *The Australian Educational Leader*, *36*(1), 30-33.

Stake, R. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.

Stake, R. (2005). Qualitative case studies. In N. K. Denizin & Y. S. Lincoln (Ed.), *Handbook of qualitative research* (3rd ed., pp.). Thousand Oaks, CA: Sage.

Stenhouse, L. (1984). Artistry and teaching: the teacher as focus of research and development. In D. W. Hopkins (Ed.), *Alternative perspectives on school improvement* (pp. 67–76). Falmer Press.

Stiggins, R. (2007). Assessment through the student's eyes. *Educational Leadership, 64*(8), 22.

Stiggins, R. & Chappuis, J. (2005). Using student-involved classroom assessment to close achievement gaps. *Theory into Practice, 44*(1), 11–18.

Stoll, L., Bolam, R., McMahon, A., Wallace, M. & Thomas, S. (2006). Professional learning communities: a review of the literature. *Journal of Educational Change, 7*(4), 221–258. Retrieved from doi: 10.1007/s10833-006-0001-8

Stoll, L., Fink, D. & Earl, L. M. (2003). *It's about learning (and it's about time*). Psychology Press.

Strauss, A. & Corbin, J. (1998). *Basics of qualitative research: grounded theory, procedures and techniques* (2nd ed.). Thousand Oaks, CA: Sage.

Tashakkori, A. & Teddlie, C. (1998). *Mixed methodology: combining qualitative and quantitative approaches*. Thousand Oaks, CA: Sage.

Tashakkori, A. & Teddlie, C. (2003). Major issues and controversies in the use of mixed methods in the social and behavioural sciences. In A. Tashakkori & C. Teddlie

(Eds.), *Handbook of mixed methods in social and behavioural research*. Thousand Oaks, CA: Sage.

Taylor, S. J. & Bogden, R. (1984). *Introduction to qualitative research methods: the search for meaning*. New York: Wiley.

Timperley, H. S. (2009). *Using assessment data for improving teaching practice*. Paper presented at the Australian Council for Educational Research Conference. Retrieved from http://www.acer.edu.au

Timperley, H. S. (2005). Instructional leadership challenges: the case of using student achievement information for instructional improvement. *Leadership and Policy in Schools, 4*(1), 3–22.

Timperley, H. & Parr, (2010). *Weaving evidence, inquiry and standards to build better schools*. NZCER.

Tomlinson, C. A., Brighton, C., Hertberg, H., Callahan, C. M., Moon, T. R., Brimijoin, K., Reynolds, T. (2003). Differentiating instruction in response to student readiness, interest, and learning profile in academically diverse classrooms: a review of literature. *Journal for the Education of the Gifted, 27*, 119–145.

Tozer, L. & Holmes, M. (2005). *Moving on from count me in too: evidence-based teaching and learning in numeracy in the early and middle years of schooling*. Retreived from http://research.acer.edu.au/research_conference_2005/16

Turkington, M. (2004). *The Catholic Education Office (CEO) Sydney as a learning organization and its perceived impact on standards*. Australian Catholic University.

Van de Vijver, F. & Tanzer, N. K. (1997). Bias and equivalence in cross-cultural assessment: an overview. *European Review of Applied Psychology, 47*(4), 263–280.

Volante, L. (2004). Teaching to the test: what every educator and policy-maker should know. *Canadian Journal of Educational Administration and Policy, 35*.

Warm, T. A. (1989). Weighted likelihood estimation of ability in item response theory. *Psychometrika, 54*(3), 427–450.

Wasson, D. (2009). *Large-cohort testing—how can we use assessment data to effect school and system improvement?* Retrieved from http://www.acer.edu.au

Watt, C. (2010). *No ban on NAPLAN national tests will go ahead in non-government schools*. Retrieved from http://www.ieu.org.au

White, K. R. (1982). The relation between socioeconomic status and academic achievement. *Psychological Bulletin, 91*(3), 461.

Wiggins, G. & McTighe, J. (2005). *Understanding by design*. Alexandria, Virginia: Association for Supervision and Curriculum Development.

Wiliam, D. (2007). Content *then* Process: Teacher Learning Communities in the Service of Formative Assessment. In D. Reeves (Ed.), *Ahead of the curve: the power of assessment to transform teaching and learning* (pp. 183–206). Bloomington, IN: Solution Tree.

Woods, P. (1992). Symbolic interactionism: theory and method. In M. LeCompte, M. D. LeCompe & W. L. Millroy (Eds.), *A handbook of qualitative research in education* (pp. 337–404). London: Academic Press.

Wu, M. (2005). The role of plausible values in large-scale surveys. *Studies in Educational Evaluation, 31*(2–3), 114–128. doi: http://dx.doi.org/10.1016/j.stueduc.2005.05.005

Wu, M. (2010). *Interpreting NAPLAN results for the layperson.* Retrieved from http://www.appa.asn.au

Yin, R. K. (2003). *Case study research: design and method* (3rd ed.). Thousand Oaks, CA: Sage.

Appendices

Appendix A: Research Application Letter of Approval

Catholic Education Office Sydney
www.ceosyd.catholic.edu.au

8 October 2012 Ref: Research Application 820

Frank Malloy
51 Sofala Ave
LANE COVE NSW 2006

Dear Frank,

RE: RESEARCH APPLICATION REF: 820 – LETTER OF APPROVAL

Thank you for the submission of your application to conduct research in Archdiocesan Catholic Schools under the jurisdiction of the Catholic Education Office (CEO) Sydney. Approval is given by CEO Sydney to conduct this study. **This approval is granted subject to full compliance with NSW Child Protection and Commonwealth Privacy Act legislation.** It is the prerogative of any Principal or staff member whom you might approach to decline your invitation to be involved in this study or to withdraw from involvement at any time.

Permission is given for you to approach the Principals of the schools nominated, listed below, requesting participants for your study: "The Use of NAPLAN Data in Catholic Schools for the Improvement of Learning";

School	*Principal*
[redacted]	

COMMONWEALTH PRIVACY ACT
The privacy of the school and that of any school personnel or students involved in your study must, of course, be preserved at all times and comply with requirements under the Commonwealth Privacy Amendment (Private Sector) Act 2000. In complying with this legislation, the CEO Sydney has decided that, for the purposes of research applications, students are not to be identified by anything other than age and/or gender.

NSW CHILD PROTECTION REQUIREMENTS
It is noted that your proposed study methodology **does not involve direct unsupervised contact with students**. Approval to conduct this research study in Sydney Archdiocesan Catholic Schools under the jurisdiction of the CEO Sydney is granted subject to the

researcher's **full compliance** with the **'Commission for Children and Young People Act 1998'**.

FURTHER REQUIREMENTS
When you have established your participating schools, please **complete the attached form and return it** to this office.

It is a condition of approval that when your research has been completed you will forward a **summary report of the findings and/or recommendations** to this office as soon as practicable after results are to hand.

All correspondence relating to this Research should note 'Ref: Research Application 820.

Please contact me at this office if there is any further information you require. I wish you well in this undertaking and look forward to learning about your findings.

Yours sincerely,

Kathy Campbell
Head: Policy and Corporate Services
Email: kathy.campbell@syd.catholic.edu.au

Appendix B: Australian Catholic University's Human Research Ethics Committee Approval

ACU
AUSTRALIAN CATHOLIC UNIVERSITY

ACU education
Transforming learning communities

Dear applicant,
Principal Investigator: A/Prof Charles Burford Student Researcher: Mr. Frank Malloy
Ethics Register Number: 2013 109N Project Title: The use of NAPLAN Data in Catholic Schools for the improvement of Learning.
Risk Level: Low Risk 2
Date Approved: 13/05/2013
Ethics Clearance End Date: 14/04/2014

This email is to advise that your application has been reviewed by the Australian Catholic University's Human Research Ethics Committee and confirmed as meeting the requirements of the National Statement on Ethical Conduct in Human Research.

This project has been awarded ethical clearance until 14/04/2014. In order to comply with the National Statement on Ethical Conduct in Human Research, progress reports are to be submitted on an annual basis. If an extension of time is required researchers must submit a progress report.

Whilst the data collection of your project has received ethical clearance, the decision and authority to commence may be dependent on factors beyond the remit of the ethics review process. For example, your research may need ethics clearance or permissions from other organisations to access staff. Therefore the proposed data collection should not commence until you have satisfied these requirements.

If you require a formal approval certificate, please respond via reply email and one will be issued.
Decisions related to low risk ethical review are subject to ratification at the next available Committee meeting. You will only be contacted again in relation to this matter if the Committee raises any additional questions or concerns.

Researchers who fail to submit an appropriate progress report may have their ethical clearance revoked and/or the ethical clearances of other projects suspended. When your project has been completed please complete and submit a progress/final report form and advise us by email at your earliest convenience. The information researchers provide on the security of records, compliance with approval consent procedures and documentation and responses to special conditions is reported to the NHMRC on an annual basis. In accordance with NHMRC the ACU HREC may undertake annual audits of any projects considered to be of more than low risk.

It is the Principal Investigators / Supervisors responsibility to ensure that:
1. All serious and unexpected adverse events should be reported to the HREC with 72 hours.
2. Any changes to the protocol must be approved by the HREC by submitting a Modification Form prior to the research commencing or continuing.
3. All research participants are to be provided with a Participant Information Letter and consent form, unless otherwise agreed by the Committee.

For progress and/or final reports, please complete and submit a Progress / Final Report form:
www.acu.edu.au/465013
For modifications to your project, please complete and submit a Modification form:
www.acu.edu.au/465013
Researchers must immediately report to HREC any matter that might affect the ethical acceptability of the protocol eg: changes to protocols or unforeseen circumstances or adverse effects on participants.
Please do not hesitate to contact the office if you have any queries.
Kind regards,
Stefania Riccardi
Ethics Officer | Research Services
Office of the Deputy Vice Chancellor (Research) Australian Catholic University

Appendix C: Script for Telephone Conversation with Principals

Greeting.

Having been granted permission to contact you by the Executive Director for Catholic Schools, Dr Dan White, I am phoning to invite you to consider participation in research being conducted on the use of NAPLAN data by teachers and school leaders to improve student learning outcomes. Interviewing you, the teachers of Years 3, 4 , 5 and 6 as well as the Assistant Principal from your school would provide rich data for analysis to be undertaken as a major component of the Doctoral Thesis I have undertaken through the Australian Catholic University under the supervision of Associate Professor Charles Burford and Dr Elizabeth Labone. **Questions will be asked seeking responses from participants on their experiences of the use of NAPLAN data. Areas to be investigated include participant's perceptions on the influences of NAPLAN data on classroom practice, professional dialogue, other forms of school assessment, feedback to students and parents, and student learning outcomes. Audio taping will be necessary to create transcripts to enable multiple analysis.**

As you are aware, prior to this year I spent the entirety of my 27 years in Catholic education in the Inner Western Region of the Sydney Archdiocese in various roles and most recently as the Regional Director before moving to Marist Schools Australia in 2012. That a selection of schools and their teachers from the Inner Western Region are the subjects of my research underscores the immense regard I have for your professionalism and dedication as Catholic educators. I feel confident your participation will assist in gaining new knowledge in regards to the use of NAPLAN data through this research.

Conscious of the many demands upon you and your staff and the time pressures you all experience, the involvement being sought for each individual will be for two 45 minute interviews occurring in **Term 2 2013**. Contained within the agreement and approval by Sydney CEO to conduct and support the research, a commitment was made to cover any necessary teacher relief costs if required. Involvement would be purely voluntary, with the opportunity for participants to withdraw at any time without question which is in accordance with the processes for undertaking ethical research with the Australian Catholic University.

Have you any questions I can answer in regards to this proposal?

If you are happy for members of staff at your school to be invited to participate, I will send you copies of the invitation letters and consent forms to forward to your staff members. Staff who wish to participate can then send the completed consent forms to me using the contact details provided.

Appendix D: Information Letter to Participants

ACU
AUSTRALIAN CATHOLIC UNIVERSITY

ACU education
Transforming learning communities

TITLE OF PROJECT: The use of NAPLAN Data in Catholic Schools for the improvement of Learning
SUPERVISORS : Associate Professor Charles Burford and Associate Professor Dr Elizabeth Labone
STUDENT RESEARCHER : Frank Malloy
PROGRAMME IN WHICH ENROLLED: Professional Doctoral Degree

Dear Participant,

You are invited to participate in research regarding the use NAPLAN data to improve student learning. The purpose of this research is to better understand how teachers and school leaders use NAPLAN data to improve learning outcomes for students. The methods to be used for this research involve firstly, analysis of student results as reported on the My School Website, and presented in the SMART DATA Analysis package. Secondly, two rounds of interviews will be conducted with Principals, Assistant Principals and teachers of Years 3, 4, 5 and 6 across 5 schools in the Inner Western Region of the Sydney Archdiocese.

Your involvement will require two interviews of 45 minutes some months apart. This will occur during the school day. If it is to be at a time when you are scheduled to be teaching, or working with students in another capacity you will be released from these duties and covered by a colleague or casual teacher. This release will incur no cost to the school but will require you to set appropriate work or instructions to manage your absence during this time from your usual duties. Contained within the agreement and approval by Sydney CEO to conduct and support the research, a commitment was made to cover any necessary teacher relief costs if required. If you are absent on the day scheduled for the interviews at your school, you will be invited to be available at another time outside of normal face-to-face teaching hours.

The interviews will be audio taped onsite in a suitable space provided by the Principal. Water will be provided and participants are to be prepared for an uninterrupted conversation. Phone calls, and other potential interruptions are to be avoided and this will require some prior organisation on your part.

The potential benefits of this research include deepening understanding by teachers and school leaders regarding the manner in NAPLAN data can be effectively integrated into critical reflection on teaching and learning, summative and formative assessment practices, school planning, review and improvement with the aim of improving student learning outcomes.

NAPLAN testing is a major financial investment by Australians through the Commonwealth Government and serves a range of purposes in identifying schools requiring additional support in serving communities experiencing educational disadvantage across the country. The possibilities of NAPLAN data informing teaching and learning are often overshadowed by the pervasive political discourse that naturally focuses on identification and categorisation of schools based on NAPLAN results, to address the inequity of educational opportunity and attainment for young Australians as identified by the OECD PISA tests throughout the past decade. The results of this research will help inform future decisions regarding the purpose, meaning and benefits of NAPLAN testing from an educational perspective. The results of the research will be published in a Doctoral Thesis.

As an invited and voluntary participant in this research, you are free to refuse consent altogether without having to justify that decision, or to withdraw consent and discontinue participation in the study at any time without giving a reason.

All participants and schools will be de-identified through coding processes in the reporting and discussion of the research. Research materials such as transcripts of interviews will be securely stored at the Australian Catholic University Strathfield Campus. All materials will be destroyed at the conclusion of the research.

Any questions regarding this project should be directed to the Supervisors and the Student Researcher.

Supervisor: Assoc Prof Charles Burford Ph.D.
Acting Director for the Centre of Creative and Authentic Leadership
Mount Saint Mary Campus
Locked Bag 2002.
Strathfield, NSW, Australia.
Clancy Building, R C1.41
Ph: 02 97014166 Mob: 0412443104

Supervisor: Dr Elizabeth Labone
Acting Deputy Head Research NSW/ACT Faculty of Education
Director Higher Degree Research | Faculty of Education
Senior Lecturer Education Studies
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Locked Bag 2002, Strathfield 2135, NSW
Ph: 02 9701 4130

Student: Mr Frank Malloy
Regional Director Marist Schools Australia NSW/ACT
14 Drummoyne Ave
DRUMMOYNE. 2047.
Email: frank.malloy@marists.org.au
Ph: 9819 6622 Mob: 0417 219 648

As a result of this research, appropriate feedback to participants on the results of the project will be readily communicated if desired.

The Human Research Ethics Committee at Australian Catholic University has approved this study.

In the event that you have any complaint or concern, or if you have any query that the Supervisor and Student Researcher have not been able to satisfy, you may write to the Chair of the Human Research Ethics Committee care of the nearest branch of the Research Services Office.

NSW and ACT: Chair, HREC
C/- Research Services
Australian Catholic University
North Sydney Campus
PO Box 968
NORTH SYDNEY NSW 2059
Tel: 02 9739 2105
Fax: 02 9739 2870

Any complaint or concern will be treated in confidence and fully investigated. The participant will be informed of the outcome.

If you agree to participate in this project, you should sign both copies of the Consent Form, retain one copy for your records and return the other copy to the Student Researcher.
Yours sincerely,

Supervisor Student Researcher

Appendix E: Consent Form

ACU
AUSTRALIAN CATHOLIC UNIVERSITY

ACU education
Transforming learning communities

Copy for Researcher / Copy for Participant to Keep

TITLE OF PROJECT: **The use of NAPLAN Data in Catholic Schools for the improvement of Learning**

SUPERVISORS: Associate Professors Charles Burford and Dr Elizabeth Labone.

STUDENT RESEARCHER: Frank Malloy

I ..... *(the participant)* have read and understood the information provided in the Letter to Participants. Any questions I have asked have been answered to my satisfaction. I agree to participate in two interviews of approximately 45 minutes duration. I understand the interviews will be audiotaped, realising that I can withdraw my consent at any time without adverse consequences. I agree that research data collected for the study may be published or may be provided to other researchers in a form that does not identify me in any way.

NAME OF PARTICIPANT: .....

SIGNATURE .....

DATE .....

SIGNATURE OF SUPERVISOR:.....

DATE:……..

SIGNATURE OF STUDENT RESEARCHER:.....

DATE:.....……

Appendix F: NAPLAN Results

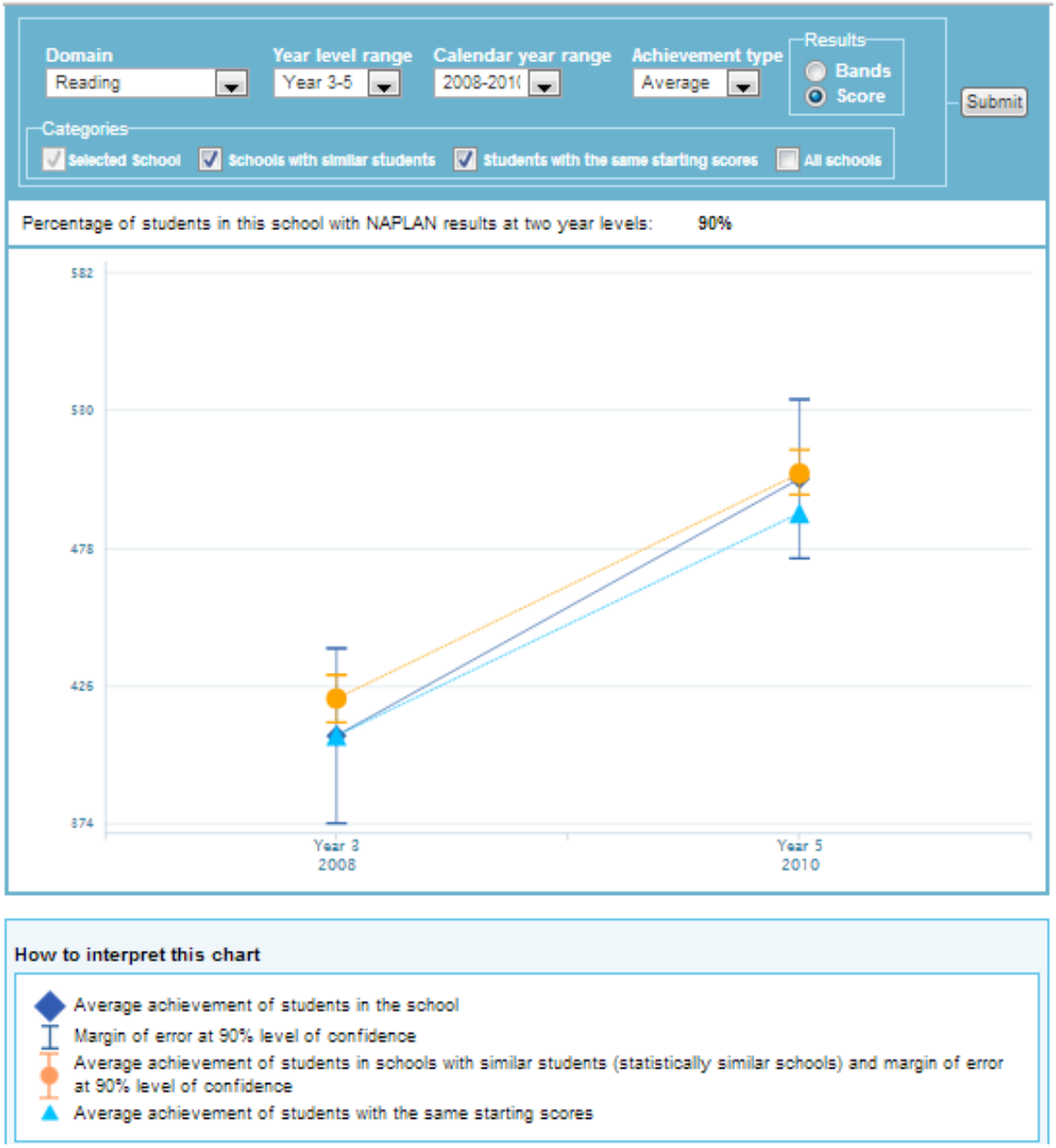

Figure F.1. School 1 average student gain reading Year 5 2010.

Figure F.2. School 1 average student gain numeracy Year 5 2010.

Figure F.3. School 1 average student gain reading Year 5 2011.

Figure F.4. School 1 average student gain numeracy Year 5 2011.

Figure F.5. School 1 Average student gain reading Year 5 2012.

Figure F.6. School 1 average student gain numeracy 2012.

Figure F.7. School 2 average student gain reading 2010.

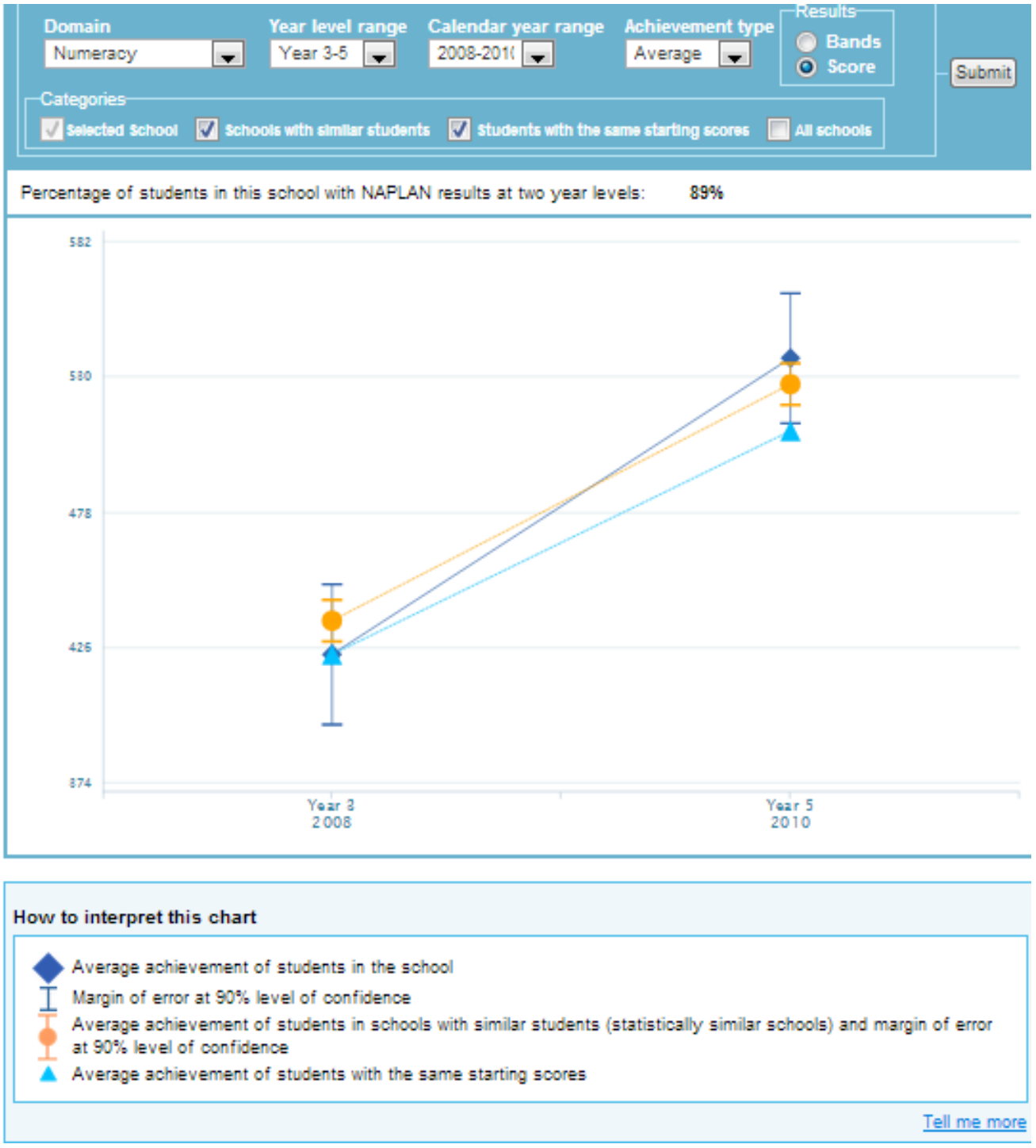

Figure F.8. School 2 average student gain numeracy 2010.

Figure F.9. School 2 average student gain reading 2011.

Figure F.10. School 2 average student gain numeracy 2011.

Figure F.11. School 2 average student gain reading 2012.

Figure F.12. School 2 average student gain numeracy 2012.

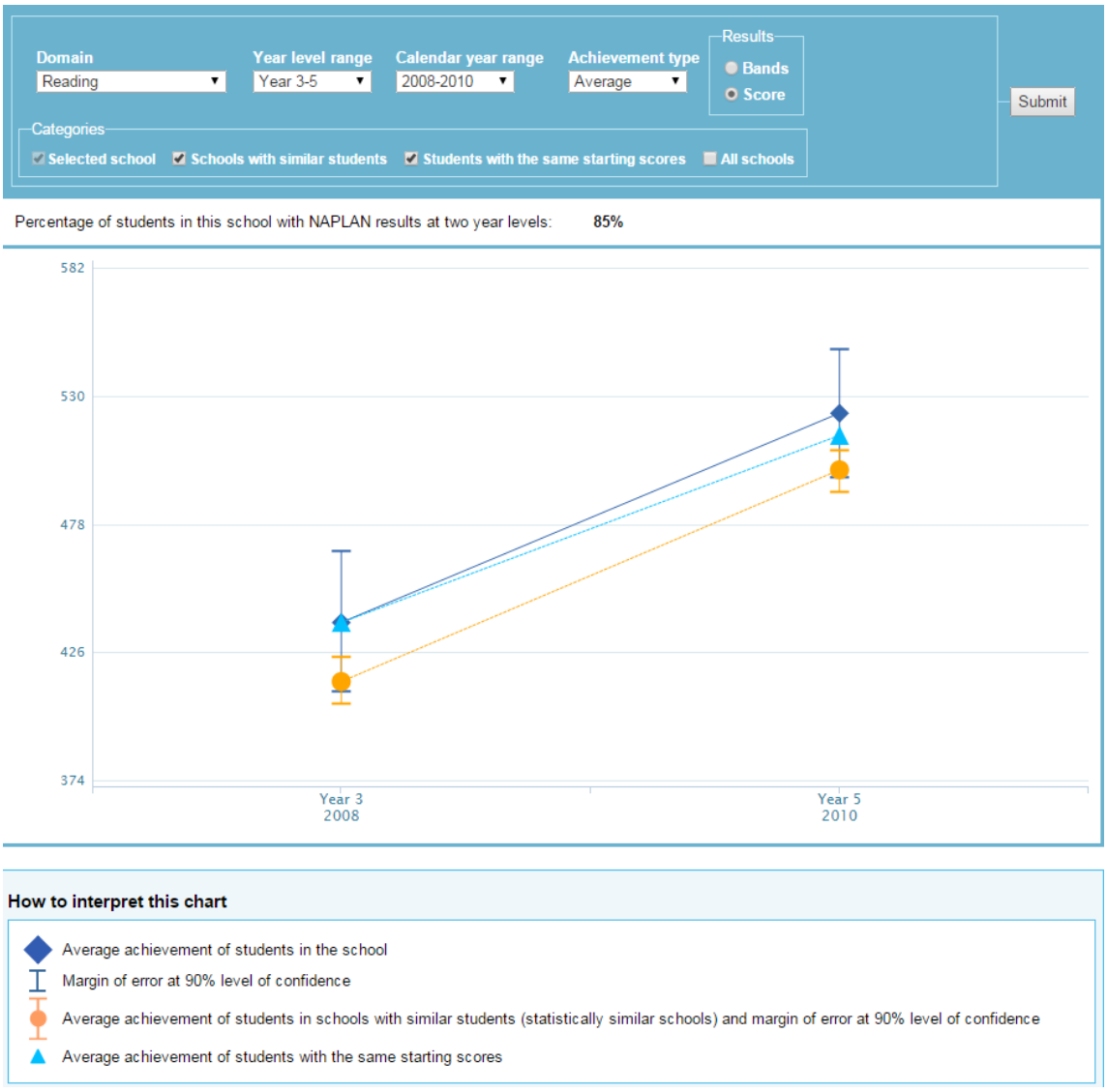

Figure F.13. School 3 average student gain in reading 2010.

Figure F.14. School 3 average student gain in numeracy 2010.

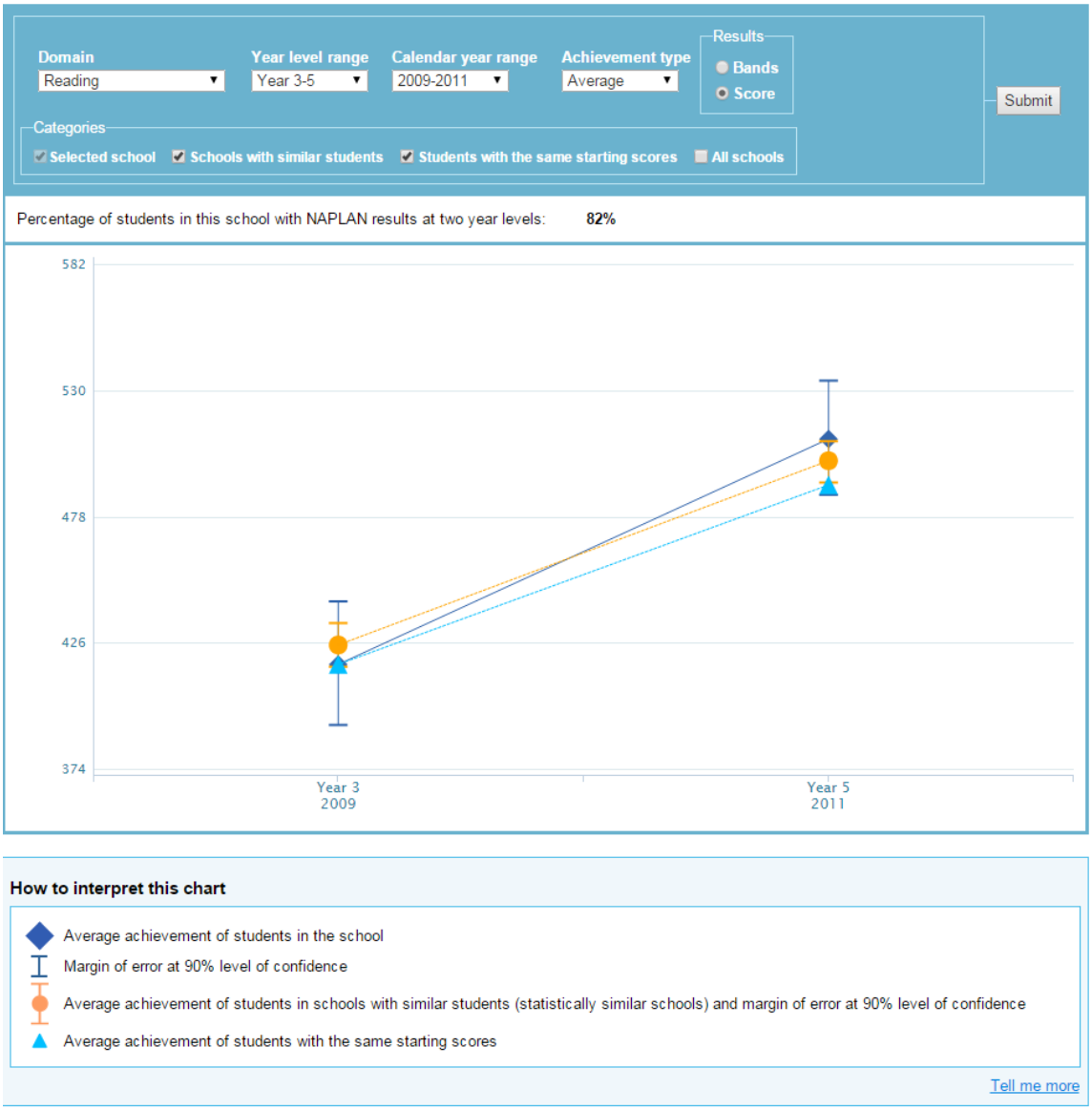

Figure F.15. School 3 average student gain in reading 2011.

Figure F.16. School 3 average student gain in numeracy 2011.

Figure F.17. School 3 average student gain in reading 2012.

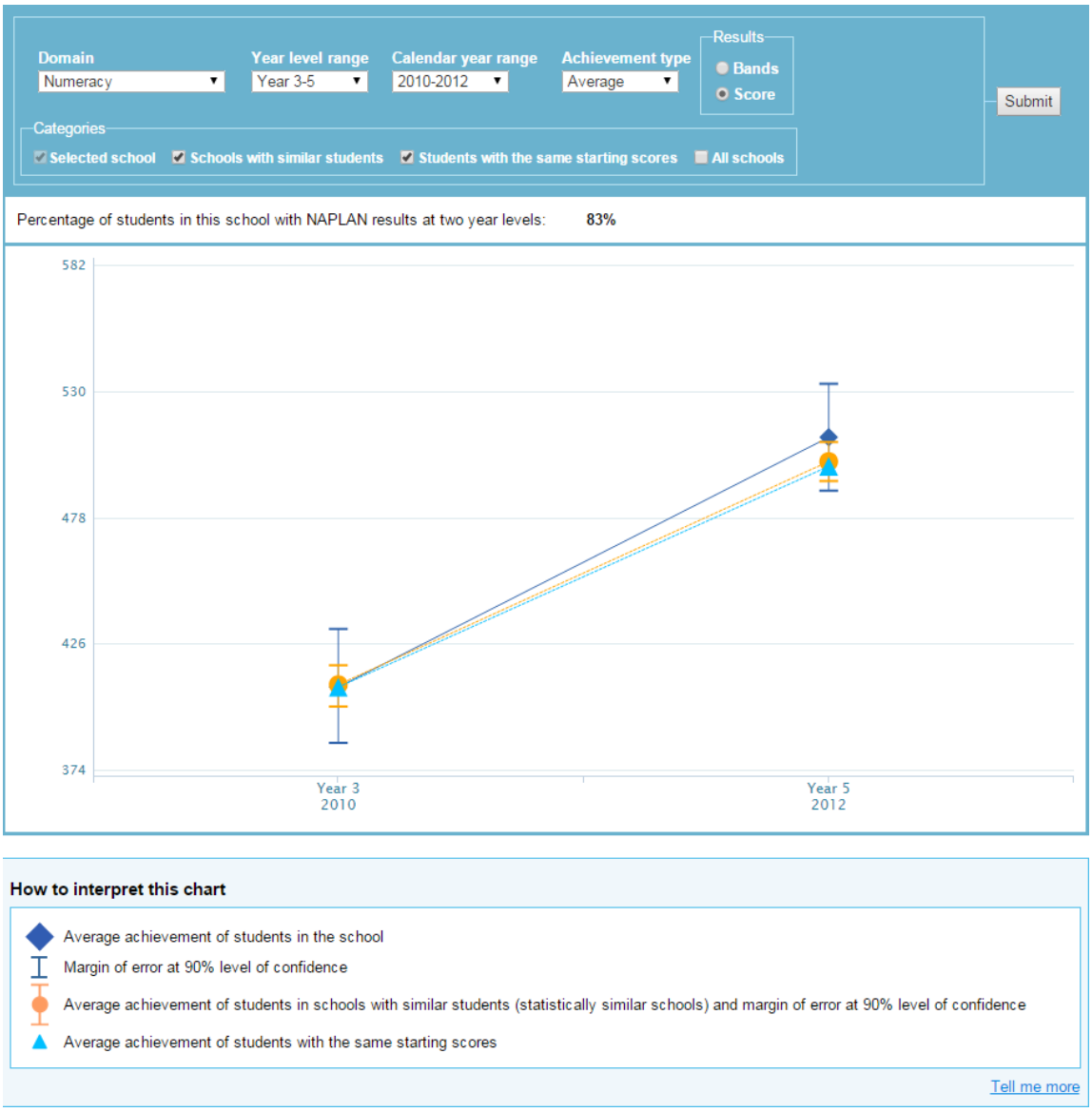

Figure F.18. School 3 average student gain in numeracy 2012.

Figure F.19. School 4 average student gain in reading 2010.

Figure F.20. School 4 average student gain in numeracy 2010.

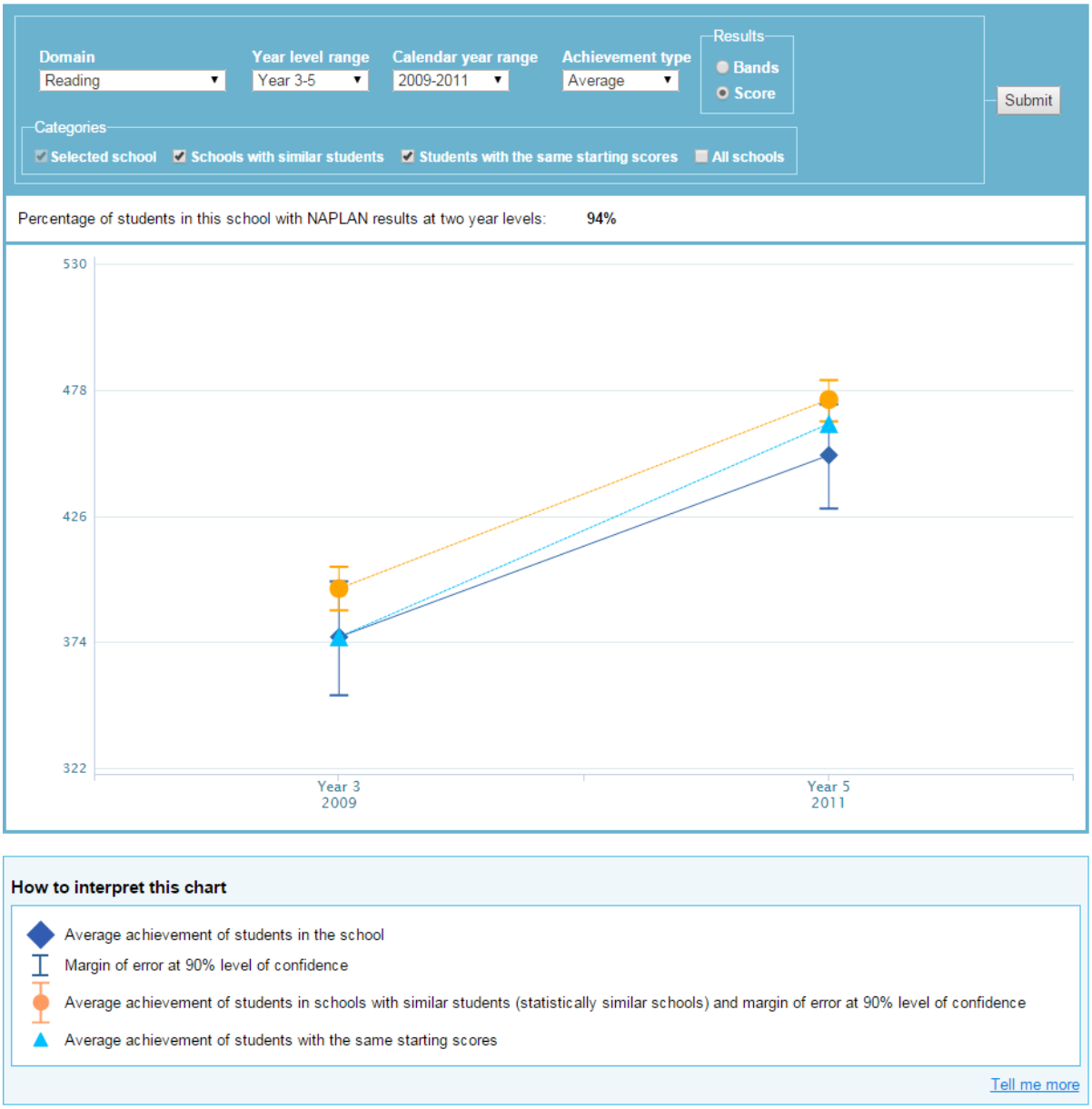

Figure F.21. School 4 average student gain in reading 2011.

Figure F.22. School 4 average student gain in numeracy 2011.

Figure F.23. School 4 average student gain in reading 2012.

Figure F.24. School 4 average student gain in numeracy 2012.

Figure F.25. School 5 average student gain in reading 2010.

Figure F.26. School 5 average student gain in numeracy 2010.

Figure F.27. School 5 average student gain in reading 2011.

Figure F.28. School 5 average student gain in numeracy 2011.

Figure F.29. School 5 average student gain in reading 2012.

Figure F.30. School 5 average student gain in numeracy 2012.

Appendix G. My School website data in detail

This section presents in more detail the selected schools data from the *My School* website. In this presentation of data, each school's average student gain in reading and numeracy is compared with the average student gain by schools serving SSSB and SSSS at the previous test point in Year 3. This data presents comparisons between students in the selected schools and students from the two chosen sub-sets of the national student population. Comparsions are presented firstly between schools sharing similar SEAs, classified as schools serving SSSB and secondly between schools sharing similar baseline performance in reading and numeracy in Year 3, classified as SSSS.

School 1.

In Figure G.1, the results are provided in numbers, as presented graphically on the *My School* website in six graphs. For ease of understanding, the results have been presented in a table. School 1 recorded average student gain above that of schools serving SSSB and SSSS in reading in 2010, 2011 and 2012.

SCHOOL 1	Year 3 2008	Year 5 2010	Year 3 2009	Year 5 2011	Year 3 2010	Year 5 2012
● **SSSB** Schools with Students from Statisically Similar Backgrounds	422	507	434	510	435	513
Λ - **SSSS** Students with the same starting score	408	492	412	489	416	495
◆ - Chosen School	408	506	412	510	416	500
AVERAGE STUDENT GAIN						
Chosen School		98		98		84
SSSB		85		76		78
SSSS		84		77		79

Figure G.1 . School 1 average student gain comparisons in reading.

In Figure G.2, School 1 recorded average student gain above that of schools serving SSSB and SSSS in numeracy in 2010, 2011 and 2012, with the exception of equal gain with SSSS in 2010.

SCHOOL 1	Year 3 2008	Year 5 2010	Year 3 2009	Year 5 2011	Year 3 2010	Year 5 2012
● **SSSB** Schools with Students from Statisically Similar Backgrounds	415	505	414	504	412	505
- **SSSS** Students with the same starting score	377	473	390	485	401	494
◆ **-** Chosen School	377	473	390	493	401	503
AVERAGE STUDENT GAIN						
Chosen School		96		103		102
SSSB		90		90		93
SSSS		96		95		93

Figure G.2 School 1 average student gain comparisons in numeracy.

School 2.

In Figure G.3, School 2 recorded average student gain above that of schools serving SSSB and SSSS in reading in 2010 and 2011 and below that of schools serving students from statistically similar backgrounds and SSSS in reading in 2012.

SCHOOL 2	Year 3 2008	Year 5 2010	Year 3 2009	Year 5 2011	Year 3 2010	Year 5 2012
● **SSSB** Schools with Students from Statisically Similar Backgrounds	446	534	462	538	468	543
- **SSSS** Students with the same starting score	446	521	477	535	453	522
◆ **-** Chosen School	446	552	477	569	453	521
AVERAGE STUDENT GAIN						
Chosen School		106		92		68
SSSB		88		76		75
SSSS		75		58		69

Figure G.3 School 2 average student gain comparisons in reading.

In Figure G.4 School 2 recorded average student gain above that of schools serving SSSB and SSSS in numeracy in 2010 and 2011, and below that of schools serving SSSB and SSSS in numeracy in 2012.

SCHOOL 2	Year 3 2008	Year 5 2010	Year 3 2009	Year 5 2011	Year 3 2010	Year 5 2012
● **SSSB** Schools with Students from Statisically Similar Backgrounds	436	527	436	528	438	531
Λ - **SSSS** Students with the same starting score	422	508	439	519	424	511
◆ - Chosen School	422	538	439	540	424	493
AVERAGE STUDENT GAIN						
Chosen School		116		101		69
SSSB		91		92		93
SSSS		86		80		87

Figure G.4. School 2 average student gain comparisons in numeracy.

School 3.

In Figure G.5 School 3 recorded average student gain above that of schools serving SSSB and SSSS in reading in 2011. In 2010, School 3 recorded average student gain above that of SSSS and below that of schools serving SSSB in reading. In 2012, School 3 recorded average student gain below that of schools serving SSSB and SSSS in reading.

SCHOOL 3	Year 3 2008	Year 5 2010	Year 3 2009	Year 5 2011	Year 3 2010	Year 5 2012
● **SSSB** Schools with Students from Statisically Similar Backgrounds	387	500	425	495	430	508
- **SSSS** Students with the same starting score	439	513	417	491	450	518
◆ **-** Chosen School	439	523	417	511	450	504
AVERAGE STUDENT GAIN						
Chosen School		84		94		54
SSSB		113		70		78
SSSS		74		74		68

Figure G.5. School 3 average student gain comparisons in reading.

In Figure G.6, School 3 recorded average student gain in numeracy above schools serving SSSB and SSSS in 2011 and 2012. In 2010, School 3 recorded average student gain below schools serving SSSB and SSSS.

SCHOOL 3	Year 3 2008	Year 5 2010	Year 3 2009	Year 5 2011	Year 3 2010	Year 5 2012
● **SSSB** Schools with Students from Statisically Similar Backgrounds	409	494	407	498	408	493
- **SSSS** Students with the same starting score	457	536	386	481	407	492
◆ **-** Chosen School	457	529	386	498	407	511
AVERAGE STUDENT GAIN						
Chosen School		72		112		104
SSSB		85		91		85
SSSS		79		95		85

Figure G.6. School 3 average student gain comparisons in numeracy.

School 4.

In Figure G.7, School 4 recorded average student gain in reading in 2010 above schools serving SSSB and below SSSS. In 2011, School 3 recorded average student gain in reading below schools serving SSSB and SSSS.In 2012, School 4 recorded average

student gain in reading above school serving SSSB and below SSSS.

SCHOOL 4	Year 3 2008	Year 5 2010	Year 3 2009	Year 5 2011	Year 3 2010	Year 5 2012
● **SSSB** Schools with Students from Statisically Similar Backgrounds	388	474	395	474	400	480
- **SSSS** Students with the same starting score	356	457	376	463	343	445
◆ **-** Chosen School	356	456	376	451	343	444
AVERAGE STUDENT GAIN						
Chosen School		100		75		101
SSSB		86		79		80
SSSS		101		87		102

Figure G.7. School 4 average student gain comparisons in reading.

In Figure G.8, School 4 recorded average student gain in numeracy in 2010 below that of schools serving SSSB and SSSS. In 2011, School 4 recorded average student gain in numeracy above that of schools serving SSSB and SSSS. In 2012, School 4 recorded average student gain in numeracy above that of schools serving SSSB and below that of SSSS.

SCHOOL 4	Year 3 2008	Year 5 2010	Year 3 2009	Year 5 2011	Year 3 2010	Year 5 2012
• **SSSB** Schools with Students from Statisically Similar Backgrounds	387	477	384	473	386	476
- **SSSS** Students with the same starting score	362	457	349	459	340	448
◆ **-** Chosen School	362	445	349	473	340	436
AVERAGE STUDENT GAIN						
Chosen School		83		124		96
SSSB		90		89		90
SSSS		95		110		108

Figure G.8. School 4 average student gain comparisons in numeracy.

School 5.

In Figure G.9, School 5 recorded average student gain in reading below that of schools serving SSSB and SSSS in 2010 and 2011. In 2012, School 5 recorded average gain in reading above that of schools serving SSSB and SSSS.

SCHOOL 5	Year 3 2008	Year 5 2010	Year 3 2009	Year 5 2011	Year 3 2010	Year 5 2012
• **SSSB** Schools with Students from Statisically Similar Backgrounds	427	512	442	515	442	519
- **SSSS** Students with the same starting score	413	496	433	504	433	506
◆ **-** Chosen School	413	489	433	490	433	511
AVERAGE STUDENT GAIN						
Chosen School		76		57		78
SSSB		85		73		77
SSSS		83		71		73

Figure G.9. School 5 average student gain comparisons in reading.

In Figure G.10, School 5 recorded average gain in numeracy in 2010 below that of schools serving SSSB and SSSS. In 2011 and 2012, School 5 recorded average growth in numeracy above schools serving SSSB and SSSS.

SCHOOL 5	Year 3 2008	Year 5 2010	Year 3 2009	Year 5 2011	Year 3 2010	Year 5 2012
● **SSSB** Schools with Students from Statisically Similar Backgrounds	418	509	417	509	417	511
- **SSSS** Students with the same starting score	402	494	416	503	395	493
◆ **-** Chosen School	402	470	416	509	395	498
AVERAGE STUDENT GAIN						
Chosen School		68		93		103
SSSB		91		92		94
SSSS		92		87		98

Figure G.10. School 5 average student gain comparisons in numeracy.

Appendix H: Interview Questions for Phase 2

Question no.	Interview Question	Research Question
1	What is your experience of the use of NAPLAN data at your school?	RQ1 How do school leaders and teachers perceive the influence of NAPLAN data on classroom practice for the improvement of learning?
2	a. What changes, if any, have you implemented in your teaching (leadership) since NAPLAN data was available? b. Why?	RQ1
3	I would like you to think about the way in which the analysis of NAPLAN data has influenced (if at all) a number of elements of school life. ***What effect, if any, has the use of NAPLAN data had upon:*** **i.** Student experiences of learning; **i.** Student outcomes; **i.** School review and improvement planning; **v.** Teacher goal setting; **v.** Teacher performance; **i.** Teacher accountability; **i.** Leader goal setting; **i.** Leader performance; **x.** Leader accountability?	RQ 1 RQ 2 What role does professional dialogue play in the utilisation of NAPLAN data to improve student learning?
4	In what ways, if any, do teachers speak about NAPLAN data at this school?	RQ 2
5	As a result of conversations about NAPLAN data what changes, if any, would you identify to: a. teacher practice ? b. student learning ?	RQ 2
6	In what ways has NAPLAN data been integrated with other forms of school assessment?	RQ 3 How is NAPLAN Data integrated with other forms of school assessment for improvement of student learning?
7	What has been the influence, if any, of NAPLAN data on the nature of school-based assessments?	RQ 3
8	a. What influence, if any, has NAPLAN data had on the nature of feedback to students about their learning? b. To what extent has the SMART data analysis package influenced your feedback to students? Please explain.	RQ 4 What influence has the use of NAPLAN data had on student feedback for the purposes of improving student learning?
9	a. How do teachers at this school integrate data from NAPLAN with school-based assessments and their professional judgement? b. What has been the influence of NAPLAN data, if any, on the nature	RQ4

Question no.	Interview Question	Research Question
	of feedback to parents about their child's learning?	
10	What would you consider to be the three main characteristics of your school's use of NAPLAN data? What influence, if any, have these characteristics had on learning growth for students?	RQ 5 What elements in the use of NAPLAN data contribute to the improvement of learning as measured by NAPLAN performance?
11	What evidence would you cite to justify your answer to the previous question?	RQ 5
12	In what ways, if any, did the presentation of NAPLAN data on the public My School website influence your teaching (leadership) at the school?	RQ1