



Making local meaning from national assessment data: a Western Australian view

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Abstract

Purpose – The purpose of this paper is to present a case study of the support provided to all three education sectors in one state of Australia to assist school leaders in the analysis and interpretation of their school's performance on state-wide and subsequent national assessments of Literacy and Numeracy in Years 3, 5, 7, and 9.

Design/methodology/approach – This is a case study, presented from the perspective of the chief investigator over a ten-year period. The approach is an interpretive one, involving reflection on action and some external qualitative evaluation data.

Findings – The case study illustrates the need for those involved in large-scale assessment aimed at school improvement to adopt a long-term view, understanding that the use of data to inform and change school practices, pedagogical and administrative and cultural, takes time and a great deal of support.

Research limitations/implications – The paper does not purport to provide empirical evidence, nor does it attempt to provide experimental or quasi-experimental conditions.

Practical implications – The paper aims to provide policy makers and educational authorities with information to assist in understanding the long-term nature of using data for school improvement.

Originality/value – The paper presents an account of a decade of involvement with a project designed to assist schools to make use of large-scale assessment data to inform and stimulate school improvement. The paper is original because of the length of engagement in this project, and its broad scope, involving all schools in one state of Australia.

Keywords Australia, Schools, Leadership, Assessment, Literacy, Numeracy, Data analysis

Paper type Case study

Introduction

Australian schools and education authorities are currently in the grip of what could be described as national assessment frenzy. Australia implements whole population literacy and numeracy assessment of years 3, 5, 7 and 9 students. Now in its third year, the program, known as the National Assessment Program – Literacy and Numeracy (NAPLAN), requires all students in the years 3, 5, 7 and 9 cohorts to sit the same assessment at the same time across the nation. The data from the assessment are reported to schools, to education authorities and to the states' and national governments.

However, the single event that has elevated the attention of the nation towards the assessment program is the introduction of a web site, My School (www.myschool.edu.au) which provides every school's results to the entire nation. The web site displays the results of each of approximately 10,000 Australian schools, allowing the reader to "quickly locate statistical and contextual information about schools in your community and compare them with statistically similar schools across the country". Furthermore, the web site "provides an important opportunity for everyone to learn more about Australian schools, and for Australian schools to learn more from



each other". Professor Barry MCGaw, Chair of the Australian Curriculum, Assessment and Reporting Authority under whose auspices the web site was developed and the authority responsible for NAPLAN, the web site uses a "new index of student and school characteristics, developed specifically for the purpose of identifying schools serving similar student populations". This enables schools' results on national tests to be understood in a fair and meaningful way, and enables schools seeking to improve their performance to learn from other schools with statistically similar populations'.

The My School web site was launched on 28 January 2009 to display the results of the first year of assessment in 2008. According to the Department of Education, Employment and Workforce Relations (DEEWR), the web site had over nine million hits on its first day – from an Australian population of 23 million people. DEEWR, the national education authority states that "Each report card provides important performance and contextual information about each individual school" and claims that "This new era of school transparency will ensure clear and accurate data is publicly available to facilitate an informed debate on education in Australia" (www.deewr.gov.au/LatestNews/Pages/MySchool.aspx).

This paper presents a review of a decade's experience by the first author of large-scale assessment of literacy and numeracy in one of Australia's eight states and territories, Western Australia. The paper is based on ten years of working with three educational sectors – public, independent and Catholic – to support school leaders to interpret and use the assessment data. We argue that, although data-based decision making and evidence-based practice are the concepts underpinning school improvement efforts in many jurisdictions and governments want to see quick improvements demonstrated in large-scale performance data, the gap between policy and practice is wide. We do not present empirical data from a single study. However, our paper reports practices and experiences suggesting that school leaders need time and a great deal of support over the long haul if they are to engage successfully with evidence-based school improvement. This is an especially pertinent observation when it is taken into consideration that school leaders often lack confidence in understanding and using data (Earl and Fullan, 2003) and if they do use data it tends to be for "accounting" purposes rather than for improving teaching and learning (Shen and Cooley, 2008).

Review of relevant literature

That schools are, and have long been, awash with data is not a new phenomenon (Chafouleas *et al.*, 2007; Ozga, 2009). However, schools are expected to use the data to improve students' learning (Earl and Katz, 2006). Extensive sets of raw data by themselves are inaccessible to principals and teachers and have little use for school improvement purposes. For data to be useful, the procedures for synthesising data to produce information and for extracting meaning are simple, logical and time efficient for teachers and school leaders (Salvia *et al.*, 2009). When data are transformed into information and used to stimulate conversations about students' learning, only then do those data become meaningful for school improvement (Timperley, 2009).

As recently as January 2011, academics from Belgium, South Africa, The Netherlands and the UK presented papers at the 24th International Congress for School Effectiveness and Improvement at Limassol, Cyprus, on the topic of data use in schools. They argued that, although increasingly schools are expected to use assessment data for school improvement, the lack of data literacy among users was one of the key obstacles

to the effective use of data by principals and teachers (Archer *et al.*, 2011). In their study of the effects of using a self-evaluation instrument over a five-year period on student achievement in a sample of 79 small primary schools in The Netherlands, Schildkamp *et al.* (2009) found no direct effects on student achievement scores. However, they found indirect effects. Interestingly, the indirect effects were found to be on factors that are known to be prerequisites for school improvement – for example, on consultation, dialogue and reflection among teachers; changes in classroom practices including teachers' didactic behaviour; improved functioning of the principal and an increase in professional development activities. Schildkamp and colleagues argue that long-term follow up is needed to continue to monitor the impact of the use of the self-evaluation instrument in these schools.

Closer to home, the Catholic Education Office of the Archdiocese of Melbourne, Victoria, reports in discussion of school improvement planning processes in schools accounting for nearly one quarter of schools in that Australian state, that 97 percent of school leaders described the use of data as the most critical challenge in the school improvement process. These leaders reported a lack of confidence in their ability to analyse and interpret not only assessment data but also data on their school's environment including values, interpersonal relationships and culture and the influence of these factors on school improvement (Osiki, 2010). Similarly in Australia's most populous state of New South Wales, Mystery Central School in the State's Central Region reported in 2009 that there had been no major change in student performance in state literacy and numeracy assessment or in secondary exit achievement over the past six years, despite the implementation of three extensive intervention programs designed to lift performance (Brito and Betts, 2009). Lack of engagement with assessment data was cited as one of the reasons for the lack of change. A key recommendation of the report was for whole school training for teachers in analysing and using assessment data, and the software provided by the NSW public education authority. Such a recommendation resonates strongly with the well-established international acknowledgement that unless teachers are deeply engaged in school improvement activity, little changes (Scheerens *et al.*, 1989).

However, according to Anderson *et al.* (2010), data literacy alone is not sufficient to ensure effective use of data. These researchers found that support and influence by regional and central offices are also required to create opportunities for networking and data sharing between schools. Dr Lyn Sharratt, Superintendent of Curriculum and Instructional Services for York Regional District School Board in Canada, believes that when all layers of leadership are focused, knowledgeable and aligned, then improvements are likely to occur. However, she argues that the district office has a key role in bringing about such alignment (Booth and Rowsell, 2007). Similarly, the work of Park and Datnow (2009) has highlighted that effective data-driven decision making is co-constructed by multiple actors at both the school and district level. Ironically, research in the USA suggests that those schools with greatest need for improvement of sometimes the schools with the least capacity to make use of data to inform their improvement strategies (Fuhrman, 1999), citing lack of resources (such as planning time, time to master diagnostic practices, access to specialists in using data) as barriers to effective use of data to improve student performance (Englert *et al.*, 2004).

Yet it is not sufficient to understand how to analyse and interpret the data, have the support and pressure of the school district, and have time and resources

to implement change. According to Timperley (2009), more is required if teachers are to make a difference to their students' learning outcomes. In her keynote Address to an audience of over 700 school-based personnel in Perth, the capital city of Western Australia in 2009, she described five factors that narrowed the gap between hope and reality in student learning:

- (1) The data provide teachers with information that is relevant to their curricula.
- (2) Teachers have sufficient knowledge to adjust their practice in the light of the information.
- (3) The information is seen by teachers not as a judgement on their performance or a means of labeling their students but as information about their teaching and students' learning (Timperley, 2008).
- (4) School leaders know how to lead the changes in thinking and practice relevant to teachers' use of the data (Robinson *et al.*, 2008).
- (5) All staff engage in systematic evidence-informed cycles of inquiry that build on and develop the skills and knowledge identified in the preceding factors (Black and Wiliam, 1998).

Unlike policy makers who imply that producing assessment data will lead speedily to student performance gains, Timperley (2009) articulates a respectful appreciation of what it takes for teachers to change their practice, acknowledging the role of teachers' deep understanding of the link between the assessment data and their students' learning and of their own part on this connection between assessment data and learning outcomes. Others such as Earl and Katz (2006) urge that although people suffer from data anxiety, schools need to learn to live with data and to like it. Importantly, according to these researchers, principals' roles in schools include having an inquiry habit of mind in which they value deep understanding, reserving tolerance for ambiguity, adopting a variety of perspectives and being systematic in their increasingly focused questioning of data.

Reflections on a decade of data in Western Australia

The current frenzy of Australia-wide public interest in NAPLAN data contrasts sharply with the attention given to the results of the local Western Australian-level assessment that preceded the national program. Prior to the implementation of NAPLAN, each of the eight states and territories of Australia implemented its own local whole population assessment program, the results from which were benchmarked across jurisdictions to allow performance reporting to the state/territory and national governments. In Western Australia, this assessment was known as Western Australian Literacy and Numeracy Assessment (WALNA) in a program of assessment that extended to years 3, 5 and 7, all of which were, at that time, located in primary schools.

Upon reflection, it appears that our West Australian school colleagues were not unique, back in 2000, in their disinterest in the assessment data. Their lack of interest was similar to that which we now read about across Australia and internationally (Booth and Rowsell, 2007; Brito and Betts, 2009; Englert *et al.*, 2004; Oski, 2010; Scheerens *et al.*, 1989; Timperley, 2008).

A decade ago, schools in Western Australia, at least public schools, were not in the slightest interested in their assessment data. At that time, Louden and Wildy (2001)

had begun what became known as the Data Club when we worked together at one of Western Australia's five metropolitan universities. Funded in 2000 by the Australian Government and the local Western Australian State Government through the Department of Education, Training and Youth Affairs and the WA Department of Education (WADET), the project was titled: "Developing schools' capacity to make performance judgements". Our collaboration was set up as a pilot project to:

- advise on value added and like school performance measures suitable for schools;
- develop data displays and self-evaluation strategies;
- test the effectiveness of these strategies with school communities;
- trial these strategies with individual schools to build their capacity to interpret and use benchmark performance data; and
- report on best practice in the use of benchmarking data in school self-assessment.

This ambitious project was based on the assumption that schools would use the 1998 and 1999 WALNA benchmark data to make a series of judgements about the performance of their students: comparisons between 1998 and 1999 cohorts within the school, between the 1998 and 1999 cohorts, between school cohorts and all students in the state, and between schools. We assumed that by 2000 each school would be in a position to demonstrate growth between years 3 and 5, and compare this growth with the growth of students in other schools, and in the state (Louden and Wildy, 2004). Furthermore, the initial project was designed to involve not only school principals but also school staffs and school communities in our explanation of the analyses. We undertook to improve the skills of school leaders, teachers and communities to interpret benchmark data. In hindsight, this was indeed an enterprising project.

Early in 2000, each school in the Western Australian public sector was invited to share its 1998 and 1999 data, and to send two school leaders to participate in a half-day workshop, on the understanding that a sample of about 20 schools would respond. We would select for our trial those districts with the largest representation of schools. In the event, 200 schools responded, including two districts with 100 percent response rates. Having decided to expand the trial to take all applicants we then started to collect their data. "What data?" was the most common response to our request for the school's WALNA data. Although the WALNA data had been sent in hard copy to every school in the state a short time prior to our request, few schools could locate the data and happily paid for their school's data to be reproduced and resent to the school (Wildy, 2004).

The first lesson was that the WALNA data had little meaning and even less value to those 200 schools then keen to join our pilot. The second lesson was that the data quality was uneven: it was clear that schools had not taken the state-wide assessment program seriously – large gaps in cohorts resulting from many students being absent at the time of the assessment; patches of extremely low scores suggesting students were poorly supervised during the tests or given too little time to complete many items; and some sets of outrageously high scores suggesting rather too much teacher "support" during the tests. However, the third lesson is one that continues to be pertinent, now a decade later: the variable capacity of school personnel to engage with their school's assessment data in a way that links with improvement in student learning outcomes.

From 2000 to 2003, the Data Club was funded by both national and state governments. Over those three years, the number of schools registered in our Data Club grew from the initial 200 schools to 510 representing over 80 percent of schools with primary-aged students in the government sector. The materials, initially paper based, were then developed as disc based, and later web based. Each year Wildy and Loudon conducted workshops in the capital city and across regional centres, as well as satellite broadcasts and interactive video conferences. A key design element was that schools only received their analysed WALNA data when they participated in the workshops. Confidentiality was another key element: schools voluntarily joined the Data Club and submitted their data for inclusion in the analyses. Schools were coded and no materials carried identifying names.

In November 2001, the end of the first year of the Data Club, an evaluation of the impact of the Data Club was conducted by Figgis and Butorac of AAAJ Consulting Group (2001). Using telephone interviews with principals of a random sample of 30 of the participating schools, Figgis and Butorac asked why principals signed up for the Data Club; to what use the WALNA data were being put by principals; principals' impressions of the usefulness of the professional development provided by the Data Club; and principals' views about related issues such as their confidence in the assessment regime.

Amongst the findings of this evaluation were a number of relevant points. Principals reported that they joined because they wanted to compare their school with like schools, and to track their students over time; they wanted to make use of the WALNA data but did not know what the data meant; and the workshops gave them time to devote to reflecting on their schools' data. Many principals described how data were used and the collaborative processes they were developing in schools to share their understandings. Others spoke of looking at the data "squarely in the eye" and accepting that there was something relevant to them and their school. Figgis and Butorac (2001) reported on the participants' appreciation of the workshops as professional development, concluding that:

There was not a single principal who felt that he or she did not learn what was intended for them to learn. The outcome was that they wanted more – more for themselves and for their teachers.

The reviewers ended their report with:

The Data Club has begun very well, but its role has only just begun. Schools recognise that there will be much more for them to learn about using the data over the next few years. And they will want reliable help from independent experts. The Data Club has provided those services to everyone's satisfaction – indeed, it seems to have exceeded expectations.

These findings of Figgis and Butorac (2001) are presented here because of their bearing on what was to follow.

At the end of 2002, the team of Wildy and Loudon split up when Wildy was appointed to the staff of another university. More importantly, the WADET resolved that henceforth the Data Club would operate from within its ranks. One last round of analysis was carried out by the original team. The following year, the department's internal team developed some disks and offered them to all schools without the requirement of attending workshops which were run by district office personnel. In that year, 2004, it was reported that even greater numbers of principals participated

in workshops than previously. Since that time, Data Club analyses have been carried out by WADET staff and discs distributed without workshops, and this has been supplemented with further analyses focused on the achievement of targets set by the education authority.

Although Wildy's involvement with the public sector ended by mid-2003, she was then to start a new venture with the Catholic Education Office at the invitation of a senior member of that office. She assembled a new team comprising an experienced programmer and a project manager and data analyst which has continued through to the present. For each of the years 2004-2011, the new project called NuLitData, was offered to the Catholic sector of schools in Western Australia (CEOWA). Subsequently for the four years 2005-2008, a parallel project was offered to the third education sector in the state, Association of Independent Schools of WA (AISWA). NuLitData CEOWA involved all 159 schools in that sector and NuLitData AISWA involved nearly all 158 schools. The NuLitData model was similar to the Data Club although the programming was more sophisticated than that used in the Data Club.

Throughout this period, year 9 assessment data were added to the years 3, 5 and 7 WALNA data so secondary school principals and curriculum leaders joined the workshops. Linking year 7 students' data with their later performance as year 9 students was challenging because year 7 students in primary schools moved to any one of a large number of optional secondary schools in one of the three sectors. As was the case for the Data Club for public schools, we ran half-day workshops across the state during February, March and April each year.

By 2009, Wildy had moved to the present university to take up the Deanship in the Faculty of Education. This move required that all materials were to be re-badged and the operation relocated. However, more than that was to change. For the first time, we were to deal with the national assessment data (NAPLAN). A decision was made to attempt to continue to present the longitudinal 2001-2007 WALNA data as well as the new NAPLAN data. We set up new displays for the 2008 NAPLAN data in a program we called NAPNuLit, building on the concept of bands, incorporating subgroup data (indigenous, language background other than English, sex) as we had for all the NuLit displays. However, we introduced new box-plot displays to make use of the percentile data available nationally. So we continued the NuLit analyses, and added 2008 NAPLAN Reading and Numeracy data adjusted to link with the scale we used for the earlier state-level WALNA data. Now with data from 2001 to 2008 we displayed on a single graph the means from eight years of reading, and then of numeracy, for years 3, 5, 7 and 9. Here for the first time each school could examine its long-term performance throughout the school on a given test. This powerful overview of school performance allowed principals and other leaders to interrogate the performance of year-groups over time, noticing the extent of its natural fluctuations, looking for signs of upward movement, all the while questioning the impact of interventions and the effects of organisational and cultural changes.

Throughout the seven years of working with the Catholic sector, we designed workshops linking NuLitData and NAPNuLitData with school improvement processes. For the first two years, the focus was entirely on understanding the data displays. Each year participants examined their school's data in terms of overall means compared with the state and with like schools, then shapes of distributions through box and whisker plots – from subgroups to individuals, then to individual student

change over time, and then to value-added measures. Participants learnt how to interpret standardised residuals plotted around a mean of 0 with expected performances lying between +1 and -1. They noticed that, over the eight-year period, most of them performed as expected and that wild deviation was usually accounted for by very small numbers or early aberrant data. They understood that, while the school as a whole might be performing satisfactorily, they could identify the impact of interventions on subgroups (for example, low-performing students) and also on individual students. They also learned how to construct conversations they could pursue back at school with groups of teachers to explore and extend others' interpretation of the data. More recently, all these learnings were linked specifically to school goals and strategies. Now the challenge is to develop the skills to align displays of data analysis to back up arguments and to write coherently for different audiences. In our 2010 workshops with CEOWA and AISWA schools these were our goals.

Concluding remarks

In conclusion, we refer the words of Figgis and Butorac in their 2001 report on the impact of the Data Club and apply these to our subsequent work with the national assessment data. We believe that this:

[...] has begun very well, but its role has only just begun. Schools recognise that there will be much more for them to learn about using the data over the next few years.

It is a decade since we started this work and our efforts have been focused on school leaders. We have not even begun to work with teachers or school communities. That, we believe, is now in the hands of the school leaders and their education authorities.

A decade may be long time in politics and a long time in the life of a school student but it is a short period in the journey of learning about the use of data for student learning improvement. The current media frenzy based on the public availability of the national assessment data for all Australian schools is a reminder that there is much still to be learned by the public. While it is tantalizing to read the literacy and numeracy scores of years 3, 5, 7 and 9 students in the neighbourhood school and compare those with the nearby school, the information presented by two or three years of data is thin and can only be interpreted by school-based personnel in the light of the actions taken at the school level. Most importantly, the data can only be interpreted as meaningful information when patterns emerge over time. It is through this gradual process that information becomes knowledge as it is shaped, organized and embedded in a more specific context that gives it meaning and connectedness (Earl and Katz, 2006) – and that takes time.

On the basis of our experience of working with nearly 1,000 schools over a period of a decade, we argue that policy makers would be wise to adopt a long-term view in their calls for assessment-driven school improvement. The implementation of national assessment of literacy and numeracy achievement of primary and secondary school students does not, in itself, improve the students' achievement. Expressed colloquially, "weighing the pig does not make it fatter". However, long-term commitment to the professional learning of school leaders that pays attention to the interpretation of their own schools' assessment data goes some way to sharpening the focus on school-level practices and policies that lead to student learning improvement. In the Australian context school leaders may be currently distracted from school improvement efforts

by media preoccupation with public comparisons of schools' performance. Increasing public understanding of the use of long-term trends, rather than short-term fluctuations, as indicators of improvement may assist in appreciating the efforts of schools. We urge patience as well as a commitment to continued support, at the school level and in the public arena, for interpreting assessment data and understanding what it takes to improve students' learning.

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