

# Developing evaluative thinking and evidence-based practice: A synthetic case study



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## Abstract

The NSW Literacy and Numeracy Action Plan, which operated from 2012–16, provided \$261 million to improve literacy and numeracy learning in 448 of the most disadvantaged and lowest performing schools across the three education sectors in New South Wales.

A key objective of the Action Plan was to enhance teacher and school leader capacity, including the ability to apply evidence-based practices and evaluative thinking to planning and programming for teaching and learning at a classroom level and to planning and decision-making at a whole-school level.

The concept of ‘evidence-based practice’ is part of common parlance in Australian schools; however, in many of the schools targeted by the Action Plan, authentic application of the principles of evidence-based practice was not well developed at the commencement of the initiative, and in some cases the concept was misunderstood.

This paper draws on data gathered during more than 70 schools visits and six longitudinal case studies conducted as part of the evaluation of the Action Plan. It develops a synthetic case study of how successful schools have gone about building the confidence and competence of teachers and school leaders to embrace the new ways of thinking and working required to become true evaluative thinkers. What occurred in many of the schools visited can be described as nothing less than a complete paradigm shift in how the schools operated, providing a much richer, more engaging and relevant learning experience for their students.

The case study will discuss the key role of instructional leaders in providing the professional learning necessary to underpin the new practices; the use of data systems to provide authentic evidence for planning and teaching; and the implications for adoption of differentiated teaching, personalised learning and targeted interventions from adoption of the new models.

## Introduction

Evaluative thinking is now considered to be one of the key competencies of school leaders (Centre for Educational Statistics and Evaluation [CESE], 2015). It is recognised, for example, in the Australian Institute for Teaching and School Leadership (AITSL, 2014) standard for principals, which highlights the value of principals who ‘evaluate outcomes and refine actions as change is implemented ... [and] take account of the impact of change on others, providing opportunities for regular feedback’ (p. 17).

The concept of evaluative thinking is not new, and indeed, the program-planning evaluation cycle and the closely related action research cycle have been popular since the 1980s. The importance of establishing processes for continuous improvement has likewise been long recognised (popularised by the total quality management movement of the 1990s). The reality, though, is that while these concepts have been long known, their application at classroom level (and particularly in Foundation to Year 2 [F–2] classrooms) has often been less well developed. Evaluation has often been viewed by teachers as an afterthought or as the province of school leaders, and it has often been disconnected from day-to-day lesson planning and delivery. Many teachers, for example, developed and implemented teaching programs they were confident

in delivering regardless of the actual impact on or relevance to student learning.

This paper describes how F–2 teachers’ capacity for applying evaluative thinking was developed as one of the outcomes of the NSW Literacy and Numeracy Action Plan, which operated in 2012–16. The Action Plan involved 448 schools and 41 000 students across the three education sectors in New South Wales, with an allocated budget of \$261 million to improve literacy and numeracy learning in the most disadvantaged and lowest performing schools in the state. These schools were often characterised by high staff turnover and by high numbers of beginning teachers and inexperienced leaders. A key objective of the Action Plan was to enhance teacher and school leader capacity, including the ability to apply evidence-based practices and evaluative thinking to both classroom-level planning and programming for teaching and learning and whole-school planning and decision-making.

Targeted schools were provided resourcing to:

- support the explicit assessment of the learning needs of students, especially on entry to Foundation
- provide classroom-based professional development for teachers in personalised learning and diagnostic assessment

- adopt the use of a three-tiered response to intervention for those children who need special attention
- focus on whole-school instructional leadership.

The Action Plan aimed to increase the literacy and numeracy outcomes for students in the targeted schools and to reduce the influence of socio-economic status as a key determinant of students' academic performance.

## Literature

Evaluative thinking can be defined as a disciplined approach to inquiry and reflective practice that helps us make sound judgements using good evidence as a matter of habit.

Earl and Timperley (2015) note that:

Evaluation methods and evaluative thinking provide the tools for systematically gathering and interpreting evidence that can be used to provide information about progress and provide feedback loops for refinement, adjustment, abandonment, extension and new learning. ... Evaluative thinking contributes to new learning by providing evidence to chronicle, map and monitor the progress, successes, failures and roadblocks in the innovation as it unfolds. It involves thinking about what evidence will be useful during the course of the innovation activities, establishing the range of objectives and targets that make sense to determine their progress, and building knowledge and developing practical uses for the new information, throughout the trajectory of the innovation. Having a continuous cycle of generating hypotheses, collecting evidence, and reflecting on progress, allows the stakeholders (e.g., innovation leaders, policymakers, funders, participants in innovation) an opportunity to try things, experiment, make mistakes and consider where they are, what went right and what went wrong, through a fresh and independent review of the course and the effects of the innovation.

The recent emphasis on evaluative thinking and evidence-based practices owes much to the work of John Hattie (2012), described in his book *Visible Learning*. While the term 'visible learning' has itself taken on several different but related meanings since, the mantra that teachers should 'know thy impact' has been taken up extensively by schools participating in the Action Plan, even appearing as a poster on staffroom walls. This exhortation reflects Hattie's (2012) finding that 'those teachers who are students of their own effects are the teachers who are the most influential in raising students' achievement' (p. 24).

Other researchers have reached similar conclusions. Timperley and Parr (2009), for example found that

'effective teachers use data and other evidence to constantly assess how well students are progressing in response to their lessons'. Robinson, Lloyd and Rowe (2008) likewise report that effective principals constantly plan, coordinate and evaluate teaching and the use of the curriculum with systematic use of assessment data.

According to the NSW Department of Education (2017), engaging in evaluative thinking requires teachers and school leaders to:

- suspend judgement, considering alternative explanations and allowing new evidence to change our mind
- question assumptions, particularly about the pathway of cause and effect
- select and develop solutions that are informed by a strong evidence base and are responsive to our context and priorities
- value the lessons we can learn from all our experiences—disappointments as well as triumphs
- wrestle with questions of impact and effectiveness, not just activity and implementation
- maximise the value of existing data sources already available to us, mindful of their limitations
- work to improve the strength of our evidence base as we go.

While the literature on the merits of evaluative thinking is extensive and abounds with descriptions of what it involves as well as case studies of change in individual school and teacher practice, there are fewer examples of how school systems have attempted to develop and embed evaluative thinking on a large scale.

## Methodology

This paper draws on data gathered during more than 70 schools visits and six longitudinal case studies conducted as part of the evaluation of the Action Plan (Erebus International, 2017). It develops a synthetic case study of how successful schools have gone about building the confidence and competence of teachers and school leaders to embrace the new ways of thinking and working required to become true evaluative thinkers.

During the school visits and case studies, interviews and focus groups were conducted with principals, instructional leaders, school leaders, classroom and support teachers and paraprofessionals, and parents where available. The interviews were conducted by the two principal researchers using semi-structured interview schedules, which were provided to participants in advance.

In later years of the evaluation, principals and instructional leaders of schools participating in the case studies completed extensive pre-visit questionnaires in relation to specific areas of interest to the evaluation, including expenditures and use of intervention programs.

The school visits also included classroom observations and review of school documentations, including school plans, annual reports, data collections and so on. The overall evaluation also collected data using online questionnaires, analysis of student outcomes, document analysis and stakeholder interviews. Data from all sources was triangulated to draw conclusions about changes that had occurred during the Action Plan and conclusions about its effectiveness.

## Findings of research

The case studies and school visits revealed that there had been substantial changes in teachers' and schools' use of data and evaluative methods over the course of the Action Plan, and participants had developed a stronger appreciation of the relationship of student achievement data and lesson planning and implementation. The following is a summary of the key actions, common in the schools visited, that led to these changes. These actions have been described in terms of four key themes:

1. Provision and use of tools to enable teachers to constantly identify student learning needs and monitor individual student progress:
  - The Action Plan introduced teachers to two key tools. The first tool was the literacy and numeracy continuums, which set out standards for student achievement at key milestones. The continuums derive from the relevant syllabuses and specify what skills and knowledge students should be able to demonstrate. The methodology behind the continuums requires teachers to make judgements based on their observation of individual students on a regular basis. The judgements were arrived at by various means, including direct questioning, teacher-made or standardised assessments and analysis of student work samples.
  - The second tool was the concept of data walls, which provided a visual display of the status of each student and the progress they had made since the last reporting period. Many schools embellished or enhanced the data wall entries with additional information—for example, about the intervention programs the student was receiving.
2. Regular analysis of student achievements with instructional leaders followed by reporting every five weeks of individual student achievement:
  - The driver for this change was the requirement for schools receiving funding from the Action Plan to report to their system (every five weeks for government schools and every 10 weeks for non-government schools) on the number of students at each continuum level in reading, writing and numeracy. Systemic monitoring and feedback to individual schools was a powerful influence on school practice and provided a strong incentive for schools to act on their data. This was the first time that schools had been held accountable for F–2 student achievement, and the first time that a consistent form of data was available for this purpose. The feedback to schools also allowed them to benchmark themselves against the cohort as a whole, as well as the implicit standards defined by the continuums. This was, for many teachers, the first time that they had any sense of what sort of learning growth was 'normal' or possible, as participating schools typically had a high proportion of teachers and leaders with limited experience.
3. Targeted professional learning opportunities for all teachers to build their capacity in the key elements of evaluative thinking, including differentiated teaching and personalised learning:
  - The role of the instructional leaders funded by the Action Plan was pivotal in establishing processes through which data was gathered, analysed and reflected on by teachers. Additional funding from the Action Plan (especially in government schools) allowed purchase of release time on a weekly or fortnightly basis for teachers to meet with the instructional leader and often the relevant school leader on a year level or stage basis to discuss student progress and to determine the next steps.
  - Instructional leaders typically adopted a formal process for documenting and following up on these discussions. The emphasis from the outset was to focus on the teaching and not the teacher to reduce the level of threat felt by some teachers in making both their teaching methods and students results open and transparent. Teachers often spoke about there being 'no place left to hide', but at the same time they felt better supported than ever as the collaborative nature of the discussions developed a culture of mutual support and a collective sense of responsibility for each individual student's learning.
  - A considerable amount of time and professional learning (often more than 12 months) was required to ensure all teachers had a common understanding of the continuum standards and were capable of making consistent judgements. This involved, for example, comparison of student work samples demonstrating certain continuum standards. (Given the high level of teacher turnover in these schools, this is a never-ending process that suggests serious consideration is required about how teachers are inducted into the new way of doing business that has occurred in Action Plan schools). At a systemic level, instructional leaders themselves attended moderation sessions that ensured that judgements about achievements of standards across schools were comparable.

- The broader context of the Action Plan and its other key priorities of personalised learning, tiered intervention and increased student engagement were also key factors in helping teachers see that the time and energy devoted to developing evaluative thinking was purposeful rather than simply a bureaucratic requirement or passing fad. It is not possible to describe here all of the changes in pedagogy that occurred as a result of the Action Plan, but it is no exaggeration to say that the look and feel of the F–2 classrooms was totally transformed in the vast majority of schools. Old notions of teaching to the class average; grouping students as a means of classroom management; use of textbooks and worksheets; and at-risk students being sent to someone else to be ‘fixed’ have largely disappeared. Instead, the majority of classrooms now truly demonstrate what it means to be student-centred, have a growth mindset, teach explicitly and appreciate student voice.
4. Deeper understanding of the process of diagnosing student learning needs and the implications of this process for planning teaching and learning:
- There was a substantial change in the way that teachers used diagnostic assessment of students. Prior to the Action Plan, teachers used a variety of assessment tools, usually on an ad hoc basis to determine whether individual students should be referred to a specialist teacher or intervention program. Prior to schools’ engagement with the Action Plan, there was little assessment carried out F–2 in a systematic way, and the data was seldom aggregated or reported a whole-school basis.
  - In addition, an outcome of the processes adopted to enhance stronger evaluative thinking was that educators developed much deeper knowledge of the curriculum and much deeper knowledge of each student’s needs, aspirations and abilities. The use of the data walls and regular data collections has meant that it is now much more difficult for children to ‘slip through the cracks’, and the teaching students receive is more relevant, engaging and purposeful.
  - The impact of these changes on students, as reported in the final report of the evaluation (Erebus International, 2017), has been a substantial improvement in the proportion of students in the participating schools who now meet or exceed the appropriate end-of-year standards.

## Takeaway messages

The following points emerged as key lessons to be learned from the Action Plan experience:

- There needs to be an intellectual base to justify why changes in current practices are necessary.

Teachers and leaders need to accept the moral imperative for doing things differently from the past.

- Considerable time and effort has to be invested in developing teacher and school leader capacity to engage in evaluative thinking. This includes some of the basic concepts of data analysis, such as statistical significance, reliability of data, experimental design and inference.
- Time and space need to be created in teachers’ timetables for analysis and reflection to occur. This must be seen as part of teachers’ normal working day—not an add-on or extra task.
- Processes, structures and discipline are necessary to use the time effectively—and these need to be consistent across the school setting. The school leadership team has a key responsibility for developing these prerequisites for an effective culture of evaluative thinking.
- Application of evaluative thinking is best done in a collegial and collaborative setting. While an evaluative thinking capacity needs to become part of every teacher’s toolkit, it is not something that can effectively be developed in isolation or in an abstract way. Teachers need to be constantly challenged in their understanding of data and supported to explore possibilities for responding to the conclusions drawn from their analysis of data. Involving all teachers in every stage of the evaluation cycle is important—otherwise, evaluation becomes ‘someone else’s job’. When this happens, teachers ultimately become disempowered and revert to implementing standardised programs with little ownership of the results.
- The measurement tools used to provide data to the evaluation matter. Narrow assessment instruments provide a narrow view of learning and promote ‘teaching to the test’. The literacy and numeracy continuums had some inherent measurement issues (which are being addressed in current redevelopment) but were an effective foundation for fostering teachers’ understanding of the linkages between the curriculum, student achievement, classroom teaching and intervention strategies.
- Evaluative thinking is a means to an end, not an end in itself. It must be focused on achieving enhanced teaching and learning practices that result in improved student learning outcomes. Unless the application of evaluative thinking is purposeful and consequential, it will remain an abstract concept or passing fad with little chance of sustainability.
- To build teachers’ capacity to become productive, evaluative thinkers on a large scale, systemic leadership is required. This includes not only the provision of support material and professional learning but also strong accountability measures (including quality assurance or moderation processes) to ensure all schools understand and apply best practice.

## Key points for discussion

Teachers' and school leaders' skills in relation to data analysis were observed during the evaluation to have increased considerably (often from a very low base). Data analysis and evaluation of teaching and learning were not well developed among F–2 teachers prior to the Action Plan. However, after some initial reluctance, the majority of teachers and leaders enthusiastically embraced the new opportunities provided to them. Significant changes in the way teaching and learning now occur in targeted schools were observed. Teachers' enthusiasm was spurred in part by their own observations of their success in helping students progress, in situations where improving student outcomes was formerly thought to be unachievable. The use of the data walls and continuums to provide a common yardstick for measuring progress was instrumental in this. While there has been demonstrable improvement across the state as a result of the Action Plan's emphasis on evaluative thinking, at individual school and teacher levels there are still some concerns. These include:

- the accuracy and consistency of teacher judgements against the continuum standards
- the validity of teacher analysis and attribution of causes of underachievement (including their attribution of student success to their own teaching, when it could have been due to other causes). The NSW Department of Education (2017) warns of 'cognitive biases' in interpretation, but there are other causes, including beginning teachers' lack of knowledge and experience, which may lead them to draw false conclusions from the data
- teachers' capacity to know what to do with the results of their analysis in terms of their pedagogy (i.e. to draw out the implications for subsequent teaching practice and intervention strategies). The Action Plan provided scaffolded support to enable further development in this area, but without the funding and leadership provided by this initiative, many schools will struggle to improve their practice. They are limited by their own experience.

## Areas for further research

The Action Plan demonstrated that transformative change is possible at the F–2 level and has applicability at the Years 3–6 level. Whether similar processes can work as successfully in the secondary school level is yet to be tested. Secondary schools are typically less flexible and more timetable-driven than primary schools, and secondary teachers arguably have more fixed mindsets about their role in 'delivering the curriculum', particularly in the senior years. There remains a strong view among secondary school teachers that differences in student outcomes are

inevitable, and that these differences are a product of individual students' effort and application or socio-economic backgrounds rather than the quality of the teaching. Changing these mindsets and transforming secondary school culture may be possible at the individual school level, but large-scale demonstration of change at a whole system level is an area that could profitably be explored further in future.

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