# Developing and implementing an explicit school improvement agenda

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In January 2012, Dr Bruniges became a Member of the Order of Australia for her service to public administration through executive roles, and her contribution to reform in the education sector at state and national levels. She also took up the role of Adjunct Professor in the School of Education, Faculty of Arts and Social Sciences at the University of New South Wales. Dr Bruniges is a Fellow of the Australian College of Educators and the Australian Council for Educational Leaders who, in 2011, awarded her the ACEL Presidential Citation for her high level leadership of public education.

# Abstract

School improvement is a high-stakes enterprise, as difficult as it is important. While the broad agenda of school improvement is unassailable, the concept has become entangled with debates about the use of standardised assessment data for the purposes of public accountability. The risk of this is that data per se are devalued in the eyes of teachers.

Effective use of data by teachers is, however, the crux of school improvement. For student outcomes to improve, teachers need an accurate understanding of individual students' strengths and weaknesses. Moreover, they need the capacity to translate this understanding into improved conditions for teaching and learning through high-quality pedagogic decisions. While positive steps have been taken to strengthen evidence-based teaching, the research literature shows this is not universal.

This paper proposes three systemic actions to improve pedagogic decision-making and practice, and thus engender school improvement: (1) support ongoing improvement in teachers' data literacy, including by fostering a culture of inquiry and trust that facilitates teachers' use of data to evaluate their own practices; (2) ensure that the evidence base for effective teaching practice is readily accessible and understood by teachers, including through evidence-based professional development; (3) support teachers to expand their understanding of effective teaching practice through a collaborative approach to professionalism, including again through the development of a culture of trust that will facilitate genuinely collaborative planning and reflection.

## School improvement – what's at stake?

Education is a high-stakes enterprise in the 21st century. At the 2011 International Summit on the Teaching Profession, the OECD Director for Education, Barbara Ischinger, stressed that 'education is both *the* key driver of economic growth and a key social equalizer' (Asia Society, 2011, p. 5, emphasis added). For individuals, higher levels of education are linked with a greater likelihood of being employed, higher levels of remuneration and other benefits such as better health, which have both personal and quantifiable social benefits (ABS, 2009, 2010; Feinstein 2002). For countries, levels of education are linked with indicators of economic health such as GDP per capita (e.g. KPMG Econtech, 2010; Hanushek & Woessman, 2010; Business Council of Australia, 2004). Importantly, however, analysis has

indicated that the salient variable is not merely the quantum (duration) of education, but its quality (Hanushek & Woessman, 2010).

## School improvement – the challenge

The challenge, then, is not just to ensure that all children access their educational entitlement, or to extend that entitlement. Rather, the challenge is to improve the quality of the education they receive for the duration of their schooling. This is easier said than done, as the American experience attests:

> In the past decade, the burgeoning economies of India and China have provoked United States commissions and initiatives to advocate the teaching of 21st-century skills, tougher curriculum requirements, common national standards, yet more testing, increased competition between teachers and schools, and harder work for everybody. Nevertheless, over the past quarter century, the standards and performance of American teachers and schools have steadily declined in relation to international benchmarks (Sahlberg, 2012, p. vii).

No educator could seriously dispute either the broad agenda of school improvement, which is better outcomes for more students, or the intermediate objective, which is improvement in the conditions for teaching and learning. Discussions about how to effect school improvement, however, have been vexed. This can be largely attributed to the fact that the concept of school improvement has become entangled with a more ideological debate about the use of standardised, universal assessment data (such as NAPLAN) for the purposes of public accountability (e.g. Graham, 2007). The significant risk of this is that data per se become devalued, particularly in the eyes of teachers.

This is a danger because data is – and always has been – at the heart of the educational process. As early as 1922, Edward Thorndike wrote:

> 'The task of education is to make changes in human beings. For mastery in this task, we need definite and exact knowledge of what changes are made and what ought to be made' … schools need accurate and actionable information about what students know and can do so that they can plan effectively for student learning (cited in Heritage & Yeagley, 2005, p. 320).

The OECD has recognised the link between effective assessment and use of data to improve student learning, and the effective use of data to inform school and system evaluation (the necessary precursor to school and system improvement) (OECD, August 2011a). With respect to all of these, the 2011 OECD report, *OECD Reviews of Evaluation and Assessment in Education: Australia* has good news, finding that this country has the broad conditions for

success in place. There is, in Australia as elsewhere, increasingly widespread recognition that '[u]sing information about student learning and progress to inform school and classroom practices is … an important component of strategies to support improvement' (Campbell & Levin, 2009, p. 48; see also Protheroe, 2001, 2010; ACER, 2008; van Barneveld, 2008).

There is still, however, room for improvement. In particular, the OECD notes that '[t]he links to classroom practice are less clearly articulated' (OECD, August 2011b, p. 1). This is an issue because, as Black and Wiliam put it:

> Attempts to raise standards by reform of the inputs and outputs to and from the black box of the classroom can be helpful, but they cannot be adequate on their own, and whether or not they are helpful can only be judged in the light of their effects in classrooms (Black & Wiliam, 2001, p. 9).

This paper argues that the only real chance for significant and sustained school improvement lies not in structural change in and of itself, but in attending to the bread-and-butter of the educational process – what goes on in our classrooms. As Shulman argued nearly 30 years ago:

> … the teacher must remain the key. The literature on effective schools is meaningless, debates over educational policy are moot, if the primary agents of instruction are incapable of performing their functions well (1983; cited in Flinders, 1988, p. 17).

The key question for school systems seeking to improve, then, becomes, 'how do we support teachers to offer each and every student the best educational experience they possibly can?'


## Using data and evidence – the hallmarks of professional decision-making

Teaching has always required the capacity to make decisions, in a wide range of contexts, across many areas, and often very quickly. Teachers are increasingly, however, required to make more and more nuanced decisions, as the expectations of education and the task of schools undergoes a fundamental change – from sorting students by achievement level to supporting all students to learn (Alton-Lee, 2011). It is important that these decisions are as sound as possible, across the innumerable classrooms of our education systems.

The use of evidence is one of the hallmarks of a profession (Matters, 2006), and evidence-based teaching has been defined as 'the conscientious, explicit and judicious use of best evidence in making decisions about the education of individual students' (Gardner, 2009,

p. 1). There are two forms of evidence that teachers draw on in practising evidence-based teaching. First, there are the data – in many forms – that reveal a student's current level of knowledge and skills, relative to the curriculum and expected standards of achievement. This interpretation of this data may be compared with the medical processes of patient assessment and diagnosis.

The second type of evidence is the knowledge base about what works, with particular student cohorts, in particular teaching situations, and what doesn't. Some researchers (e.g. Heritage & Yeagley, 2005) characterise this as 'process' data (in contrast to 'input' data, such as student demographic data, and 'output' data, such as assessment scores), and the teaching decisions based on this might roughly be compared with the medical process of prescribing treatment.

## Professional decision-making – how well is it done?

The picture is mixed. Recent research by the US National Council on Teacher Quality into what teacher education students are learning about assessment found that of the 180 elementary and secondary undergraduate and graduate programs examined, only 3 per cent provided sufficient coverage of assessment; only 2 per cent exposed students to the means of analysing test results; and only 1 per cent addressed how to come up with an instructional plan once they've done so (NCTQ, 2012).

Closer to home, the OECD report on educational evaluation and assessment in Australia found 'some inadequacies in teachers' skills for assessment and to use assessment data' (2011b, p. 1). This is corroborated by a small Australian pilot study into teacher intentions to use national literacy and numeracy assessment data, which found that only 27 per cent reported direct access to NAPLAN data. Eighteen per cent chose not to access the data, for reasons including negative perceptions of the data's value and a lack of confidence in how to use the data (Pierce & Chick, 2011).[1] More optimistically, in New South Wales, all of the teachers involved in the Smarter Schools National Partnerships have now had access to training in the effective use of data. Preliminary findings from NSW's strategic evaluation of

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[1] The study was of 49 secondary Mathematics and 35 secondary English teachers from 16 schools. A much larger research study by the US Department of Education found that 38 per cent of surveyed teachers indicated a need for training on how to formulate questions that they could address with data; 48 per cent reported needing professional development on the proper interpretation of test scores and more than half said that they needed additional professional development on how to adjust their instructional content and approach based on data (Means, Chen, DeBarga and Padilla, 2011).

the Smarter Schools National Partnerships indicate that 34 per cent of teachers involved with the SSNPs for approximately two years experienced large or very large increases in their use of student achievement data to inform lesson planning.[2]

It is one thing to be data savvy, and another to transform this understanding into improved classroom practice. The 2011 international summit on improving teacher quality around the world observed that education is not yet a knowledge-based industry (Asia Society, 2011). The late Ken Rowe put this view forcefully when he wrote:

> First, despite the existing and emerging research evidence for educational effectiveness in terms of teaching and learning, there is a disturbing level of ignorance among teachers at all levels of educational provision related to what works and why. Second, the prevailing ideologies in schools and universities surrounding effective teaching practice are typically not grounded in findings from evidence-based research (2007, p. 59).

Alton-Lee goes even further when she outlines 'recurrent findings of inadvertent harm done in education' that demonstrate 'it is possible for teachers – well-intentioned, caring and experienced – to unknowingly have impacts on students that are the direct reverse of what they intend'. She cites the New Zealand example whereby 'the prevalent use of learning styles matching approaches … can ghettoise Maori and Pasifika students into kinaesthetic activities with concrete material and procedural activity while other students engage in metacognitive strategy instruction' (2011, p. 321).


## Quality decision-making – the role of the system

This paper approaches the concept of school improvement from the well-supported premise that teachers are the most significant in-school variable influencing student outcomes and, therefore, that to significantly improve student outcomes necessarily involves improving teachers' capacity for quality pedagogic decision-making. Evidence suggests a number of steps to be taken. While these might seem obvious on the face of it, in actuality they involve significant cultural shift in the teaching profession, not least in the understanding of what it means to be professional.

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[2] This excludes schools participating in the Literacy and Numeracy Addendum (commencing 2010) and the low SES Reform Extension (commencing in 2010 and 2011).

**(1) Support ongoing improvement in teachers' data literacy**

Student data doesn't speak for itself, and the more complex uses of data require more complex skills (Ikemoto & Marsh, 2007). If we are to increase the prevalence of evidence-based teaching in our schools, we need to ensure in the first place that our teachers have the requisite skills for data-based inquiry, and opportunities to practise them.

This is a responsibility we share with teacher educators in our universities. Consistent with Australian and US research cited above, an English study of professional attitudes to the use of student performance data in English secondary schools, discovered that newly qualified teachers and teachers with one to five years' experience have the lowest levels of understanding of student performance data, 'which when taken together with other findings suggests poor "data analysis" content in teacher training courses' (Kelly & Downey, 2011, p. 423).

This is a bigger task than it might superficially seem. It is not just a matter of ensuring relevant content in pre-service teacher education courses, or sufficient professional development for our existing workforce, though they are both important. It means, rather, rethinking teaching as an inquiry-based profession (e.g. Alton-Lee, 2011), more akin to its character in Finland and, increasingly, a number of East Asian countries as outlined in the recent Grattan Institute report, *Catching up: Learning from the best school systems in East Asia* (Jensen, Hunter, Sonnemann, & Burns, 2012). In seeking to support this shift, we need to guard against the documented tendency for data hierarchies to develop, where direct access to, and analysis of, data is more evident amongst school executive than classroom teachers (Kelly & Downey, 2011).

Evidence exists that data analysis is most effectively undertaken in groups and that 'when working by themselves, teachers tend to rely on anecdotes and intuition' (David, 2008; see also Hattie 2012 on the 'data teams model'). Building a strong culture of collaborative inquiry within and across schools will involve tackling the assumption that teaching is an independent rather than a collaborative profession (Beswick, 2011), the strength of which is well documented in the literature on teacher isolation (e.g. Flinders, 1988; DuFour, 2011).

Most significantly, we need to build a culture of trust so that teachers feel able to interrogate performance data not only for the insights it might shed on students' strengths and weaknesses, but on their own. Research shows that between-class variation in student outcomes is typically much greater than the variation between schools (Rowe, 2007). Yet research also indicates that this is (understandably) a 'nondiscussable' within the school environment (Barth, 2006); that teachers tend not to question their own pedagogic expertise;

and that they persist in the belief that the teaching practices of their colleagues are 'acceptable at least and exemplary at best, based on the absence of evidence to the contrary' (Griffin, 1995; cp Hattie, 1999).

**(2) Ensure that the evidence base for effective teaching practice is readily accessible and understood by teachers in classrooms**

An American study has shown that doctors in the United States of America failed to recommend medicines up to 10 years after they were shown to be efficacious, and continued to recommend treatments up to 10 years after they were shown to be ineffective (cited in Matters, 2006). Assuming that this reflects a time lag between the production of evidence and its uptake (and not ill-will on the part of doctors), we need to find effective and timely ways of systematically identifying, interpreting, contextualising, packaging and disseminating robust knowledge about effective teaching practice.

New South Wales has a strong background in the codification and dissemination of knowledge about good teaching practice, as evidenced by the Quality Teaching Model developed almost a decade ago (NSW Department of Education and Training, 2003). The research base continues to evolve however, and we have an ongoing responsibility to guard against fads (Timperley's 'unproven ideas [that] continue to sweep through educational jurisdictions'; cited in Alton-Lee, 2011, p. 320). Conversely, we have a responsibility to highlight robust evidence that might contravene common 'understandings' as in, for example, the evidence that explicit instruction and the systematic, repetitive practice of small learning steps has a higher chance of success than more loosely structured approaches, especially for traditionally educationally disadvantaged groups.

We also need to ensure that professional learning reflects this evidence base. This may seem obvious, but it doesn't always occur. A synthesis of 72 studies which analyses the links between professional development and its impact on student outcomes showed that 'there was little evidence that just providing teachers with time and resources is effective in promoting professional learning in ways that have positive outcomes for students'. More positively, the same study found that the greatest benefits to student learning were from professional development 'that deepen teachers' foundation of curricula-specific pedagogical content and assessment knowledge' because they 'provided teachers with new theoretical understandings that helped them make informed decisions about their practice' (Alton-Lee, 2011, pp. 311–312).

**(3) Support teachers to expand their understanding of effective teaching practice through a collaborative approach to professionalism**

This is not as straightforward as ensuring access to the evidence base. As DuFour notes, even the most powerful concepts can be badly applied (2011). Early research into teacher decision-making found that at the micro level – such as how to respond to a particular type of question during a class – teachers were remarkably consistent in their individual approach (Borko, Roberts, & Shavelson, 2008; Bishop, 1976). When combined with a cultural tendency to view each other's teaching styles and decisions as sacrosanct, this consistency presents a significant obstacle to broadening one's understanding about how the principles of quality teaching can be translated into a strengthened range of practices in individual classrooms.

What teachers need, in addition to the more 'summative' evidence base, is ready access to evidence-in-action, examples of other teachers doing things differently yet well. This will require perhaps the biggest cultural shift of all. The metaphor of the classroom as a black box, like the 'egg-crate' image of a school, is an apt representation of a teacher's closed domain. As in the case of increasing capacity for data analysis, we need to build a culture of trust that will facilitate genuinely collaborative planning and reflection, including teachers' observation of each other's classrooms. If this seems challenging, it is business as usual elsewhere in the world. Beginning teachers in Shanghai sit in on three to four of their mentor's classes weekly, and have two to three of their own classes observed (Jensen et al., 2012).

# Conclusion

School improvement is hard and it may be even harder for schools and systems already performing comparatively well. At the same time, we live in a knowledge age and a global economy, which take no prisoners. It is a moral as well as an economic imperative that we continue to improve both the quality and the equity of student outcomes, for our individual and collective wellbeing are intertwined. Take, as just one example, the fact that employed Aboriginal people who have completed Year 12 are about 60 percentage points more likely to be earning above the national median wage than those who have not (Biddle, 2010).

To effect real, systemic improvement in the conditions for, and outcomes of, teaching and learning in our schools will mean improving the quality of the decision-making informing practice at all levels. In the first instance, this means embedding the use of data – and the related use of evidence-based practice – where they belong, in the service of teachers in classrooms (cp Hattie, 2005). We have taken important steps in this direction through the

Smarter Schools National Partnerships (SSNPs). Evidence from New South Wales shows that approaching half the teachers who had been involved in the SSNPs for approximately two years reported large or very large increases in their understanding of what they need to do to be a more effective teacher, and in their ability to implement effective classroom practice, planning and learning strategies.

At the broader level of the school education sector, we must mirror on a larger scale, the capacity we require in our teachers to interrogate multiple data sets for insights into strengths and weakness. We must also, then, adjust our practices accordingly. For, though the benefits of education are of such magnitude they may seem infinite, the public purse is not. We have a real and not merely a rhetorical responsibility to ensure that hard-contested public dollars are well spent.

Finally, we must not, after all, forget the 'schools' in 'school improvement'. This paper has argued that the heart of any school improvement agenda lies first and foremost with teachers in classrooms, but that is not to ignore the crucial, contextual impact of the school community in which we expect those same teachers to develop and demonstrate an increasingly data-informed, evidence-based and collaborative professional practice. For, while 'the quality of a system cannot exceed the quality of its teachers' (Barber & Mourshed, 2007), if you put a high quality recruit into a dysfunctional school environment, 'the system [in the most negative sense of the word] wins every time' (Asia Society, 2011).

# References

Alton-Lee, A. (2011). (Using) evidence for educational improvement, *Cambridge Journal of Education, 41*(3), 303–329.

Asia Society (2011). *Improving teacher quality around the world: The international summit on the teaching profession* (n.p: Asia Society).

Australian Bureau of Statistics (2009). *National Health Survey: Summary of results 2007–09*, Catalogue no. 4364.0.

Australian Bureau of Statistics (2010). *Measuring economic returns to post-school education in Australia*, Catalogue no. 1351.0.55.032

Australian Council for Educational Research (2008). What does research tell us about how schools and teachers can use data to inform teaching in ways that lead to improvements in student achievement? *The Digest Number 2* (Sydney: NSW Institute of Teachers).

Barber, M., & Mourshed, M. (2007). *How the world's best-performing school systems come out on top* (n.p.: McKinsey&Company).

Barth, R. (2006). Cooperate: Improving professional relationships, *Teacher*, *171*, 22–26.

Beswick, T. (2011). Revitalising teacher professionalism and accountability, *The Australian Educational Leader, 33*(2), 21–24.

Biddle, N. (2010). *A human capital approach to the educational marginalisation of Indigenous Australians*. Canberra: Centre for Aboriginal Economic Policy Research, ANU.

Bishop, A. J. (1976). Decision-making, the intervening variable. *Educational Studies in Mathematics*, 7(1-2), 41–47.

Black, P., & Wiliam D. (2001). *Inside the black box: Raising standards through classroom assessment.* London: King's College London School of Education. Accessed  ttp://weaeducation.typepad.co.uk/files/blackbox-1.pdf June 2012

Borko, H., Roberts, S. A., & Shavelson, R. (2008). Teachers' decision making: From Alan J. Bishop to today. In P. Clarkson & N. Presmeg (Eds.), *Critical issues in mathematics education* (pp. 37–67)*.* New York: Springer.

Business Council of Australia (2004). *Economic growth and social change in Australia 1976–2025*. Research paper for Scenario Planning Project 'Aspire Australia 2025'.

Campbell, C., & Levin, B. (2009). Using data to support educational improvement, *Educational Assessment, Evaluation and Accountability*, *21*, 47–65.

David, J. L. (2008). Collaborative inquiry, *Educational Leadership*, *66*(4), 87–88.

DuFour, R. (2011). Work together but only if you want to, *Phi Delta Kappan, 92*(5), 57–61.

Feinstein, L. (2002). *Quantitative estimates of the social benefits of learning, 2: Health (Depression and Obesity).*London, UK: Centre for Research on the Wider Benefits of Learning, Institute of Education.

Flinders, D. J. (1988). Teacher isolation and the new reform. *Journal of Curriculum and Supervision*, *4*(1), 17–29.

Gardner, J. 'Assessment for teaching: The half-way house', *Conference Proceedings*, ACER Research Conference 2009 (Camberwell, VIC: Australian Council for Educational Research).

Graham, J. (2007) 'Richard Elmore on the use of test data, accountability systems, building teacher capacity and the role of politics in educational change – part three', interview by John Graham, *The National Agenda – Part one* (Abbotsford, VIC: Australian Education Union).

Griffin, G. A. (1995) 'Influences of shared decision making on school and classroom activity: Conversations with five teachers', *The Elementary School Journal* 96.1, 29–45.

Hanushek, E. A., & Woessman, L. (2010). *The High Cost of Low Educational Performance*. Paris: OECD.

Hattie, J. (1999). Influences on Student Learning. Inaugural Lecture as Professor of Education, University of Auckland, 2 August.

Hattie, J. (2005). What is the nature of evidence that makes a difference to learning? *Using Data to Support Learning,* ACER Research Conference 2005 (Camberwell, VIC: Australian Council for Educational Research).

Hattie, J. (2012). *visible learning for teachers: Maximizing impact on learning*. London and New York: Routledge.

Heritage, M., & Yeagley, R. (2005) 'Data use and school improvement: Challenges and prospects. *Yearbook of the National Society for the Study of Education, 104*(2), 320–339.

Ikemoto G. S., & Marsh, J. A. (2007). *Yearbook of the National Society for the Study of Education,* 106(1),105–131.

Jensen, B., Hunter, A., Sonnemann, J., & Burns, T. (2012). *Catching up: Learning from the best school systems in East Asia* (Camberwell, VIC: Grattan Institute).

Kelly, A., & Downey, C. (2011).Professional attitudes to the use of pupil performance data in English secondary schools. *School Effectiveness and School Improvement, 22*(4) 415–437.

KPMG Econtech (2010). *Measuring the impact of the Productivity Agenda, Final Report*, Canberra: Dept. of Education, Employment and Workplace Relations.

Matters, G. (2006). *Using Data to Support Learning in Schools: Students, Teachers, Systems*. Camberwell, VIC: Australian Council for Educational Research.

Means, B., Chen, E., DeBarger, A., & Padilla, C. (2011) *Teachers' ability to use data to inform instruction: Challenges and supports*. Washington, DC: US Department of Education.

National Council on Teacher Quality (2012). *Teacher Quality Bulletin* (TQB) Monthly Newsletter, June. Accessed at: http://www.nctq.org/p/tqb/viewBulletin.jsp?nlIdentifier=290

NSW Department of Education and Training (2003). *Quality teaching in NSW public schools: An annotated bibliography*. Sydney: NSW Department of Education and Training.

OECD (August 2011a). *OECD Reviews of Evaluation and Assessment in Education: Australia*. Paris: OECD.

OECD (August 2011b). *Educational Evaluation and Assessment in Australia: Strengths, Challenges and Policy Pointers*. Paris: OECD.

Pierce, R., & Chick, H. (2011). Teachers' intentions to use national literacy and numeracy assessment data: A pilot study. *Australian Education Research* 38, 433–447.

Protheroe, N. (2001). Improving teaching and learning with data-based decisions: Asking the right questions and acting on the answers. n.p.: Educational Research Service. Accesssed at www.ers.org/spectrum/sum01a.htm

Protheroe, N. (2010). Schools as effective data users. *Principal* September/October. Accessed at www.naesp.org/SeptOct

Rowe, K. J. (2007). Educational effectiveness: The importance of evidence-based teaching practices for the provision of quality teaching and learning standards. In D. M. McInerney, S. Van Etten & M. Dowson (Eds.), *Standards in Education* (pp. 59–92). Carlotte, NC: Information Age Publishing.

Sahlberg, P. (2012). *Finnish lessons: What can the world learn from educational change in Finland?* Moorabbin, VIC: Hawker Brownlow Education.

Shulman, L. S. (1983). Autonomy and obligation: The remote control of teaching. In L. S. Shulman & G. Sykes (eds.), *Handbook of Teaching and Policy*. (pp. 484–504). New York: Longman.

Van Barneveld, C. (2008). *Using data to improve student achievement*, What Works? Research into Practice series, Research Monograph no. 15. Ontario: The Literacy and Numeracy Secretariat and the Ontario Association of Deans of Education.