

Evidence for the kinds of feedback data that support both student and teacher learning¹



Ken Rowe

Australian Council for Educational Research

Dr Ken Rowe is the Research Director of ACER's *Learning Processes and Contexts* research program. Prior to this appointment, Ken was Principal Research Fellow and Associate Professor in the Centre for Applied Educational Research at the University of Melbourne (1993-99), Senior Research Officer in the Department of Education, Victoria (1986-92), Commonwealth Relations Trust Fellow at the University of London Institute of Education (1984-85), teacher and Principal in Victorian government schools (1967-83). Ken has also held Visiting Research Fellow appointments at the University of Twente (the Netherlands, 1995) and at the University of London (UK, 1996).

Dr Rowe's post-graduate training in program evaluation, research methodology and design, educational psychology, assessment, measurement, psychometrics, and advanced statistical modelling, was undertaken at the University of London, and his doctoral research at the University of Melbourne. Ken is an Honorary Fellow of the Australian Council for Educational Leaders (FACEL).

Dr Rowe's substantive research interests and expertise include: 'authentic' educational and psychological assessment; models of quality assurance; multilevel, 'value-added', educational and organizational performance indicators, achievement target-setting and bench-marking; teacher and school effectiveness; differential gender effects of schooling in the context of teaching and learning; the teaching and learning needs of students with learning difficulties and disabilities; the impact of externalizing behaviour problems on students' learning outcomes in literacy and numeracy; and the educational implications of Attention-Deficit/Hyperactivity Disorder (AD/HD) and Chronic Fatigue Syndrome (CFS) in children and adolescents.

In addition to his research commitments, Dr Rowe conducts training courses in evaluation and performance monitoring and in multilevel, structural equation modelling. Currently, Ken is Committee Chair of the Australian Government's *National Inquiry Into the Teaching of Literacy*, and a member of the Board of Directors of the *Carrick Institute for Learning and Teaching in Higher Education*.

Abstract

Given the level of consensus regarding the importance of school education as an essential element of micro and macro economic reform, performance indicator (PI) data that inform policy and practice, at all levels of education systems, are of strategic importance. In particular, findings from evidence-based school effectiveness research since the 1980s indicate that the feedback and use of such data have demonstrated utility in providing support for enhanced student learning outcomes and improvements in educational provision. Following a brief background and contextual review of educational performance feedback systems, the present paper presents findings from several studies that highlight the kinds of feedback data, and their use, that support both student and teacher learning, and enhance *educational effectiveness* at the student, parent, teacher, school and system levels.

Background and context

Since the 1980s, education systems throughout the world have been subject to considerable reform and change – all justified on the grounds (or at least the rhetoric) of improving the *quality* of school education. In this context, Mortimore (1991, p. 214) has noted that the 'measurement of the quality of schooling is of critical importance at a time when so much

school reform in so many parts of the world is being undertaken'. Manno (1994) underscored the importance of measuring *quality* in terms of student achievement outcomes by asserting:

When judging educational quality, either we focus on what schools spend – or one of its many variants – or we focus on what students achieve, what they know and can do. Those who advocate a focus on outcomes in judging educational quality hold one common belief: we must specify what we expect all children to learn, and we must assess them to determine whether they have learned it. (Manno, 1994)

A key feature of this reform has been the frequent revisions of style and policy focus, especially in the area of performance indicators (PIs), with major emphases being placed on the assessment and monitoring of student learning outcomes. Indeed, current policy activities related to 'outcomes-based' educational PIs and their links with growing demands for *accountability*, *standards monitoring*, *benchmarking*, *school effectiveness* and *reform* are widespread and well established in many countries.² Such emphases are aptly illustrated in the reported proceedings of a meeting under the auspices of the *Summit of the Americas* (2002), which stated:

Although it is now part of daily life in schools and in debates between specialists, educational assessment has recently become a relevant

¹**Enquiries:** Dr Ken Rowe, Research Director (Learning Processes & Contexts), Australian Council for Educational Research, Private Bag 55, Camberwell, VIC 3124; Australia; Email: rowek@acer.edu.au. The complete version of this paper (including references and appendices) is available in PDF format from: <http://www.acer.edu.au/research/programs/learningprocess/html>. Note that the views expressed here are those of the author and may not necessarily be held officially by the Australian Council for Educational Research.

²See: Alton-Lee (2003); Buckingham (2003); Darling-Hammond (2004); Dorn (1998); Goldstein (2001); Gray, Goldstein & Thomas (2001); Manno (1994); Masters (2005); Monk (1992); OECD (1995); Tucker & Coddling (1998); Rowe (2000, 2001, 2003a, 2004a,b,c); Rowe, Hill & Holmes-Smith (1995); Rowe & Lievesley (2002); Scheerens & Bosker (1997); Visscher & Coe (2002, 2003); Visscher et al. (2000); Willms (2000).

topic for governments and society, especially because of the economic crisis and the acceleration of the globalization process, which make investments in education a strategic point while the resources available for the sector have shrunk.

Much of this reform activity has been (and continues to be) directed away from concerns about *inputs* and *processes* of educational systems (e.g., physical resources and curriculum provision) to *outputs* (e.g., improvements in student achievement outcomes, as well as in school and system performance). A major effect of such activity has been to signal shifts in government policy intention to: (a) encourage system accountability to ensure both efficient and effective utilisation of resources, and (b) bring the delivery of educational services into public sector accounting, underscored by a concern to ensure that such services represent 'value for money' (see Earl, 2005). Since schooling accounts for a significant proportion of public and private expenditure, as well as generating a substantial quantity of paid employment for teachers and administrators, the enduring interest by governments and system administrators in the relative *effectiveness* of school education is understandable³.

In Australia, policy revisions have been evident in the increasing national approaches to educational governance and accountability, first signalled by Dawkins (1988), which called for a national focus on student assessment and standards monitoring. In

commenting on this change Wilson (1996, p. 5) observed: 'One of the remarkable things that has happened in Australian education in recent years is the rapid achievement of a hegemony by the idea of *outcomes-based education*'. Wilson supported this observation by pointing to two features of this hegemony: (1) the considerable degree of national consensus that has been achieved about the purposes of education, and (2) that the consensus is based on student learning outcomes. The emergence of specific learning outcome statements in documents such as *Curriculum and Standards Frameworks* and *Essential Learnings*, for example, reflect the national influence of the earlier work done on profiles (see: Griffin, 1990; Griffin & Nix; 1991; Rowe & Hill, 1996), and strong commitments to *standards* and *outcomes-based education* (Hill & Crévola, 1999). These commitments are likewise reflected in recent increases in state-wide assessment and monitoring programs.⁴ In this context, Hill (1995, p. 4) noted:

accountability pressures have forced most education systems to press ahead with large-scale assessment programs. All government school education systems in Australia ... now operate programs to monitor educational standards ... The principal motivation behind current assessment programs is to meet public demands for educational systems to be accountable for maintaining and indeed improving standards. As such, they tend to command broad support from the

community, but rarely receive enthusiastic support from the teaching profession.

These changes follow similar activity in the United Kingdom where government policies centred on *educational accountability* and *standards monitoring*, have had notable impacts on schools. Foremost among these is the implementation of a national curriculum, national assessment, an external school inspection system administered by the *Office for Standards in Education* (OfSTED), and the publication of schools' average achievement scores on tests and public examinations. This approach is part of a general policy initiative by the British government since 1987 to promote the use of indicators by which public service institutions can be compared and their performances evaluated. The *Parents' Charter* (DES, 1991), for example, requires that comparative 'league tables' of examination and national curriculum test results be published for every educational institution (schools) and local education authority (LEAs). The 'league tables' consist of schools' rankings computed from students' average achievement scores (raw and unadjusted) on national curriculum test results at ages 7, 11 and 14 years, together with similar scores for the *General Certificate of School Education* (16 year-olds) and *A-levels* (18 year-olds). The stated intention of the *Parents' Charter* is that these tables be used by parents to assist in choosing schools for their children to attend. However, consistent with Hill's point cited above, the British

³For indicative commentary, see: Fitz-Gibbon (1996); Gray (2002); Hill (1995); Mortimore (1998); Tucker & Coddling (1998).

⁴In the Australian context, a rationale for educational monitoring has been provided by McGaw (1991), followed by the provision of a detailed review of monitoring programs throughout Australia by Lokan and Ford (1994). In discussing the limitations of educational performance indicators and their potential misuse, Watson (1996) suggested an approach to measuring system performance designed to establish 'benchmarks' that reflect both the 'efficiency and effectiveness of Australian school systems'.

government's intention in pursuing these policies has been to meet presumed public demands for 'accountability' and the maintenance of 'educational standards'.

The use of published performance-feedback data of these kinds has generated considerable critical comment that need not be reiterated at length here.⁵ In brief, however, an inevitable result of comparisons among schools, whether by publication of crude 'league tables' as in the UK, France and in several Australian states,⁶ or more sophisticated 'value-added' ones like those published in the US State of Tennessee (Sanders & Horn, 1994), is that there are 'winners' and 'losers'. Once the losers are deemed to be 'failing' or 'ineffective', it is difficult to find ways of helping them in a prevailing social and political atmosphere of blame, recrimination and retribution. Moreover, such atmospheres are not conducive to the formulation and implementation of within-school improvement strategies.

Whereas measures of student learning outcomes are prime PIs of education systems and the services they provide and for which they are responsible, there are many others (including *inputs*, *processes* and *outputs* such as student values, engagement, social and behavioural outcomes of schooling,

together with teacher professionalism) that constitute useful bases for informed planning and decision-making, followed by implementation and reform (see below). If decisions for improvement are to be **informed** rather than based on mere whim or ideology, then useful, dependable and timely information on indicators is required. Such bases constitute key purposes of specifying, gathering and using educational PIs for change and reform. In particular, PI information of these kinds allows systems and their constituent organisational elements at the school, teacher, parent and student levels to: (a) formulate strategic policy priorities and their related targets, (b) specify achievable objectives, (c) implement them, and (d) evaluate the extent to which those target objectives have been attained. Thus, PI data provide evidential bases for determining the extent to which specified goals and targets are being achieved, and serve various purposes, the most notable of which are for **monitoring, policy formulation, target-setting, evaluating and reforming**.

In contrast to calls for *research-driven* or *data-driven* approaches to PI feedback directed at educational improvement and reform (e.g., Hill, 1998; Rowley, 2005), the present paper advocates the utility of systems, schools, teachers,

parents and students being **data-informed** via PI feedback (see, e.g., Craig, 2005; Hattie, 2005; Richardson, 2005). To this end, the paper focuses on evidence for the kinds of feedback data that support learning at all stakeholder levels – illustrated with data drawn from several research and evaluation studies.

Feedback data of learning and achievement outcomes

Consistent with Manno's (1994) assertion cited above, the dominant local and international approach to educational PI data and its feedback continues to be on *assessment (or testing) of learning* – principally of students' achievement outcomes in literacy and numeracy. Such is the case despite longstanding calls emphasising the role of: (a) *assessment as learning* (e.g., Goldstein & Lewis, 1996; Nuttal, 1987), and (b) *assessment for learning* (e.g., Broadfoot, 1996; Hattie, 2004, 2005; Holmes-Smith, 2005; Rowe, 2003a; Rowe & Hill, 1996; Tognolini, 2005).

To illustrate key features of the utility of *assessment as, of and for learning*, Figure 1 summarises student PI achievement data in literacy, drawn from ACER's *Longitudinal Literacy and Numeracy Study (LLANS)*.⁷ Based on the notion of *developmental assessment*,⁸ and using

⁵For relevant comment, see Goldstein (1997a,b,c, 2001); Goldstein & Spiegelhalter (1996); Myers & Goldstein (1996); Rowe (2000); Saunders (1999); Visscher et al. (2000); Willms (2000).

⁶The publication of UK-type 'league tables' of school-level public examination results in Australian states, is a relatively recent phenomenon. In Victoria, for example, such crude information was first published in major daily newspapers in December 1996. While some modifications have since been made to their presentation (see Ball, 1998; Ball & Brown, 1998), in the view of the present author, the information remains misleading and hence, irresponsible (see Goldstein & Thomas, 1996; Rowe, 1996; 2000, 2001; Rowe, Turner & Lane, 2002; Rowe & Stephanou, 2004, 2005).

⁷For detailed descriptions and uses of the LLANS assessment instruments and the reporting of students' learning and achievement progress, see: Loudon, Rohl, et al. (2005); Masters, Meiers & Rowe (2003); Meiers (1999, 2000); Meiers And & Anderson (2001); Meiers & Forster (1999); Meiers & Rowe (2002); Meiers & Stephanou (2000). Further information related to the item content of the LLANS assessment instruments may be obtained by contacting Marion Meiers (Senior Research Fellow at ACER); email: meiers@acer.edu.au.

⁸See: Forster, Mendelovits & Masters (1994); Masters (2004); Masters & Forster (1996a,b, 1997a,b).

modern measurement theory (or more particularly, *Rasch measurement*),⁹ the literacy progress of children in the LLANS study on five occasions is shown as a 'map' on the right of Figure 1.¹⁰ Growth in literacy is described on the left of the 'map', from early skills at the bottom to more advanced competencies at the top. This 'map' of typical progress across the early years of schooling indicates that: (a) on average, children's literacy skills developed most rapidly during their first year of school but developed little between November of that year and Term 1 of the following year (a period that included the summer holidays), and (b) *Angelico Jefferson* made less-than-expected progress during the second and third years of school.

Such 'maps' provide a useful framework for measuring, describing and monitoring growth over time at the individual and group levels. They make it explicit what is meant by *growth* (or *progress*) and introduce the possibility of plotting and studying the growth trajectories for both individuals and groups of learners. Moreover, the summary descriptions are valuable in that they provide a 'window' that 'opens-up' to more detailed information about what students have actually achieved (as documented in portfolio records, class/school-based assessments, and so on), as well as providing useful pointers to what has yet to be learnt and achieved. Similarly, this information is valuable for reporting learning and achievement progress to relevant stake-holders, namely: students, parents, teachers, schools and system authorities.

Above all, the administration of the developmental and diagnostic LLANS

assessment instruments provides opportunities for both students and teachers to not only to use the constituent items for the *assessment of learning*, but also for *assessment as and for learning*. In terms of *assessment as learning*, feedback from teachers using the LLANS instruments continues to be strongly positive to the extent that they as teachers, together with the students, 'learn a great deal'. Likewise, the diagnostic nature of the items provide teachers and parents with valuable information in terms of *assessment for learning* by highlighting strategic pedagogical interventions for individuals and groups at any given point throughout the achievement distribution and across time. Typical of the comments made by parents upon receipt of their child's achievement progress as illustrated in Figure 1 are:

This report of my child's progress at school is great! For the first time, I have descriptions of what my child has achieved, what is currently being achieved, and what has yet to be learnt and achieved. With the teacher's guidance, I now know how best to help my child at home. Before, I had no real idea of what was expected or how to help.

Teachers continue to make positive comments about the utility of these progress 'maps'. Typical of such comments include:

Using these maps, I can monitor the learning progress of each child in the class, as well as the whole class – against the norms for their age and grade levels. I can also identify what I need to do to help those children who are not progressing as well as they should.

Data feedback on students' behavioural orientations and attitudinal experiences of schooling

Whereas criterion performance indicators of *educational effectiveness* have typically focused on assessments of students' cognitive achievements (via the administration of standardised assessment instruments and/or public examinations), scant attention has been paid to the monitoring of other highly valued outcomes of schooling that include students' behavioural orientations and attitudinal experiences. This is unfortunate for several reasons – not the least of which is that there is growing local and international interest in curricula provision and monitoring in the areas of students' *engagement with school, civics and citizenship* and the development of attitudes and values, to name just a few (see Fullarton, 2002; Galbally, 2004; Masters & Forster, 2000; Mellor, Kennedy & Greenwood, 2002; Pascoe, 2002). Such feedback data are useful for identifying those aspects of students' experiences of schooling that are positive, that need to be celebrated and enhanced, as well as those that may warrant attention and amelioration via intervention (see Rowe, 2003b, 2004c).

To illustrate key features of the utility of feedback data from monitoring indicators of students' behavioural and attitudinal experiences of schooling, Figure 2 summarises findings from several studies including the *One Hundred Schools Project – Literacy Programs Study* (Rowe, 1991, 1995; Rowe & Rowe, 1992a,b, 1999); the

⁹See: Embretson & Hershberger (1999); Masters (1982); Masters & Keeves (1999); Masters & Wright (1997); Rowe (2002b); Wilson (2005); Wright & Mok (2000).

¹⁰Note that the initial sample of 1000 children was drawn from a national, randomly selected sample of 100 government Catholic and Independent schools.

Longitudinal Literacy and Numeracy Study (LLANS)

LITERACY SCALE DESCRIPTION & NORMATIVE DISTRIBUTIONS

Angelico Jeffereson
Warra School of Excellence

Note: The indicators listed on this side of the scale have been derived from the tasks completed in the LLANS assessments. Only a selected sample of these indicators has been used to describe developing achievement in literacy.

Writes a variety of simple sentences; selects and controls content of own writing. Listens to a text and infers the reason for an event without picture clues. Uses full stops and capital letters to separate sentences. Identifies the purpose of parts of a text (eg. glossary, caption).

Recognises implied meaning in a short section of a simple written text. Reads with word-for-word accuracy, an unseen, illustrated reader with a narrative structure, varied sentences and a wide range of common vocabulary. Segments and blends to pronounce unfamiliar words correctly. Spells some common words with irregular patterns, eg. 'basket'. Controls content in writing, eg. selects specific details appropriate to the piece, or includes some explanations, opinions or reasons.

Explains a story complication and resolution in a picture story book. Links images and text to construct meaning from own reading or listening. Reads with word-for-word accuracy, an unseen, factual early reader with a repetitive structure, varied content and some support from illustrations. Spells high frequency words with a range of patterns. Writes a piece that shows some overall coherence, eg. a sequence of events or a detailed list.

From own reading or listening, identifies and explains key events, and follows steps in procedures of a picture story book and early readers. Reads common words with difficult spelling patterns, eg. 'because'. Spells some high frequency words with common patterns. Manipulates sounds in words, eg. swaps 'm' in 'smell' with 'p' to make 'spell'. Joins simple sentences using conjunctions.

Offers simple explanations for a character's behavior, and locates explicit details from own reading or listening to picture story books. Reads unseen early readers with moderate accuracy (ie. omissions or substitutions do not consistently maintain meaning of text). Writes simple sentences that are mostly readable using phonetically plausible spelling for most common words. Lists ideas with little elaboration.

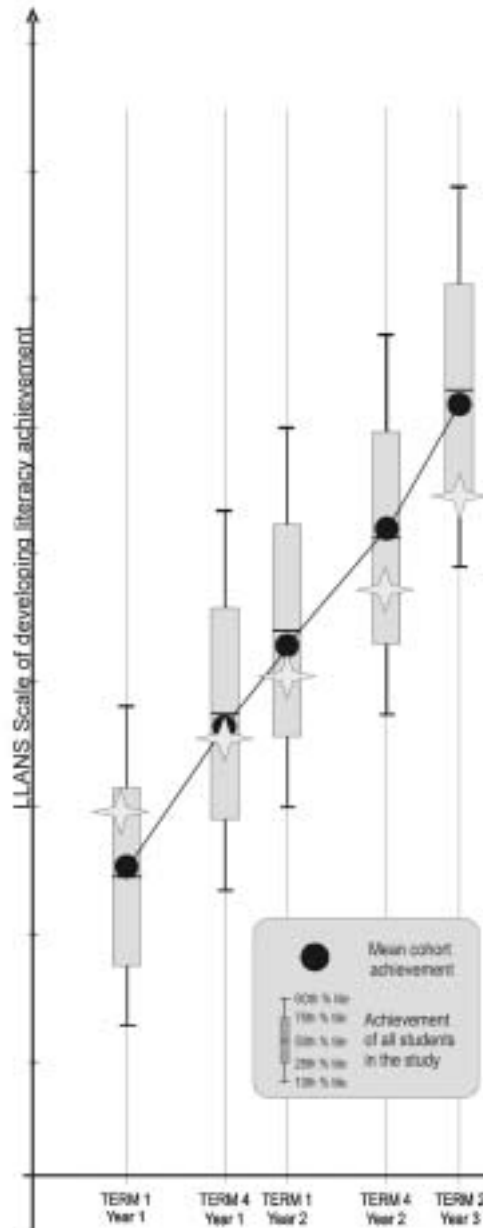
After listening to a picture story book, includes several key aspects in a retelling. Reads simple common words. Identifies all the sounds in simple words. Writes one main idea with mostly recognisable words.

Reads some very high frequency words. Recognises the same initial sounds in short words. Writes some recognisable words with spaces. Communicates some meaning in writing.

Describes an event or gives a limited retelling after listening to a picture story book. Reads a single word label by linking to the illustration. Names and sounds many letters. Writes own name correctly.

Describes the main idea in an illustration after listening to a picture story book. Identifies writing and distinguishes words and letters. Writes a string of letters or scribble.

Locates the front of a picture story book. Identifies a word.



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Figure 1 A growth map of achievement progress in literacy showing individual, group and norm-referenced growth against descriptions of domain-referenced criteria [Source: Adapted from Masters, Meiers and Rowe, 2003]

Outcome Statements and Management Information Systems (OSMIS) Project (Rowe, 1994); the Victorian Quality Schools Project (Hill et al., 1996; Hill & Rowe, 1998; Rowe & Hill, 1998; Rowe, Hill & Holmes-Smith, 1995; Rowe & Rowe, 1999); the Schools of the Future Co-operative Research Project (Caldwell et al., 1997); and the Early Literacy Research Project (Crévoila & Hill, 1997, 1998; Rowe & Rowe, 1999). Consistent with the student achievement progress data summarised in Figure 1, the behavioural and attitudinal data presented in Figure 2 are at the student level, 'mapped' onto the normative standardised scale score distributions. In this case, the normative data derive from a cohort of 34,433 Year K–11 students (age range 5 to 16 years). Scale definitions, reliability estimates and constituent item content are provided in Appendix A.

An interpretation of the profile illustrated in Figure 2 suggests that in terms of teacher-rated behaviours, *Jono Jefferson* is typically *inattentive* and *restless* at school. Jono's self-rated profile indicates lower than average *enjoyment of school*, perceived *curriculum usefulness* and *teacher responsiveness*. Consistent with Fullarton's (2002) analyses of related data from the *Longitudinal Surveys of Australian Youth* (LSAY) database, this student is at-risk of both *disengagement* with school and under-achievement.

Feedback profiles of these kind assist teachers and school leadership teams to: (a) identify those students (and groups of students) whose behavioural orientation and attitudinal experiences of schooling warrant attention, and (b) intervene with positive counselling and intervention strategies designed to

ameliorate the negative effects of poor experiences. Comment about the value of such feedback data from one teacher of Year 9 students illustrates many similar comments on the utility of these profiles:

The student behaviour and attitude profiles have been most helpful. Most students at this year level are experiencing major changes in their lives – both physically and socially. Using the profile as a prompt has given me the chance to speak with individual students who are struggling in a way that I had difficulty doing in the past. By asking the students to 'tell me about your profile', I have learnt a lot about them as individuals, how they are coping at school, and how I and other staff members can help.

Data feedback on teachers' perceptions of their work environments

Given that schooling generates a substantial quantity of paid employment for teachers, it is not surprising that there is growing interest in the importance of: (a) ensuring that dimensions of teacher wellbeing are both enhanced and maintained, and (b) building teacher capacity in terms of extending their repertoire of pedagogical strategies via professional development that meet the developmental and learning needs of their students. Similarly, there is considerable interest in knowing how *effective* the provision of such wellbeing support and PD is and how it might be improved. In a recent paper by Rowe, Purdie and Ellis (2005, pp. 4647) note:

So what matters most? Certainly NOT the 'pimple' of student 'compositional characteristics' such

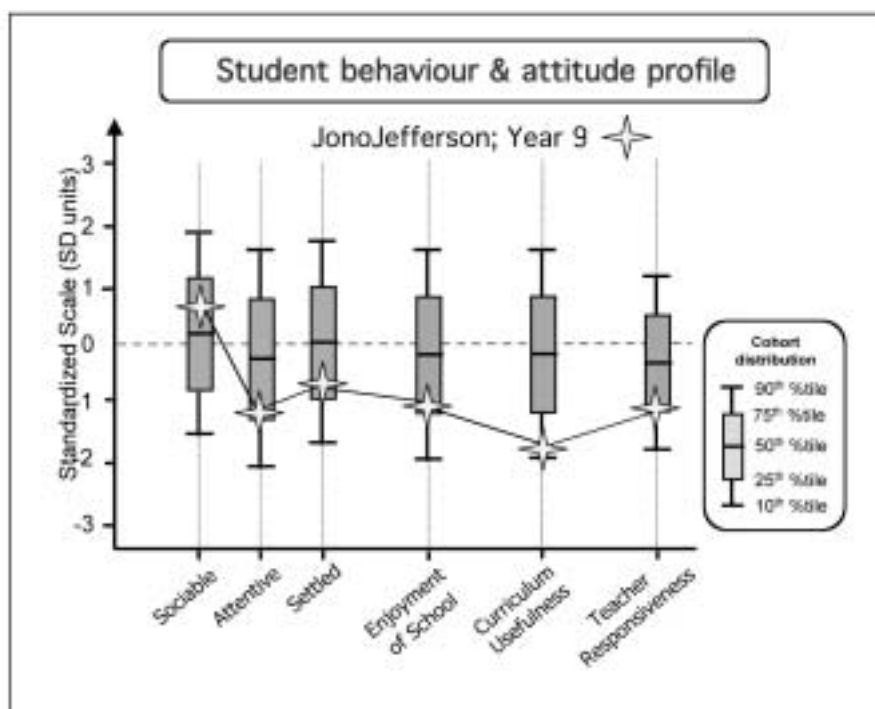


Figure 2 Individual student behaviour and attitude profile against normative cohort distributions for 6 scales
[Note: Horizontal dotted line indicates the cohort mean]

as learning difficulties, educational disadvantage, disruptive student behaviors, nor school structural arrangements of interest to 'school effectiveness' researchers, but the 'pumpkin' of **quality teaching** and learning provision, supported by *teaching standards* and ongoing teacher professional development focussed on evidence-based practices that are demonstrably effective in maximising students' learning outcomes and achievement progress. Since the **most valuable educational resource available to ANY school is its teachers**, the need for a refocus of the predominant 'educational effectiveness' policy and research agenda to one that focuses on **quality teaching** and **learning** provision is obvious (see OECD, 2001, 2005).

In focusing on 'quality teaching and learning provision', feedback data about teachers' perceptions of their work environments provide valuable information to school leaders as bases for improving the quality of teachers' individual and collective work-life contributions. The utility of such information has been amply demonstrated in several studies. For example, as part of a longitudinal study of teacher and school effectiveness, the data summarised in Figure 3 were obtained from 3242 teachers, drawn from a cluster-designed, stratified sample of 145 elementary schools and secondary colleges. For specific details of this larger study, see: Hill and Rowe (1996, 1998); Hill, Rowe, Holmes-Smith and Russell (1996a,b); Rowe (2003c); Rowe, Hill and Holmes-Smith (1994, 1995).

Teachers were asked (*inter alia*) to provide indications of *perceptions* of their *work environments* by responding

to a 57-item *School Organizational Health Questionnaire* (SOHQ) developed by Hart and colleagues (Hart et al., 1992, 1993, 2000). The items, each measured on 5-point, Likert-type, ordinal scales (i.e. *Strongly Disagree* to *Strongly Agree*), relate to 12 latent domains of interest to organisational administrators and psychologists. For the purposes of the present paper, only five of these domains are displayed, namely, *Morale*, *Leadership Support*, *Peer Support*, *Goal Congruence* and *Professional Development*. The definitions and item content for each of these five constructs are given in Appendix B. For details related to the measurement of these latent constructs as composite variables, as well as the simultaneous estimation of the magnitude of their interdependent effects, see Rowe (2003c).

An interpretation of the profile illustrated in Figure 3 suggests that with the exception of mean scores on the *Professional Development* scale, teachers' perceptions of their work environment at *Yarra School of Excellence* are mostly positive. That is, teachers indicate that they experience higher than average *Morale*, *Leadership Support*, *Peer Support* and *Goal Congruence*, but the lower than average scores on the *Professional Development* scale warrant attention by the school's administration.

As for the performance feedback data illustrated in Figures 1 and 2, the data summarised in Figure 3 constitute useful indicators that support learning about factors affecting teachers' wellbeing and work environments – in this case at the school-level. Again, one comment from a school principal illustrates the utility of such feedback:

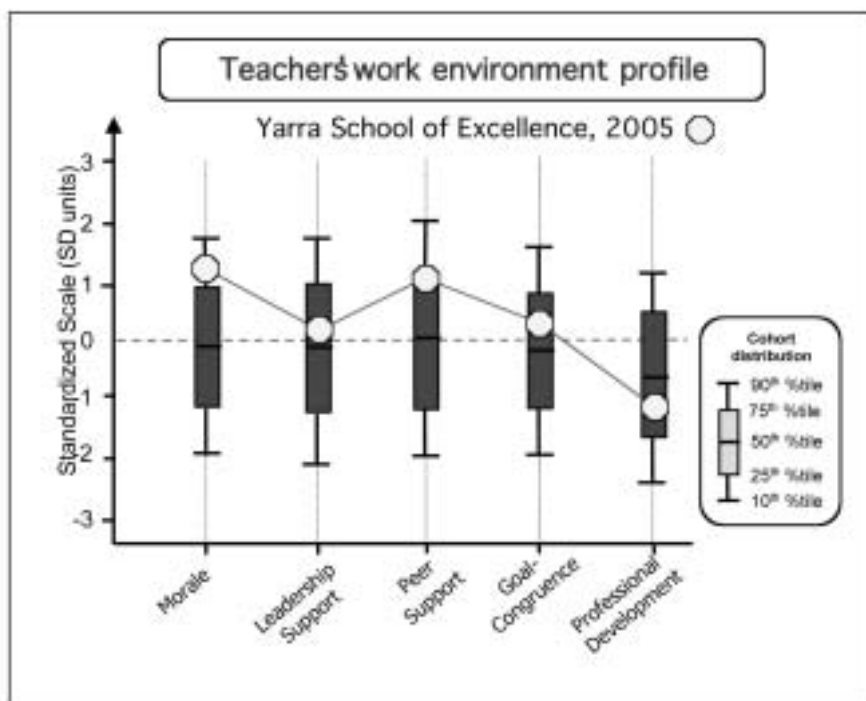


Figure 3 School mean profile of teachers' perceptions of their work environment against normative cohort distributions for 5 scales [Note: Horizontal dotted line indicates the cohort mean]

The school's *Work Environment Profile* has enabled me to get a useful 'picture' of those aspects that my leadership team have been trying to foster among the staff. To be able to identify the things we are doing well and those we are not doing so well is most helpful. The *Profile* has allowed me to have discussions about strategies for improvement with the staff. I only wish I had access to this tool when I was first appointed as principal in a previous school.

Concluding comments

A major lesson that has been learnt from the feedback of performance data of the kinds illustrated in this paper is that successful learning support depends very much on the extent to which schools are provided with an opportunity to claim 'ownership' and 'control' over their own data. Moreover, the data-gathering tools used here have been important products in achieving these outcomes. Given that a central aim of performance feedback is to generate, stimulate and maintain efforts towards the ongoing improvement of teaching, learning and management practices that link directly to the quality of educational outcomes for students, parents, teachers and school leaders, the provision of such products is vital.

Such improvements, however, are not likely to be brought about by academic polemic, nor by the 'top-down-driven' administrative fiat of bureaucracies, since the products of such enterprises (mercifully, in most cases) have an established record of rarely penetrating the classroom door. Rather, with access to, ownership of, and control over their own data and their supporting products, sustained improvement can be achieved by schools via leadership

support and teacher professional development practices that maximise the quality of teaching, learning and achievement. Under such circumstances, school leaders and teachers themselves become the empowered agents and purveyors of change, having consequent positive effects on the teaching quality of other staff. Ultimately, of course, the measures of success or otherwise of such efforts, like all endeavours to improve the quality of school education, will be judged in terms of their impact on the key areas of improved student learning and achievement, and the enhancement of teacher professionalism.

NOTE: A full list of references and Appendices for this paper are available at: <http://www.acer.edu.au/research/programs/learningprocess.html>

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APPENDIX A

Behaviour Scale Definitions, Reliabilities and Response Items (RBRI)

Teacher ratings of students' externalising behaviors are obtained on the semantic bi-polar *Rowe Behavioral Rating Inventory* (RBRI) 12-item research version in three domains: *Irritable/*

Antisocial–Sociable scale (5 items), *Inattentive–Attentive* scale (4 items), and *Restless–Settled* scale (3 items). The items (requiring ordinal responses in 5-categories) may be scored in either negative to positive or positive to negative directions. For specific details of the RBRI rating inventories, see Rowe and Rowe (1999, 22-23; 121-128). RBRI scale definitions, reliabilities and response items are given below. The weighted composite scores provided are computed for each of three scales derive from a normative cohort sample of 33,433 children and adolescents (age range 4–16 years).¹¹

Irritable/Antisocial – Sociable. This scale consists of items indicating the extent to which students typically display sociable, self-controlled and cooperative behaviors in the classroom. Thus, higher than average scores on this scale indicate good-adjustment, high conduct control and sociable behaviors. *Response Items and weight indices for the RBRI 12-item research version* ($r_c = 0.959$; $_{-} = 0.912$):

3. Irritable, 'touchy', 'cranky' – Even-tempered (.361)
5. Demanding and argumentative – Patient and compliant (.132)

6. Has difficulty controlling own behavior – Is able to control own behavior (.385)

11. Disputes, fights over sharing and taking turns – Cooperative; shares with others (.070)

12. Rough or aggressive with other children, usually unprovoked – Gentle; not aggressive with other children, even when provoked (.052).

Inattentive – Attentive. Higher than average scores on this scale are indicative of students who typically have little difficulty concentrating on tasks, are not easily frustrated and distracted, and display purposeful and non-impulsive behaviors. *Response Items and weight indices for the RBRI 12-item research version* ($r_c = 0.955$; $_{-} = 0.926$):

1. Cannot concentrate on any task; easily distracted – Can concentrate on any task; not easily distracted (.230)
2. Lacks perseverance; is impatient with difficult or challenging tasks – Perseveres in the face of difficult or challenging tasks (.203)
7. Easily frustrated; short attention span – Persistent, sustained attention span (.347)
10. Aimless; impulsive activity – Purposeful activity (.193).

Restless – Settled. The items on this scale provide indicators of motor activity. Higher than average scores are typical of those students whose general behavior is characterized by calm, and settled behaviors in multiple contexts. *Response items and weight indices for the RBRI 12-item research version* ($r_c = 0.950$; $_{-} = 0.878$):

4. Easily excited; gets 'high' – Not easily excited; placid (0.100)
8. Restless, fidgety; can't sit still – Relaxed; can sit still (0.208)
9. On the go; lively; always moving – Settled, calm (0.692).

Attitude Scale Definitions, Reliabilities and Response Items

Measures of students' attitudes towards school and their perceptions of 'school life' experiences are obtained from self-report response forms. Using multiple items (each indicated in 4-point ordinal response categories), weighted composite scores are computed for each of three scales:¹² *Enjoyment of school* (ENJOY), *Teacher Responsiveness* (TRESP) and *perceived curriculum Usefulness* (USEFUL) – for Primary school students defined as follows:

Enjoyment (ENJOY). High scores on this scale are indicative of students who enjoy being at school and express enjoyment of their school-based learning experiences. ***Scale reliability indices, response items and proportionally weighted item factor score regression coefficients*** ($r_c = .874$):

1. I enjoy the work I do at school (.266)
2. Learning is fun at my school (.358)
3. I get excited about the work we do at school (.168)
4. I enjoy being at my school (.208).

Perceived Curriculum Usefulness (USEFUL). Items in this scale indicate the extent to which students perceive that what they learn at school is of current use to them and will be useful to them

¹¹Note that estimates of 'true' scale reliability for a composite (r_c) are provided, together with lower-bound *Cronbach's alpha* (α) estimates.

¹²Note that estimates of 'true' scale reliability (r_c) are provided.

later when they go to secondary school and when they leave school. *Scale reliability indices, response items and proportionally weighted item factor score regression coefficients* ($r_c = .861$):

1. At school I learn things that will be useful to me when I leave school (.153)
2. What I learn at school will help me get a job when I leave school (.205)
3. What I learn at school is useful to me (.249)
4. What I learn at school will be useful to me in the future (.393).

Teacher Responsiveness (TRESP). Items in this scale are designed to indicate the extent to which students perceive that their teacher is caring, helpful and responsive to their learning needs. *Scale reliability indices, response items and proportionally weighted item factor score regression coefficients* ($r_c = .819$):

1. My teacher helps me to learn (.238)
2. My teacher makes the work we do in class interesting (.183)
3. My teacher explains things clearly to me (.293)
4. My teacher is friendly and cares about me (.286).

APPENDIX B

Definitions and response items for work environment scales¹³

Morale. High levels of teacher morale occur in schools where teachers report a high degree of energy, enthusiasm, team spirit and pride in their own and others' enterprise. *Normative scale statistics and reliability* ($M = 3.36$; $SD = 0.84$; $r_c = 0.902$); *Response Items*:

25. There is a good team spirit in this school
32. There is a lot of energy in this school
40. The morale in this school is high
48. Teachers go about their work with enthusiasm
54. Teachers take pride in this school.

Leadership Support. High scores on this scale are reported by teachers in schools where there is reliable, consistent and supportive leadership, that is approachable and aware of the problems faced by teachers. *Normative scale statistics and reliability* ($M = 3.49$; $SD = 0.94$; $r_c = 0.930$); *Response items*:

2. I am able to approach the leadership in this school to discuss concerns or grievances
12. The school's leadership team know the problems faced by teachers
27. There is support from the leadership in this school
35. There is good communication between teachers and the leadership in this school
41. The leadership in this school can be relied upon when things get tough.

Peer Support. Peer support and its corollary of professional interaction involves acceptance and support from fellow teachers, and the opportunity to work with one another collaboratively. High scores on this scale reflect greater levels of professional interaction and collaborative support among teachers. *Normative scale statistics and reliability* ($M = 3.62$; $SD = 0.76$; $r_c = 0.900$); *Response items*:

13. There is good communication between groups in this school
20. Teachers in this school can rely on their colleagues for support and assistance when needed
34. Teachers frequently discuss and share teaching methods and strategies with each other
49. I have the opportunity to be involved in cooperative work with other members of staff
50. I receive support from my colleagues.

Goal Congruence. High scores on this scale are reported by teachers in schools where there is a clearly stated set of goals and objectives that are easily understood and shared by all teachers. It is the extent to which teachers perceive that they share and are able to achieve common goals and objectives. *Normative scale statistics and reliability* ($M = 3.58$; $SD = 0.73$; $r_c = 0.871$); *Response items*:

16. The staff are committed to the school's goals and values
24. The goals of this school are easily understood
38. The school has a clearly stated set of objectives and goals
47. My personal goals are in agreement with the goals of this school.

¹³Adapted and updated from the *School Organisational Health Questionnaire* originally developed by Hart et al. (1992, 1993, 2000). Note that item numbers refer to those as printed in the questionnaire.

53. There is agreement in the teaching philosophy of this school.

Professional Development. Professional growth can occur when teachers are provided with in-service and professional development opportunities that match their needs and interests. High scores on this scale are associated with schools that enable and encourage teachers to pursue professional development in areas that meet their needs and interests, and that facilitate their access to in-service training activities and programs. *Normative scale statistics and reliability* (M = 3.22; SD = 0.84; $r_c = 0.890$); *Response items*:

- 1. I am encouraged to pursue further professional development
- 8. Others in the school take an active interest in my career development and professional growth
- 11. The professional development planning in the school takes into account my individual needs and interests
- 18. There are opportunities in this school for developing new skills
- 26. It is not difficult to gain access to in-service courses.