QUALITY SCHOOLING:
THE CONTRIBUTION OF ALTERNATIVE INDICATORS TO REDEFINING SCHOOL
PERFORMANCE

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Quality Schooling: The contribution of alternative indicators to redefining school performance

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McGaw et al (1992) present overwhelming evidence that Australians want schools that take responsibility for shaping individuals who will become future members of our society. Desired key outcomes of schooling
reported in the study were the development of a positive relationship with learning, positive self-concept and a sense of self-discipline, self-worth and the development of life skills to become a productive and confident adult. The implications for schools of this message must not be overlooked. What used to be emphasised as the major if not the sole prerogative of parents and family is now acknowledged as a shared responsibility with schools.

Recently reported findings of one of the most comprehensive surveys of the Australian school community on schools and schooling are unequivocal.

The strong message is that Australians want schools that stimulate intellectual development by setting high, but realistic, expectations for their students. They also want schools that develop students' personal and social skills. Above all, they want schools in which students learn to think well of themselves, to develop a sense of personal value and a confidence in themselves to take with them to adult life (McGaw, Piper, Banks & Evans, 1992 p. 1).

Schools' mission statements and objectives also indicate that principals and teachers recognise that good schools are about more than maximising academic achievement. Espoused theories of quality schooling underlie school plans that are difficult to translate into action because of the political pressure on schools to achieve economies of scale and perform "effectively" in terms of quantifiable and readily measured outcomes. A current theory-in-use (Argyris & Schon, 1974) of quality schooling is one that reflects a bureaucratic perspective. Good schools are envisaged as large schools, efficiently organised, serving students from diverse backgrounds, offering specialised services and varied courses, individualised but without a common experience of the school as a community with shared goals and values (Lee, Bryk & Smith, 1993). Such a perspective of schools results in focusing on what is to be learnt rather than on developing the learner.

This conception of schools has dominated effective schools research which has relied on achievement test scores as a convenient measure of a school's performance. The reliance on student test performance as the criterion by which a school's success is measured is a major criticism of effective schools research (McGaw et al, 1992). It is unlikely that the use of such narrow criteria for judging effectiveness is intended to deny that schools are complex learning organisations. Nevertheless, acceptance of students' test scores as school performance measures assumes tacitly that they are associated with the desired student outcomes reflected in the rhetoric of quality schooling.

Recent Australian studies (Ainley, 1995; Silins & Murray-Harvey, 1995) provide evidence that there are alternative indicators of quality
schooling that may contribute to redefining school performance by taking into account students' attitudes towards school, their approaches to learning, their academic self-concepts, and teachers' perceptions of school leadership and organisation.

Attitude to School

There is evidence to suggest that students' feelings about their experience of the school environment contribute to shaping their educational plans (Ainley, Foreman, & Sheret, 1991) and are presumed to influence their learning (Ainley, 1995). Therefore, students' sense of achievement and attitudes toward the quality of school life are likely indicators of school performance.

Approaches to Learning

Ramsden, Martin and Bowden (1987) found strong support for a link between approaches to learning and students' perceptions of the Year 12 environment. This implies a relationship between approaches to learning and school performance. Students' approaches to learning and studying have been linked both to the quality of their learning and to their academic achievement (Newble, Entwistle, Hejka, Jolly, & Whelan, 1988). An approach to learning can be viewed as a composite of motive and strategy where the students' motives drive the strategies employed. For example, students motivated merely to pass and satisfied to meet minimum standards are likely to target their learning to the bare essentials, reproducing information through rote learning on the whole.

Such surface motives and strategies result in a 'surface' approach to learning (Biggs, 1987).

Students who are intrinsically motivated in what is being learned search for meaning by reading widely and relating new material to previous knowledge to develop competence in their subjects. Such deep motives and strategies represent a 'deep' approach to learning. Students who are motivated to achieve high grades and seek ego enhancement are likely to organise their time, energy and resources efficiently; that is, to behave as 'model' students. Such students exhibit an 'achieving' approach to learning. As deep and achieving approaches are related to higher quality learning outcomes then these are the orientations to learning that schools should be striving to foster in their students.

Self-Concept

According to Marsh (1990) self-concept is multi-dimensional. With regard to Marsh's findings, studies seeking to investigate relationships between academic performance and self-concept need to consider students' self-concepts as they relate specifically to the
academic context. The evidence is that when specific facets of self-concept, such as Math self-concept and Verbal self-concept, are considered separately, achievement may be more meaningfully interpreted in the academic areas which they reflect.

There is considerable accumulated evidence to support a strong interrelationship between academic self-concept (not general self-concept) and academic achievement with other academic behaviours (Marsh, 1990). The relationship between academic self-concept and academic achievement grows stronger with age. Marsh (1990) found that reported grade averages in Year 11 and 12 were significantly influenced by academic self-concept measured in the previous year, whereas prior reported grades had no effect on subsequent measures of academic self-concept.

School Leadership

Teachers' perceptions of the school as an organisation and how it is managed, as well as satisfaction with school leadership, influences teachers' commitment to teaching and student learning (Ainley, Reed & Miller, 1986). Ramsden, Martin and Bowden (1987) found a wide variation between secondary schools in the quality of learning evoked. They suggested that key factors of school effectiveness such as purposeful leadership and teacher involvement in curriculum planning are likely to distinguish schools that appear to offer more favourable contexts for learning.

While the secondary classroom is content driven it is more likely to concentrate on helping students achieve good grades than with personal and social development. Can it be assumed that if good grades are achieved then the developmental needs of the students as a whole have been addressed? Since student grades are so commonly accepted as an indication of students' success at school and the school's success with the students, and because assessing subject content is more familiar and more readily measured than students' development, schools still gain their reputation of effectiveness through high achievement test scores. Are schools identified as successful by traditional indicators of achievement also successful in terms of indicators of quality schooling? Is there a relationship between indicators of quality schooling identified by the Australian school community and achievement measures?

Method

As a beginning step in addressing these questions, this paper explores the nature of the relationship between outcome measures of senior secondary school performance and non-traditional indicators chosen to reflect more closely the values underlying quality schooling. If school
effectiveness is to be studied in relation to the all-round development of students then, as Mortimore (1992) argues, a broader range of outcome measures needs to be considered. The indicators providing data for this study are students' self-concept, students' attitudes to school life, students' approaches to learning, teachers' perception of school leadership, school effects representing process and organisational aspects of schools and school achievement.

The unit of interest in this study is necessarily the school and meaningful data about each school under investigation could be best obtained from the students and the teachers in that school. This required the aggregation of data from the students and teachers to the school level in analysis rather than examination and interpretation at the student and teacher levels.

The ten participating schools in this study were drawn from a range of non-government schools in Adelaide, South Australia. An index reflecting the achievements of the Year 12 students was calculated for each school by taking the ratio of the number of university offers made to the total number of Year 12 students. This was used as a performance indicator to represent each school's achievement outcome for that year.

About 90 Year 11 students from each school (mean age 16 years) completed three questionnaires administered in the penultimate term of the school year. Students provided data on their self-concept, attitudes to school and their approach to learning. Approximately 20 teachers from each school provided data on school organisation and leadership and perceptions of school outcomes related to their own performance, student performance, school culture, and the curriculum.

Instruments

School and You Student Questionnaire (Ainley, 1990)
The School and You Questionnaire assesses students' attitudes to school life based on a model developed by Williams and Batten (1981) of the quality of life within schools from the perspective of students. Although, Ainley and Sheret (1992) found no association between school life scores and static measures of student achievement in secondary schools, Ainley (1995) found student attitudes to school and students' achievement growth were positively linked in the final years of secondary school. Relative achievement growth was calculated using students' Tertiary Entrance Scores in combination with school achievement in the middle secondary years.

This 40 item attitude questionnaire provides information on seven domains of schooling (achievement, opportunity, status, social integration, teachers, negative affect and general satisfaction) to gauge students' attitudes to school for interpretation at three levels - individual items, sub scale scores, and overall attitudes. Students respond about their views of school indicating their agreement on a
self-report 4-point Likert scale ranging from strongly agree (value 1) to strongly disagree (value 4).

The Learning Process Questionnaire (Biggs, 1987) assesses 'deep', 'surface' and 'achieving' approaches to learning using a 36 item self-report questionnaire. This instrument consists of six subscale scores: Surface Motive and Surface Strategy, Deep Motive and Deep Strategy, and Achieving Motive and Achieving Strategy; three scale scores: Surface Approach, Deep Approach, and Achieving Approach; and one composite Deep-Achieving Approach score. Student responses indicate on a 5-point Likert scale whether the statement is "never or only true of me" (value of 1) ranging to "always or almost always true of me" (value of 5).

Self Description Questionnaire-III (Marsh & O'Neill, 1984) contains 136 items measuring multiple dimensions of adolescent self-concept including specific intellectual, personal and social factors as well as a general self-concept factor (13 separate areas). The SDQIII assesses students' self-concept across multiple dimensions. Students respond to declarative sentences with one of eight responses: 1= Definitely False, 2= False, 3= Mostly False, 4= More False than True, 5= More True than False, 6= Mostly True, 7= True, 8= Definitely True.

Leadership in Schools Questionnaire (Silins, 1994) has 106 items consisting of 62 items (Part A) related to eight aspects of leadership, and 44 items (Part B) tapping teachers' perceptions related to school effects associated with student outcomes, curriculum outcomes, teacher outcomes and school culture. A Likert scale with four response categories was employed with response options ranging from strongly disagree (value 1) to strongly agree (value 4).

Analysis

The data collected in this study were obtained independently from the students and the teachers in the ten schools under survey. As a consequence, it was necessary to aggregate the data from both the students and the teachers to the school level for analysis. The fact that there were only ten schools in the sample demanded that the observed (manifest) variables had to be combined to form latent variables to reduce the number of variables used in the relationships under investigation. An analytical technique that permits the examination of such data is Latent Variable Path Analysis.

Latent Variable Path Analysis with Partial Least Squares (PLSPATH Version 3.01; Sellin, 1989) allows the testing of models in which variables have been selected on the basis of theory and logical argument in order to test causal relationships between them.
The main aims of developing the path model are: (1) to test the construction of the latent variables from the observed or manifest variables, (2) to examine causal relationships between the constructs of the model, and (3) to estimate the magnitudes of the hypothesised relationships.

PLSPATH is based on the use of partial least squares estimation procedures. 'Partial' refers to the PLSPATH procedure of initially calculating an estimate for each latent variable from the corresponding manifest variables by partitioning the hypothesised inner model into its component constructs. Once the program has estimated these values for each latent variable, the paths between the latent variables are computed by calculating least squares estimates for all variables (manifest and latent) in the model. All relationships involving manifest variables (MVs) and latent variables (LVs) are presented in the form of a path model and are displayed graphically in a way that represents all relationships identified in a given setting.

The jackknife standard errors of the estimated path coefficients can be used to assess the magnitude of effect of a particular variable. In refining the inner model a path coefficient had to exceed twice its standard error as estimated by the jackknife procedure.

In refining the paths between the latent variables and the manifest variables, the estimated loadings in the model were retained when they exceeded twice their standard errors as estimated by the jackknife procedures.

Model Evaluation

The evaluation of a model in PLSPATH analysis is basically in terms of the proportion of variance explained (R²). PLSPATH also provides the Q² statistic which is useful as a test criterion since it is related to the stability of the model and to sample variability. It is derived as the jackknife analogue of R². A tested model has more predictive relevance the higher Q² is, and modifications to a model may be evaluated by comparing Q² values.

Results and Discussion

Attitudes to School

The path model in Figure 1 is a graphic representation of the results presented in Table 1. All figures and tables show only the values that have reached the criteria for inclusion in the final models. The jackknife standard errors presented in the tables are shown in the figures in parenthesis. Figure 1 and Table 1 indicate that students' attitudes to school directly and positively [0.71 (22)] influence
school performance measured by achievement. In this model, Attitude to School is reflected by six of the seven manifest variables measured. The variable Negative Affect was excluded since the estimate of loading did not exceed twice the standard error of that estimate. Defined in this way, Attitude to School explains 51 per cent of the variance in School Achievement.

Figure 1. Path analytic model: Effects of students' attitudes to school on school achievement.

Table 1
Outer and Inner Model Effects of Attitude to School on Achievement With Jackknife Standard Errors

Figure 2. Path analytic model: Influences on school achievement of students' attitudes to school and school effects.

Table 2.
Total Inner Model Effects of Attitude to School and School Effects on Achievement With Jackknife Standard Errors in Parentheses

Figure 2 and Table 2 present the path effects [0.72 (11)] and [0.79 (13)] to show the direct influence of students' attitudes to school on school effects and the influence of attitudes on students' school achievement mediated through school effects (0.56). Student attitudes to school indirectly influence school achievement when School Effects is defined not to include Teacher Outcomes. Over half the variation between schools in achievement is explained by attitudes to school in these data. An additional 11 per cent (R²=0.62) is explained through school effects.

These results offer further support for addressing a range of aspects of students' school life as a way of promoting quality schooling as well as performance. These aspects include general student satisfaction, positive interaction between teachers and students, degree of prestige accorded to an individual by significant others, sense of getting along with others, a belief in the relevance of schooling and a sense of confidence in one's ability to be successful in school work.

Approaches to Learning
In Figure 3 and Table 3, results indicate that Deep Motive and Deep Strategy did not contribute to defining the construct Approach to Learning in this model. When Approach to Learning is defined by Surface and Achieving Motives and Strategies it negatively influences School Achievement [-0.80 (11)] explaining nearly two-thirds of the variance in achievement between schools. These results suggest that the use of deep approaches to learning by students is not a significant factor in explaining school variations in achievement even though the use of surface approaches do influence school achievement negatively.

Figure 3. Path analytic model: Effects of approach to learning on school achievement.

Table 3
Outer and Inner Model Effects of Approach to Learning on Achievement With Jackknife Standard Errors

Figure 4. Path analytic model: Influences on school achievement of approaches to learning and school effects.

Table 4.
Total Inner Model Effects of Approach to Learning and School Effects on Achievement With Jackknife Standard Errors in Parentheses

Figure 4 and Table 4 show the direct negative influence of a Surface Approach to Learning on School Effects [-0.88 (10)]. The indirect influence of Approach to Learning (surface) on Achievement mediated through School Effects (-0.68) explains 60 per cent of the variance in achievement.

This study did not find support for a link between deep approaches to learning and aspects of school life or school performance. In line with other studies (Biggs, 1987), it is not surprising that deep approaches to learning appear not to be aligned with academic success. The results suggest that school academic success does not necessarily represent the quality of learning outcomes (eg. students' use of desired learning approaches such as deep and deep achieving approaches). The quality of
students' learning may not be generally considered a valuable outcome in itself (Ramsden, et al, 1987) and perhaps for most schools it remains an intervening variable between teaching methods that focus on acquisition of content and the achievement of grades.

Self-Concept

In Figure 5 and Table 5, the results indicate that when self-concept is defined as academic self-concept, including self-esteem, it influences School Achievement directly \[0.52 (30)\]. The high standard errors associated with the partial least squares estimates indicate the need to exercise caution in interpreting the relationships. The inherent instability of this relationship is indicated by the negative value of \(Q^2 = -0.08\).

Figure 6 and Table 6 present a model showing increased stability \(Q^2 = 0.55\) when the influence of Self-Concept on School Achievement is mediated through School Effects \(0.44\). Academic Self-Concept explains 68 per cent of the variance in achievement.

Leadership

Data were collected on teachers' perceptions of leadership and school organisational factors to see which leadership and organisational factors contributed to providing more favourable contexts for learning. With reference to Figure 7 and Table 7, the results indicate that with the present data, leadership defined as Management-by-exception (the more passive disinterested leader) negatively and directly influenced school achievement \[-0.63 (22)\] and explains 40 per cent of the variance in achievement. This indicates little more than the need for
the leadership of the school to be perceived as active and engaged in the management and organisation of the school.

Figure 8 and Table 8 show the direct negative influence of Leadership defined as Management-by-exception on School Effects \([-0.73 (17)]\) and an indirect negative influence on Achievement \((-0.56)\). Management-by-exception explains a further 17 per cent of variance \(R^2 = 0.57\) in achievement when its negative influence is mediated through School Effects. School Effects do not include Teacher Outcomes.

Secondary school research (Ainley, Reed and Mill, 1986) continues to report teacher dis-satisfaction with bureaucratic structures and need for involvement in collaborative planning. Preliminary correlational data from this study tend to support this view by a substantial negative correlation \((-0.84)\) between the Technical/Bureaucratic orientated leadership and Teacher Outcomes and a strong positive correlation \((0.80)\) between Collaboration and Teacher Outcomes.

There has been some evidence to suggest, however, that the kind of leadership and school organisation that promotes teacher satisfaction is not necessarily that which is associated with strong academic achievement (Silins, 1992). Figure 9 indicates that these data appear to lend further support for such findings. The strong influence of School Effects on School Achievement \([0.81 (12)]\) requires School Effects not to include Teacher Outcomes. So defined, School Effects
explains 65 per cent of the variance in School Achievement.

Figure 9 Path analytic model: Influence of school effects on school achievement.

Table 9.
Outer and Inner Model Effects of School Effects on School Achievement
With Jackknife Standard Errors

Reynolds and Packer (1992) argue that the existing leadership and school organisation paradigms will be inadequate to bring about the range of outcomes required from schools in the next decade.

If the future society needs 'active' individuals who have acquired learning-to-learn skills, an ability to work co-operatively and a more active, learner-directed mode of operation, then very new instructional methods will be required, which turn passive learning into active learning, which entail putting more responsibility upon the student and which entail putting the teacher consciously in the role of helping students to learn how to learn. These may be not the sort of skills which would be likely to emanate from the classic models of the effective school, especially in the American formulation, with its ordered climate, assertive head teacher leadership, concentration upon basic skill acquisition, collegial/consensual mentality and concern with conventional academic outcomes (Reynolds & Packer, 1992, p. 176-177).

Clearly, the changing nature of leadership and management tasks required of principals and teachers is being shaped by the changing conception of what it means for schools to be effective.

Conclusion

This preliminary study set out to examine a range of indicators related to the Australian school community's view of quality schooling for the nature of their relationship with achievement measures of school performance. Two school outcome measures were used (School Effects and School Achievement) against which the influence of four indicators of quality schooling were tested: students' attitudes to school life; approaches to learning; academic self-concept; and teachers' perceptions of leadership. Some support was found for the direct influence of students' attitudes to school life and students' academic self-concept on school achievement as well as indirect effects through
school organisational structures and processes represented by School Effects.

Recent Australian studies (Ainley & Sheret, 1992; Ainley, 1995) have indicated an inter-relationship between students' engagement in learning, attitudes to school life, students' academic self-concept and academic achievement. However, these studies focus on the individual student as the unit of analysis and concentrate on investigating the impact of the school environment on the individual.

This study has taken a beginning step towards identifying measures of school effectiveness that can better reflect what is meant by quality schooling. By addressing concepts of quality schooling and school achievement, this study has focused on the school as the unit of analysis and has explored the nature of the relationships between students perceptions and school achievement and teachers perceptions and school achievement. Interpretation of these relationships have been tentative due to the small number of schools employed in the sample. Nevertheless, this preliminary study has demonstrated that alternative indicators to achievement measures can be identified to differentiate between school performance.

Data collected from a larger sample would allow the testing of a more complex model including all the variables used in this study in order to examine the nature and intensity of their relative influence on each other and on teachers' perceptions of school organisational and process variables and academic achievement. The examination and testing of such models of school effectiveness would throw light on research questions identified by Reynolds and Packer (1992) as important to address in the 1990s "the study of how school process factors have their effects, which process factors may lead to the determination of other process factors and the study of the interaction between factors" (p. 175).

It has been argued that the schools' responsibility in developing students as members of our society involves defining quality schooling beyond the criteria that have recently been used to measure school effectiveness. This paper has highlighted a mismatch between what the Australian school community believes the central purpose of schools should be and the measure that is used to indicate schools' effectiveness. The measures that are used to assess schools as "good" should reflect what schools are to be. Unlike Mortimore et al (1988) who claim that the factors that make schools more or less effective vary with the particular outcome measure being considered, this study gives tentative support to a relationship between alternative and traditional outcome measures of school effectiveness. Furthermore, the results of this study contrast with the findings that report a lack of association between academic effectiveness and students' personal and social development (Reynolds & Packer, 1992). In fact, at the school
level, attitudes to school and academic self-concept are convincingly related to school achievement.

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