DOCUMENT RESUME

ED 372 101 TM 021 781

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TITLE Multiple Indicators of High School Effectiveness.
PUB DATE Apr 94
NOTE 18p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 4-8, 1994).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; Achievement Gains; Educational Policy; Educational Quality; Effective Schools Research; Foreign Countries; Grade 9; High Schools; High School Students; Learning Strategies; *Outcomes of Education; *School Effectiveness; School Holding Power; *Student Attitudes; Student Motivation
IDENTIFIERS *Indicators; Student Engagement

ABSTRACT

Studies of school effectiveness have sometimes been criticized for placing too great an emphasis on a limited range of achievement measures as indicators of school quality. This paper draws on a study of secondary schools in Australia to explore the extent to which achievement growtn, attitudes toward school, and school holding power are associated using a cohort of some 3,000 young people who were Grade 9 students in 1987 in a representative sample of 22 government secondary schools. Results for student attitudes toward school, approaches to learning, and achievement suggest that, although there is some scatter, there is a tendency for the three aspects of school effectiveness to be associated. In general there is some support for the proposition that high schools tend to be effective across a range of outcomes. Within that generalization the data also show that some schools do rather better on some outcomes than others. These differences in patterns of outcomes can be interpreted in terms of school programs and policies in ways that support theories relating to student engagement or withdrawal from school and learning. Three tables and three figures are included. (Contains 50 references.) (Author/SLD)

Paper Presented to the Annual Conference of the
American Educational Research Association, New Orleans, April 1994

MULTIPLE INDICATORS OF HIGH SCHOOL EFFECTIVENESS

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Abstract:

Studies of school effectiveness have been sometimes criticised for placing too great an emphasis on a limited range of achievement measures as indicators of school quality. This paper draws on a study of secondary schools in Australia to explore the extent to which achievement growth, attitudes to school, and school holding power are associated at school level. Through this study cohort of some 3,000 young people, who were Grade 9 students in 1987, in a representative sample of 22 government secondary schools through school and into the labour force or further study. Information was available at various points about students' attitudes to school, approaches to learning and achievement. Results from these data suggest that, although there is some scatter, there is a tendency for the three aspects of effectiveness to be associated. In general there is some support for the proposition that high schools tend to be effective across a range of outcomes. Within that generalisation the data also show that some schools do rather better on some outcomes than on others. Those differences in patterns of outcomes can be interpreted in terms of school programs and policies in ways which support theories that relate to student engagement to withdrawal from school and learning.

INTRODUCTION

Earliest studies of school effectiveness focussed attention on achievement test scores as indicators of school effectiveness. Given that learning is a central purpose of schooling it is not surprising that achievement was of major interest to these studies and that this has continued to be pre-eminent in school effectiveness research (Mortimore 1991). Many of those early studies sought to identify schools which were "unusually" effective in terms of achievement in reading and mathematics and then to probe, using case study methods (Levine 1992) or more systematic comparisons (Teddlie, Kirby & Stringfield 1989), the sources of effectiveness . As studies of school effectiveness have continued there have been a number of important developments in the way achievement is used as an indicator of effectiveness. One of the most important of these has been the use of achievement growth (the change in achievement over time) rather than a single achievement score as a criterion (Mortimore, Sammons, Stoll, Lewis & Ecob 1988; Teddlie, Stringfield, Wimpelberg 1990). In addition school effectiveness studies have made use of achievement in a wider range of school areas than just reading and mathematics. Methodological advances, including new statistical techniques, have enabled systematic investigation of school effects across the full range of schools (as well as among outliers) (Bryk & Raudenbusch 1992). An important consequence of these developments is that there is strong evidence of differences between schools in promoting achievement, knowledge about how much variation in achievement can be attributed to school factors and what school factors appear to be associated with high levels of achievement growth (Reynolds & Packer 1992; Scheerens 1993). A further development has been a closer examination of the differential effectiveness of classrooms within schools (Scheerens 1989; Rowe, Hill & Holmes-Smith 1994), differences in subject areas (Fitzgibbon 1992), and differential effects on different

groups of students (Sammons, Nuttall & Cuttance 1993). The fruits of these investigations of school effectiveness are now being incorporated in emergent theories of school effectiveness which relate achievement outcomes to structure and process within schools (Slater & Teddlie 1992; Lee Bryk & Smith 1993; Scheerens 1993).

In addition to developments in the way achievement is conceptualised and measured there has been a broadening of school effectiveness studies to encompass a wider range of manifestations of quality in schools. McGaw, Piper, Banks and Evans (1992) note the wide range of goals elaborated by school communities in Australia when they were asked to comment on factors which made schools effective. They conclude the following from the responses of more than seven thousand schools which responded to an open-ended questionnaire.

> *School effectiveness is about a great deal more than maximising academic achievement. Learning and the love of learning; personal development and self-esteem; life skills, problem solving and learning how to learn; the development of independent thinkers and well rounded confident individuals; all rank as highly or more highly as the outcomes of effective schooling as success in a narrow range of academic disciplines.* (McGaw et al 1992: 174).

These conclusions are similar to those expressed a decade earlier in the United States by Goodlad (1983). Goodlad reported that "satisfaction as a criterion of school quality recurred as a major theme in a comprehensive study of American schools. There is a number of examples of studies which have invoked indicators of effectiveness such as attendance (Carroll 1992), delinquency (Rutter *et al* 1978), student behaviour and attitudes (Galloway *et al* 1985; Mortimore *et al* 1988) and attitudes to subjects in school (Knuver & Brandsma 1993). Lee *et al* (1993) propose a model of secondary school effectiveness with two groups of student outcomes (achievement and engagement) as well as teacher outcomes (satisfaction and commitment). Mortimore (1992) argues that the adoption of a broad range of outcome measures is essential to studying the effectiveness of schools in relation to the all-round development of students.

Townsend (1993) argues that the criteria adopted as indicators of effectiveness reflect prevailing conceptions of the purposes of schooling. Australia has experienced a decade in which there was a dramatic increase in the percentage of young people who completed secondary school. From 1983 to 1993 the percentage of each cohort remaining to the final year of school increased from 35 per cent to 77 per cent. In this context high schools are expected to be effective in holding students at school as well as in promoting achievement. Within a general pattern of increased retention, there remain differences in retention rates among schools and among education systems. These variations provoke considerable interest as to why some schools hold more of their students to the senior secondary years than others. It is widely acknowledged that completion of secondary school is associated with various aspects of social background (Rumberger 1983; Coombs & Cooley 1986; Ainley & McKenzie 1991). In addition there is evidence from several countries that differences in school completion rates may also be a result of differences in school policy and practice (King, Warren & Coles 1980; Ainley, Batten & Miller 1984; Wehlage & Rutter 1986; Lawton & Leithwood 1988; Bryk & Thum 1989; Ainley & Sheret 1992; Fitzpatrick & Yoels 1992).

The present paper argues that exploring the relationships among a suite of outcomes holds the potential for enhancing our power to understand the way various factors contribute to effectiveness. It is important to understand whether different facets of effectiveness cohere (Gray 1991) or whether schools can be effective in some things but not others. There is conflicting evidence on this issue. Rutter *et al* (1979) report that cognitively effective schools are also effective for non-cognitive outcomes (behaviour) but Brookover *et al* (1979) found no relationship between self concept and achievement. In one study of British primary schools it was found that some schools were effective on

cognitive outcomes, others were effective on non-cognitive outcomes and few did well on both (Mortimore, Sammons, Stoll, Lewis & Ecob 1988). Knuver and Brandsma (1993) report small but positive correlations between school effects on cognitive and affective outcomes of primary schools in The Netherlands. The present paper examines the relationships among three indicators of the effectiveness of secondary schools: holding power, achievement growth and attitudes to school.

POTENTIAL LINKS

One indication that there may be cause to seek a common interpretation for differences between schools on these indicators comes from the literature on school holding power. In studies of school holding power there are conflicting views regarding which school factors best encourage students to remain at school. Some studies suggest that stronger holding power is fostered by factors similar to those which are linked to student achievement; strong academic emphasis, coherent program, limited choice of studies (Lawton & Leithwood 1988; Bryk & Thum 1989). Other studies suggest that the presence of innovative programs, which address the needs of potential dropouts, is associated with greater holding power (Ainley Batten & Miller 1984; Wehlage & Rutter 1986; Batten 1989). Finn (1989) argued that participation in curricula and co-curricula activities helped to build positive attitudes to and an identification with school which diminished the likelihood of a students dropping out. One could infer from this that there could be a variety of approaches to building identification with school each of which could thereby contribute to an enhanced holding power.

Deliberations about whether the factors which contribute to holding power are similar to or different from those which contribute to student learning are also present in the debate about whether schools can be simultaneously effective in promoting both achievement and holding power; a debate on the notion that "more means worse". Lee *et al* (1993) in their review of effective secondary schools focus on achievement outcomes for students as a criterion of effectiveness but link those outcomes to the idea of student engagement with the life of the school which they define as "participation, connection, attachment and integration into the school setting and its educative tasks". In this they propose a link between studies of school programs and organisation and an important construct to emerge from cognitive psychology (Newman 1989). Engagement has been an important theme in studies of student learning and achievement (M.Ainley 1993; Ramsden, Martin & Bowden 1989). At one level the idea of engagement implies students being able to choose studies which suit their interests, but it also involves a consideration of teaching methods, curriculum organisation and links across the curriculum. Lee *et al* (1993) suggest that effective secondary schools (in terms of achievement outcomes) are marked by a sense of community built around a shared purpose reflected in the academic organisation of the school.

From these literatures the idea of engagement (at the individual level) and sense of community (at the group level) emerge as important to both staying on at school and to achievement outcomes. On that basis it might be that there is more in common between students' propensity to remain at school and the promotion of learning than conventional wisdom would suggest.

DATA

Data were gathered from a representative sample of 22 non-selective government high schools in New South Wales. This sample provided the data for a comprehensive study of school influences on a range of aspects of students' progress through the later years of high school (Ainley & Sheret 1992). The study was longitudinal and focussed on a cohort of approximately 3,000 Year 9 students who were first contacted in 1987. Those students and their schools were followed each year through 1990. By that time students who had continued through school were in their final year: Year 12. Quantitative data

were gathered by means of questionnaire-based surveys of students, project administered tests, and school records. Questionnaires were used extensively during the study to obtain data from students, former students, parents and teachers. Students in the longitudinal cohort completed questionnaires about their school experiences, attitudes, educational plans, and related matters in each of the four years of the study. Although the detailed content varied a little between the versions used over the four years, there was a core of issues which recurred throughout and a common format. The content included questions about: student background, attitudes to school, educational plans involving school and other institutions, views of parents, teachers and friends about future education, reasons for plans and choices in school education, self ratings of achievements in various areas, information related to subjects studied; and approaches to learning. Students completed tests in mathematics and reading comprehension when they were in Year 9 and Year 12. In addition the project had confidential and defined access to student test data in Year 10 (English and mathematics) and Year 12 from official sources. Post-school destination information were gathered in 1991 from those young people who completed high school and in other years from those who did not complete Year 12.

ANALYSIS

Three main measures of school effectiveness derived from these data are used in this paper: holding power, achievement growth and attitudes to school.

Holding Power.

Holding power refers to the extent schools are able to prevent students from withdrawing from school before reaching Year 12, the final year. It refers to the underlying propensity of students at a school to remain to the postcompulsory years. It is distinguished from specific measures commonly used as indicators of holding power. It is measured in terms of "apparent progression rates", "internal progression rates", and "adjusted progression rates".

Apparent retention rates

Apparent retention rates are the most commonly used index for examining the holding power of schools. Those rates refer to the ratio of enrolment levels in one Year level to those in a corresponding Year level from an earlier time (eg. Year 12 in 1990 to Year 10 in 1988). However, being based on gross enrolment levels, those rates may be confounded by the transfers and influenced by the social environment of the school.

Internal Progression Rates.

Internal progression rates refer to the percentage of students from within a school who continue to Year 12 (or Year 11) in the same school. In the present study internal progression rates were calculated from class lists of student names supplied by schools: the number of students in Year 11 (for example) whose name also appeared in Year 10 for the previous year divided by the total in Year 10 for the previous year. Even though these do not include students who transfer from that school to another school, they provide a better estimate of school holding power than the apparent retention rates. There was a good correspondence between the internal progression rates calculated from our data and the apparent progression rates calculated from official data; the correlation coefficients being 0.84 and 0.90 from Year 10 to Years 11 and 12 respectively. Despite a general correspondence between apparent and internal progression rates there was evidence of the influence of transfers in particular schools where there was a large number of transfers from overseas or where there were specialist arts programs.

Adjusted Progression Rates.

Adjusted progression rates indicate what those internal progression rates would be if the schools were alike in various characteristics of their student populations. Adjustments are made for social background and for mediating factors such as earlier school achievement. Such data allow an examination of whether school membership (ie. which school is attended) contributes to staying at school beyond what would be predicted on the basis of the characteristics of its students. These data were derived from the results of regression analyses in which progression rate was the dependent variable and school membership (represented as a set of dummy variables) was included as a predictor along with variables capturing student background and the outcomes of earlier schooling (Ainley, Foreman & Sheret 1992). The regression coefficients for each dummy variable were converted to deviations from the grand mean using a method described in Andrews, Morgan, Sonquist and Klem (1973, 45-47). In this way the extent to which the progression rate for an individual school deviates from the mean progression rate for the sample can be derived, after adjusting for the effect of other independent variables in the regression equation.

Achievement.

A number of different tests to monitor selected aspects of student learning. Some were administered as part of the data gathering procedures for the study and others were tests which students routinely completed in Year 10 and Year 12. From these tests it was possible to construct measures of end-of-school achievement, earlier school achievement, and achievement growth.

Earlier school achievement

Earlier school achievement was based on four achievement tests covering aspects of mathematics and English (or reading comprehension) administered in Year 9 and Year 10. Test scores were summarised in a composite formed by combining the standardised scores on each test. The procedure meant that a measure of earlier school achievement was available even if the student did not attempt all four tests. Since each individual test had an established high reliability (Ainley & Sheret 1992) the composite was extremely reliable.

End of school achievement

End of school achievement was derived as a combination of public examination and school-based assessment data from each of the students' subjects combined to form an aggregate measure. In the study being considered nearly all students completing Year 12 were awarded a Tertiary Entrance Score (TES) as an indication of achievement. This score was on a common scale based on assessments in each of their subjects. Each individual subject assessment had a high degree of curriculum validity and was based on a combination of an external examination and a school assessment.

Achievement growth.

Achievement growth refers to the extent to which student achievement changes over time. In of the studies on which this paper is based it was possible to examine relative achievement growth between the middle secondary years and the end of Year 12. Measures of achievement growth are more valid reflections of student learning than simple static measures of achievement, which are strongly governed by prior ability. The TES was used in combination with earlier school achievement to obtain a measure of relative achievement growth. Achievement growth, from the middle secondary years to the end of Year 12, was calculated from the residuals obtained by regressing the TES against earlier school achievement. A positive residual indicates that the student did

better than would have been predicted from earlier test results and a negative residual indicates that the student did worse than would have been predicted. Achievement growth scores (unlike static achievement measures) are not related to student background.

Attitudes to School.

School Life

Attitudes to school were based on the ACER School Life questionnaire which consists of 40 statements about school to which students are asked to indicate their level of agreement on a self-report Likert scale. It is structured around seven domains of school life:

- *Positive Affect* which is sometimes called general satisfaction and reflects favourable feelings about school as whole. A typical item is *my school is a place where I really like to go each day.*
- *Negative Affect* which refers to negative feelings about school and is typified by an item such as *my school is a place where I feel worried.*
- *Achievement* which reflects a sense of confidence in ones ability to be successful in school work. A typical item is *My school is a place where I always achieve a satisfactory standard in my work.*
- *Opportunity* which represents a belief in the relevance of schooling for the future. A typical item is *My school is a place where the things I am taught are worthwhile learning.*
- *Status* which indicates the relative degree of prestige accorded to the individual by significant others within the school. A typical item is *My school is a place where I know people think a lot of me.*
- *Identity* which is concerned with a sense of learning about other people and getting along with other people. A typical item is *My school is a place where I get on well with other students in my class.*
- *Teachers* which refers to a feeling about the adequacy of the interaction between teachers and students. A typical item is *My school is a place where teachers take a personal interest in helping me with my school work.*

The structure of the instrument has been confirmed in a large number of studies and using different methods of analysis. The scales have been shown to have a high reliability (average alpha = 0.8). The model does not envisage the domains as being independent of each other but that together they constitute a view of the elements of school life for students. In this, and a number of studies conducted using the instruments, scale scores were not related to student background. This finding is similar to that reported for studies overseas (Epstein 1981). These attitudes to school were measured at Years 9, 11, and 12, and in terms of changes over the period from Year 9 (1987) to Year 12 (1990).

Approaches to Learning

In addition to these indicators of students attitudes to school students also provided information about their approach to learning. It is possible to distinguish general orientations to learning as deep or surface (Biggs 1987). A deep approach to learning is characterised by an intrinsic interest in what is being learned and the search for meaning by relating new material with previous knowledge. A surface approach is characterised by a desire to meet only minimum requirements, to limit targets to bare essentials and to reproduce those through rote learning. It is important to recognise that surface and deep approaches are not conceived as mutually exclusive. The study used two scales, each of six items, based on the Learning Process Questionnaire and the evidence of those analyses supports the view that deep and surface approaches are independent of each other.

Student Background

Background factors thought to be related to educational attainment (years of completed schooling) included gender, socioeconomic status, and non-English-speaking background. Since the influence of these factors is, at least in part, attributable to the educational expectations held by parents and others, information was needed also from students about what they saw as the expectations held for them by their parents and significant others.

Socioeconomic Status.

Socioeconomic status was based on the stated occupations of the respondent's parents coded initially according to the Australia National University (ANU) scale of prestige (Broom *et al.* 1977).

Non-English-Speaking Background

Non-English-speaking background (NESB) was based on the place of birth of the students and their parents. Four categories were used according to whether the students or their parents were born in a non-English-speaking country. NESB was therefore an ordinal scale increasing as the non-English-speaking background of the student becomes stronger. The scale does not distinguish between different non-English-speaking ethnic groups.

Parental Expectations

Parental expectations were based on students' reports of the extent to which they thought that their parents wanted them to continue study when they left school. Students who indicated work without any form of study were assigned the lowest score of (1), and those who indicated full-time study were assigned the highest score (4). Combinations of part-time study and work occupied intermediate positions.

Qualitative Data

Patterns of association between these indicators of school effectiveness were analysed and related to a range of information gathered from interviews and observation in the 22 schools over a period of four years. Qualitative data were gathered from interviews and observation in the 22 schools over a period of four years. This was done within the framework of multi site qualitative research suggested by Herriott and Firestone (1983). Semi-structured interviews were conducted with student groups and with key members of staff. Direct observation of the schools in action was another useful technique through which the project gathered qualitative data. School level qualitative data of this kind are particularly useful in explaining some of the differences among schools which were revealed through the analyses of quantitative data. Interviews and observation formed an important part of the information gathered for the study. Regular contact was maintained with schools over the four years of the study. Information about policy and practice was obtained during each visit to the school. In addition, there was a series of more formal procedures for gathering qualitative data at different points during 1988, 1989 and 1990.

Students.

During group interviews (15 students) students were asked whether they intended to stay on at school to Year 11 and then whether their reasons were job-oriented or school-oriented. Every student responded. Students were also asked what change they would like to make to their school if they were in a position of authority. Each and every

student contributed an independent although not necessarily a different idea, and the ideas were, with few exceptions, carefully thought out and responsible.

Staff

At several points during the study interviews were conducted with principals and key staff members about curriculum and organisational practice in each school. For each interview a semi-structured schedule was prepared, to ensure that similar issues were canvassed in each school. Both a record of interview sheet and, in most cases, a tape recorder were used to record data. The interviews covered aspects of curriculum provision, school organisation, approaches to teaching and learning, discipline at different levels, parents' views of the school, and views of increased school participation rates.

Studies of School Programs and Policies

More detailed studies were conducted in schools with especially interesting patterns of student response. Group interviews were held with key members of staff (the principal, the deputy-principal, a Year level adviser and a faculty head) to determine what factors within the school were related to the observed levels of achievement and satisfaction (eg. school-wide policies and practices which influenced the cohesiveness of the school program, the expectations held for students, and the aspirations generated among students). In addition information was obtained about specific activities in reading and mathematics and characteristics of the student population not captured by the statistical measures used in the study. In a subsequent round of visits classes nominated by the school were observed and any meetings, staff development activities or assemblies were attended as time allowed during the visit. During this round of visits further interviews were held with staff, students and parents.

RESULTS

Results concerning the association between indicators of interest were available at both the student and the school level for achievement and attitudes but only at the school level for associations involving holding power.

Patterns in Student Level Data

In examining the student level data attention ws focussed on achievement measures at different stages of school and achievement growth. In addition information about the approaches to learning adopted by students was examined.

Achievement and Attitudes to School

Table 1 indicates the association between school life and achievement test scores for the students in this sample of secondary schools. In general the results are similar to the findings for Israeli students across elementary, middle, and high schools (Darom & Rich 1981). Although there are some important associations there is no strong and general link between school life scores and these static measures of student achievement. There was a slight difference between the patterns which were observed when students were in the middle secondary years and corresponding patterns at the end of secondary school. As shown in Table 1, in Years 9 and 10 the only substantial correlation coefficients involved the achievement subscale (a measure of the student's feeling of academic success). Such correlations suggest that students who were shown by the tests of reading and mathematics to be higher achievers, tended to feel more successful in school; a result which is not surprising. Among Year 12 students there are substantively significant associations ($r > 0.10$) between end-of-school achievement (the tertiary education rank) and just two school life scales: feeling successful (0.28) and teacher-

student relations (0.21). Overall the results tend to run counter to the notion that only successful students find schools a satisfying environment. The inference which can be drawn from these results is that students can find schools a satisfying experience regardless of their achievement level.

Table 1 Correlations between School Life and Achievement

	Year 9		Year 10		Year 12
	Reading	Maths	English	Maths	TES
Teachers	.02	.03	.04	.00	.21
Status	-.03	-.05	.00	-.05	.00
Identity	-.01	-.04	.03	-.09	-.10
Opportunity	.01	.02	.03	.04	.09
Achievement	.12	.15	.15	.13	.28
Positive Affect	.02	.01	.01	.03	.08
Negative Affect	-.08	-.05	-.07	-.02	.02

Achievement Growth

In these data it was found that favourable views of certain aspects of school life are linked to greater achievement growth. There were modest, but statistically significant associations between attitudes to school and achievement growth. The strongest associations are with the achievement (feeling successful) subscale ($r = 0.29$), teacher-student relations (0.21), general satisfaction (0.19), and opportunity (sense of relevance) (0.15). The aspects of school life which were linked to achievement growth were a sense of achievement, relations with teachers, general positive views of school and a sense of the relevance of school work. The quarter of students with the most positive views of these aspects of school life had achievement growth 11 percentile points greater than the quarter with least favourable views. The results suggest that promoting a positive view of school life, in areas closely related to the learning process, is associated with growth in achievement.

Table 2 Associations between School Life and Approaches to Learning

	Year 12		Years 9 and 10	
	Deep Approach	Surface Approach	Deep Approach	Surface Approach
Teachers	.34	-.10	.26	-.07
Status	.38	-.02	.28	-.02
Identity	.25	.04	.19	-.01
Opportunity	.49	-.12	.34	-.05
Achievement	.44	-.07	.31	-.06
Positive Affect	.56	-.13	.42	-.08
Negative Affect	-.17	.10	-.11	.07

Approaches To Learning

Quite strong associations were reported between the `deep' scale of approaches to learning and views of school life. Relevant correlation coefficients have been shown in Table 2. At Year 12 the strongest associations were with the scales general satisfaction (0.56), opportunity (0.49) and achievement (0.44). This suggests that there may be a constellation of attitudes which emerge in the senior secondary years which link views

of school life to deep approaches to learning, through a process of identification and involvement. Associations between school life subscales scores are generally negative but small in magnitude. Similar patterns are evident in the middle secondary years between the 1987 school life scores and the 1988 approaches to learning scores, although at that level the correlation coefficients are a little smaller. Other studies have also reported positive associations between these school life subscales and deep approaches to learning (M. Ainley 1992; Watkins & Hattie 1990). Ramsden *et al* 1989) also note an association between a deep approach to learning and perceptions of the school environment (assessed with a different instrument) such as teaching support, structure and cohesiveness and independence in learning.

Differences Among Schools

The preceding discussion has focused on individual student views of school life. However, it is of major interest to determine the extent to which there are systematic differences among schools in each of the domains of effectiveness.

Holding Power

Schools differ in the extent to which they retain students to the postcompulsory years. An examination of apparent retention rates to year 11 (in 1989) and year 12 (in 1990) for the population of government schools in New South Wales reveals the extent of the variation. For year 11 one quarter of the schools had retention rates of 51 per cent or less and one quarter of the schools had retention rates in excess of 77 per cent. For year 12 the corresponding figures were 38 per cent for the first quartile and 62 per cent for the third quartile. When internal progression rates were considered the inter quartile range was reduced substantially to 14 percentage points at year 11 and 16 percentage points at year 12. Statistical allowance for social background reduced the inter quartile range further to 6 percentage points at year 11 and 10 percentage points at year 12.

Observations of what happened in schools suggested explanations for these differences (see Ainley & Sheret 1992). Schools with above expected levels of holding power to year 11 were characterised by either a coherent and integrated alternative to the regular academic program or by higher than expected standards of achievement Schools with lower than expected holding power were characterised by either low levels of achievement or low aspirations for continued education and unfavourable attitudes to school.

Achievement and Achievement Growth

The differences among schools in achievement were of a magnitude which would be expected on the basis of other studies. In terms of earlier school achievement, school differences accounted for between five (English and reading) and seven (mathematics) per cent of the variance among students. For end of school achievement the contribution of school differences was larger amounting to some 11 per cent of the total variance. In practice the lowest school mean was 27.6 and the highest was 61.8. In achievement growth the lowest value was -9.4 and the highest was 12.5 percentage points. Between-school differences in achievement growth accounted for six per cent of the total variance.

Attitudes

It was found that there were statistically significant differences among schools on each of the subscales and at each year level. Values of the statistic eta-squared are shown in Table 3. The differences among schools were generally smaller than for achievement scores, but they are as large as the differences among groups based on background characteristics. Some differences between schools were quite large. Differences involving

general satisfaction with school (positive affect) are generally larger than those involving specific aspects of school life. More importantly differences among schools are greater for all the scales at Year 12 than at the earlier levels. At Year 12 differences among schools account for nearly 11 per cent of the variance in general satisfaction. Also at Year 12 differences among schools account for five per cent of the variance in opportunity and four per cent of the variance in the achievement subscale.

Table 3 Differences Among Schools in School Life (Secondary Schools)

School Life Scale	Year 9 1987	Year 11 1989	Year 12 1990
Teachers	.028	.035	.035
Identity	.020	.040	.051
Status	.032	.027	.044
Opportunity	.026	.035	.053
Achievement	.032	.028	.041
Positive Affect	.082	.055	.107
Negative Affect	.019	.020	.037

Potential Sources of Variation Among Schools

There are several guides to influences on views school life among secondary schools. Batten and Girling Butcher (1981) reported on case studies in seven schools selected because they were believed by administrators to give particular emphasis to different aspects of schooling reflected in the school life questionnaire. They found that the profiles across the subscales of the questionnaire reflected curriculum and organisational emphases, as well as the nature of the interactions between teachers and students, in those schools. The role of curriculum on aspects of school life has been reported in other studies (Batten, 1989). Ainley *et al* (1986) noted the different views of students across the Year levels of secondary school. From the first to last year of secondary school there was on some scales a U-shaped trend (positive affect, teachers), on others a steady decline (opportunity, achievement) and on others little change (status, identity). Similar trends were found in the present longitudinal study of students in a different education system. The present study also noted some the ways in which school life subscales reflect differences in school operations and the extent to which students are able to choose subjects which interest them (Ainley & Sheret, 1992).

Patterns of Association at School Level

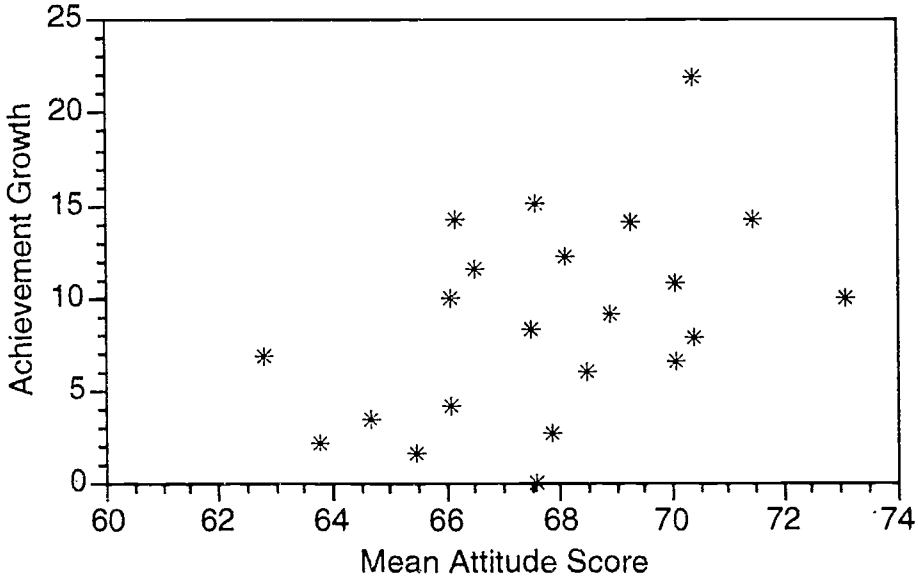
As was the case in the analysis reported by Knuver and Brandsma (1993) the results of greatest interest involved the associations between school level measures for the three aspects of effectiveness being considered.

Attitudes And Achievement

To explore the association between attitudes and achievement a composite school life measure was constructed by combining scores on the four scales most closely related to achievement growth at an individual level (achievement, teachers, positive affect and opportunity). Mean scores on this scale were unrelated to mean end-of-school achievement scores (the tertiary entrance score) ($r = -0.1$, not significant) but were positively related to mean achievement growth ($r = 0.44$). The pattern for school life and achievement growth is represented in Figure 1. Although there is some scatter, the overall tendency is for greater average achievement growth in those schools where students see school life as encompassing a sense of success, good relations with

teachers, general satisfaction school and a sense that school work is relevant to the future.

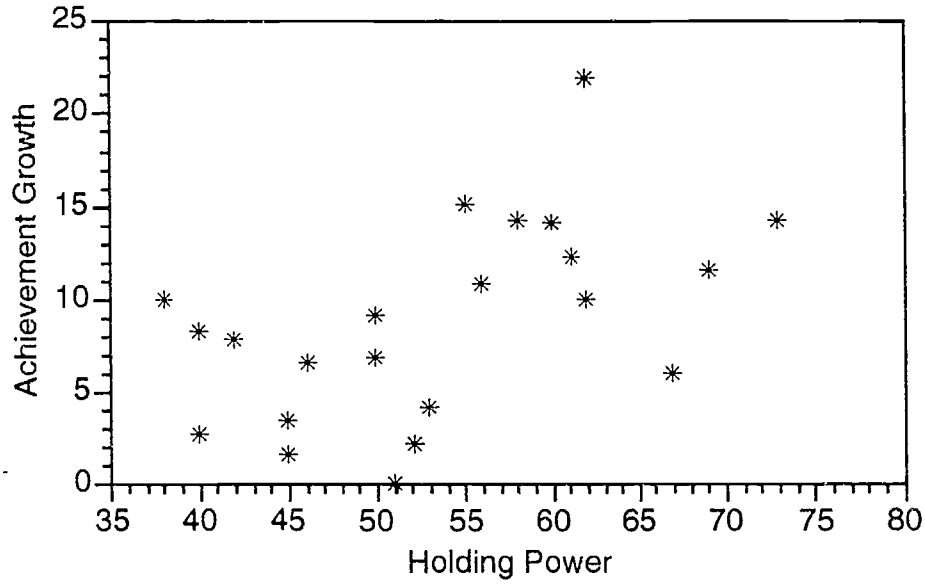
Figure 1 Achievement Growth by Attitudes to School



Holding Power and Achievement

There was no evidence to support the proposition that retaining a high proportion of students to Year 12 militates against the development of high levels of achievement for individual students. In fact for both unadjusted achievement, and for achievement growth, there was a tendency for higher achievement and high progression rates to be associated. The correlation coefficient between the internal progression rate from Year 10 to Year 12 and mean achievement was 0.54. In other words schools with high progression rates to Year 12 tended to have higher mean levels of achievement. When achievement growth was used as the outcome measure the correlation coefficient was 0.52, and if the progression rate was adjusted for the social background of the school it was reduced to 0.32. Overall there was a positive association between school holding power and achievement growth. Figure 2 shows the pattern of association between progression rates and achievement growth.

Figure 2. Achievement Growth by Holding Power



It can be inferred from these data that achievement growth is not lower in schools which retain more of the students to the end of secondary school (that would be indicated by a negative correlation coefficient). The pattern of association is scattered but, if anything, there is a general tendency for higher achievement growth in those schools which hold more students through to the final year of secondary school.

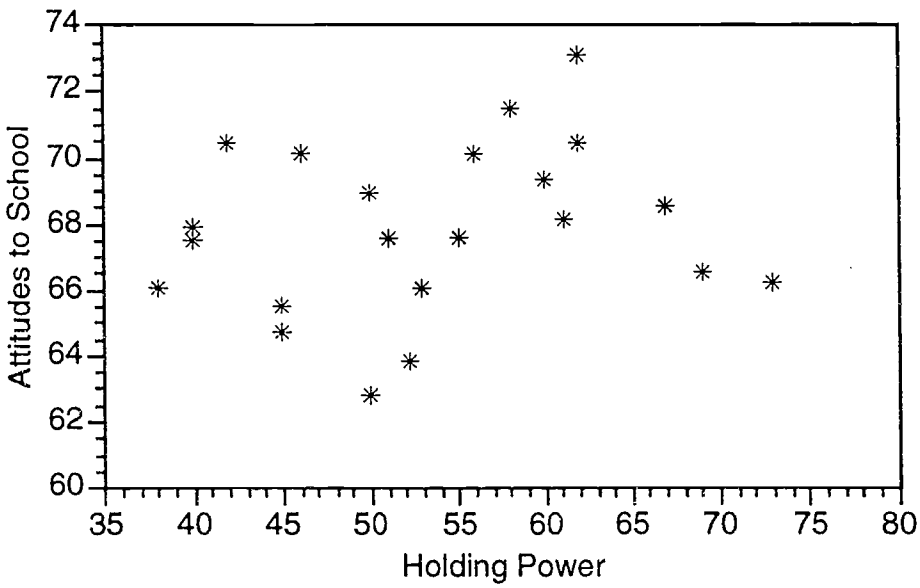
Within the pattern different types of school were evident. School K displayed a picture of high achievement growth and strong holding power. It had reviewed curriculum and organisation and emphasised the engagement of students in the learning process. In contrast School V showed low achievement growth and low holding power. It was one of a group of schools which did nothing very special and was content to fulfil requirements rather than seek better ways of doing things. School D recorded relatively high levels of achievement growth at the expense of retaining few students through to the final year of school. It was a school where students in the middle secondary years had unfavourable attitudes to school and low aspirations. It appeared to be a school which does well for the minority of students who continue to the final year but does little to provide for a wider range of potential students. School E retained a high percentage of its students to the final year but with low levels of achievement growth.

Holding Power and Attitudes

The association between holding power and attitudes to school was rather smaller than the two reported above. At school level the correlation coefficient was 0.21. This small but positive association is represented in Figure 3. An explanation for the fact that this association is smaller could be found in the fact that student attitudes were measured in the senior secondary years whereas the decision to continue in school was taken in year 10. For that reason it would be expected that there would be a stronger association with attitudes to school in year 10. It is known that positive attitudes to school in the earlier years are associated with remaining at school (Ainley Sheret & Foreman 1992). The

association observed reflected the connection between attitudes to school in those earlier years and the senior secondary years.

Figure 3 Attitudes to School by Holding Power



In Combination

The pattern of positive correlations between these indicators of school effectiveness suggested that there may be an underlying factor of general effectiveness. A principal components analysis indicated one common factor which accounted for 60 per cent of the variance in the indicators. On this basis it is argued that, although there are variations between schools in particular outcomes, there is support for the existence of a general factor of effectiveness in these schools. Despite this generalisation it may still be that insights may be derived from looking for the strengths and weaknesses in individual schools as well as in studying those which are generally effective.

CONCLUSION

This paper began with the argument that the significant developments in the analysis of achievement as an indicator of school effectiveness needed to be matched with attention to other indicators. It referred to a limited number of studies which had used other effectiveness criteria and the evidence linking attitudes and achievement outcomes at school level. The results from this analysis suggest that there are modest, but positive, associations between achievement growth, attitudes to school and school holding power. The pattern of positive associations suggests that there was an underlying dimension of school effectiveness which linked attitudes and achievement growth. Such a conclusion is consistent with the results reported by Knuver and Brands (1993). It is also what would be expected on the basis of theories of learning processes for individual students which consider motivation, engagement and positive attitudes to learning to be essential to learning. In the present study a strong link was found between adopting deep approaches to learning and having positive attitudes to school in general.

One of the keys to establishing relationships such as these is to use achievement growth, rather than a static measure of achievement as a criteria of effectiveness in the promotion of student learning. The use of such measures depends on longitudinal studies, which as Sammons *et al* (1993) note are expensive to assemble and somewhat scarce. Another important consideration for studies which seek to relate effectiveness in the cognitive and affective areas is to consider what aspects of affect are studied. In the present study it was attitudes to aspects of school life more closely linked to learning which were associated with achievement growth. Attitudes to school can embrace a range of facets of schooling and it should not be surprising that some are more closely associated with learning outcomes than others. Of additional importance is the need to examine units within schools. The present study made use of a composite achievement measure. It may be that more powerful relationships might exist within different curriculum areas of secondary schools and that there are differences between curriculum areas within schools. Recent work in primary schools has suggested that differences between classrooms are more are somewhat greater than differences between schools (Scheerens 1989; Rowe *et al* 1994).

Overall the results of this study suggest that a wider perspective on school effectiveness, than that obtained from achievement measures alone, should be invoked. Such a perspective is one which accords with the views of a range of school communities about valued aspects of schooling. If a range of measures from different domains are incorporated as part of a constellation of indicators a more comprehensive conception of effectiveness may be captured. From research which takes a multi dimensional view of effectiveness it will be possible to understand better the ways in which what happens in classrooms and schools shapes student outcomes.

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