The Measurement of Socioeconomic Status for the Reporting of Nationally Comparable Outcomes of Schooling

Draft Report

National Education Performance Monitoring Taskforce

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The Measurement of Socioeconomic Background for the Reporting of Nationally Comparable Outcomes of Schooling
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ACRONYMS AND ABBREVIATIONS

ABS  Australian Bureau of Statistics
ACER  Australian Council for Educational Research
ANU1  measure of socioeconomic status (scale 1)
ANU2  measure of socioeconomic status (scale 2)
ANU3  measure of socioeconomic status (scale 3.1)
ANU3_2  measure of socioeconomic status (scale 3.2)
ANU4  measure of socioeconomic status (scale 4)
ASCO1  Australian Standard Classification of Occupations, First Edition
ASCO2  Australian Standard Classification of Occupations, Second Edition
CAMSIS-OZ  Australian version of the Cambridge socioeconomic status scale
CCLO  Classification and Classified List of Occupations
CD  Census collection district
DETYA  Department of Education, Training and Youth Affairs
DFaCS  Department of Family and Community Services
DSP  Disadvantaged Schools Program
ENI  Educational Needs Index
ERI  Education Resources Index
LSAY  Longitudinal Surveys of Australian Youth
MCEETYA  Ministerial Council on Education, Employment, Training and Youth Affairs
NAEP  National Assessment of Educational Progress
NEPMT  National Education Performance Monitoring Taskforce
NS-SEC  National Statistics Socio-Economic Classification
PISA  Programme for International Student Assessment
SEI  Socioeconomic index
SEIFA  Socioeconomic Indexes for Areas
SES  Socioeconomic status
SLA  Statistical Local Area
SLN Index  Special Learning Needs Index
SRP  School Resource Package
YIT  Youth in Transition project
EXECUTIVE SUMMARY

The main purpose of this discussion paper is to develop a common definition of socioeconomic position to be used for reporting of nationally comparable outcomes of schooling within the context of the statement of National Goals for Schooling in the Twenty-first Century.

This report:

• discusses the conceptual basis of socioeconomic position;

• defines the terms socioeconomic position, socioeconomic status, and socioeconomic disadvantage;

• describes the theoretical understandings for the relationship between socioeconomic position and educational outcomes;

• discusses several conceptual issues regarding the measurement of socioeconomic position;

• discusses the measures of socioeconomic position commonly used both in research and for funding purposes;

• describes and summarises the measures of socioeconomic positions currently used by Australian education authorities;

• summarises the data collected on socioeconomic position in other industrialised countries;

• discusses the advantages and disadvantages for a range of commonly used measures of socioeconomic position;

• estimates costs.

The major proposals of this report are as follows:

1. Individual-level rather than area-based measures of socioeconomic position are preferred for the monitoring of the relationship between socioeconomic status and educational outcomes. We argue that area-based measures are not appropriate because:

   ▪ the use of an area-based measure to estimate an individual’s socioeconomic position is subject to considerable misclassification error, especially in regional and rural areas;
   ▪ they are not cost effective;
   ▪ they are most often not up-to-date;
   ▪ the inaccuracies associated with area-based measures will undermine conclusions about between-system and over-time differences in the importance of socioeconomic position on educational outcomes;
   ▪ for the analysis and reporting of student outcomes, area-based measures cannot be used to categorise (individual) socioeconomically disadvantaged students;
1. it is not feasible to use area-based measures of socioeconomic position to ‘control’ for differences between indigenous and non-indigenous students, between students from different immigrant groups, and between urban and other students.

2. For monitoring purposes, socioeconomic position is best measured by data on parental occupation and education. We conclude that such data are most suitable for measures of socioeconomic position because:

- they have been commonly used in research on socioeconomic position and educational outcomes so have intellectual credibility;

- data on parental occupation and education are also collected by some overseas education authorities;

- they cover the two most important aspects of a student’s socioeconomic background in regard to educational outcomes: their parent’s occupational status (or social class) and their parents’ education;

- they are stable over-time so that any over-time changes in the relation between socioeconomic position and educational outcomes cannot be attributed to methodological differences;

- occupational data are flexible so that reports can include both correlational and cross-tabular analyses. Correlational analyses provide a single convenient measure of the strength of the relationship between socioeconomic position and educational outcomes. The correlations are readily comparable between systems and over-time. In addition correlational analyses enable more detailed multivariate or multilevel analyses which are important in the understanding of the relationship between socioeconomic background and educational outcomes. Cross-tabular analyses which comprise percentages of socioeconomic groups attaining particular educational outcomes can be understood by most, if not all, stakeholders. (For example cross-tabular analyses can provide statements such as ‘70 per cent of students from trade or manual backgrounds completed Year 12’);

- it increases reliability and confidence in the conclusions drawn from the data, if data on two aspects of socioeconomic position (parental occupational and education) are available rather than one;

- the cost is relatively small if a sampling procedure is employed and data are collected and coded using Australian Bureau of Statistics procedures;

However, the report does canvass three options where less data are collected by not collecting data on either parental occupation or parental education.

3. Socioeconomic disadvantage is best measured by the health care status of the students’ parents. Data on health care status are most appropriate for the measurement of socioeconomic disadvantage because:

- it is an unambiguous measure of disadvantage;

- it is generally accepted and generally not criticised;
• it includes aspects of disadvantage, such as single parent households, parents on unemployment or sickness benefits etc. that are not picked-up by measures of parental occupation and education;

• it is a national measure of disadvantage;

• it is frequently updated;

• both parents and schools have an interest in providing accurate data on health card status;

• it is likely to remain a feature of the Australian welfare system;

• since it already exists there is no need to initiate a lengthy and difficult process of developing a measure of educational disadvantage;

• it does not suffer from the arbitrariness of measures of disadvantage based on cut-offs.

4. We acknowledge that these proposals cannot be implemented with adequate pre-testing and piloting. We propose that:

• the NEPMT appoint a committee that in consultation with the Australian Bureau of Statistics and other interested parties, develops questions on parental occupation, education and health care status that are included in school enrolment forms;

• the same committee (again in consultation with the Australian Bureau of Statistics and other interested parties) develop a small set of questions for students to answer that are included in system wide assessments (for Years 3 and 5);

• this same committee also develops questions for other indicators of interest to the Taskforce, such as those that identify indigenous students, the cultural and language background of students and possibly whether the student lives in an urban, regional or rural location;

• the NEPMT organise a pilot study so that data collection, data entry and data coding procedures can be evaluated;

• the NEPMT use already existing data to ‘mock-up’ a proposed report on the relationship between socioeconomic position and one or several educational outcomes.
## 1 BACKGROUND

### 1.1 Objectives

The main purpose of this discussion paper is to develop a common definition of socioeconomic position to be used for reporting of nationally comparable outcomes of schooling within the context of the statement of *National Goals for Schooling in the Twenty-first Century*.

The specific objective is to produce a discussion paper on ways to move towards a common definition and measure of socioeconomic position. The discussion paper:

- outlines the conceptual basis of socioeconomic position and describes current Australian measures;
- identifies and describes existing measures of socioeconomic position used in the reporting and monitoring of education outcomes;
- evaluates each measure in terms of its usefulness in describing socioeconomic position;
- discusses the merits or otherwise of reporting at student, school or system levels;
- assesses the measures for national and international consistency;
- proposes appropriate definitions and appropriate operationalisation; and
- makes an assessment of the costs and benefits for school systems of introducing data collection and reporting processes in line with the proposed definition or definitions.

It needs to be emphasised that this discussion paper is primarily concerned with the development of a common measure of socioeconomic position for the reporting of student outcomes at the individual level. Such a measure does not preclude the use of different measures for purposes such as the allocation of resources to disadvantaged schools.

### 1.2 The Importance of Socioeconomic Position

Educators, researchers and policy makers are concerned about the degree to which students from lower socioeconomic backgrounds are systematically disadvantaged in regard to performance at school, school completion, and participation in post-secondary education and training. Such disadvantage is simply ‘not fair’ in a modern democratic society such as Australia. When a relationship between social background and educational achievement is present, then it follows that students from disadvantaged backgrounds face disadvantages at school and later in adult life. Furthermore, it follows that there will be a less efficient matching of ability with occupational destinations, leading to wastage of human resources and arguably economic inefficiencies.

Most educational reforms of the last half-century have attempted to make the system fairer so that student performance at school is not related to the socioeconomic background and other ascribed characteristics of the student. If the relationship between socioeconomic background
and student performance differs between Australian education contexts, then it is important to examine the educational policies and institutional arrangements of jurisdictions in which this relationship is substantially weaker.

In this context, the lack of a common measure of socioeconomic position for the reporting of educational outcomes is problematic. Most importantly, it undermines our ability to evaluate the influence of socioeconomic position on educational outcomes, across and within educational jurisdictions, and over time. Such information is necessary in order to assess whether education outcomes are becoming more unequal (socioeconomically speaking) or if the present policy mix is, in fact, reducing the impact of students’ socioeconomic background. With the present mix of measures used by different states and systems, we cannot ascertain the overall strength of the relationship between socioeconomic background and educational outcomes, much less any between system and over-time differences.

Although the inability to make between system and over-time comparisons is important, the lack of a common measure also has other implications. Differences in educational performance between social groups (for example between non-English-speaking background students, Aboriginal students and other students) may, at least in part, be due to socioeconomic position. Without a common measure of socioeconomic background, it is impossible to make valid conclusions about the independent effects of ethnic background, home language or culture on performance between systems or over time. Similarly the influence of locality needs to be distinguished from socioeconomic influences in the assessment of differences in educational outcomes between urban and rural students.

The Australian situation can be contrasted with other countries, such as the United States, where the relationship between socioeconomic background and schooling outcomes is part of national reporting (see Section 4).
2 CONCEPTUAL ISSUES

Three broad conceptualisations of socioeconomic position/background (social class, socioeconomic status and disadvantage) have been discussed at length in the sociological and educational literature. Here we provide a brief overview of the major issues which have a bearing on the conceptualisation of the socioeconomic position of school students. For further details, the reader is referred to a number of recent general papers on the history of, and current approaches to, the conceptualisation of social class and socioeconomic status (Graetz 1995a; Jones & McMillan 2000; Western 1993). The conceptualisation of socioeconomic background in educational contexts has recently been discussed at length in relation to schooling (Graetz 1995b) and higher education (McMillan and Western 2000; Western et al 1998).

2.1 Socioeconomic Background and Socioeconomic Position

The main concepts discussed in this paper are outlined in Figure 1. For the purposes of the discussion paper, socioeconomic position is defined as the relative position of a family or individual in a social structure, based on their access to scarce and valued resources such as education, wealth and prestige (adapted from Western 1983).

![Figure 1 Conceptual Framework.](image)

Socioeconomic background is defined as the socioeconomic position of an individual’s family of origin rather than their present occupational or family circumstances. Dependent children have yet to establish their own socioeconomic characteristics. Rather, their socioeconomic position is derived by the socioeconomic climate of their family home, or more narrowly by the socioeconomic characteristics of their parents. Hence, in the case of school students, socioeconomic position and socioeconomic background refer to the
characteristics of the same family, and we will use these terms interchangeably throughout the discussion paper.

Socioeconomic background/position can be sub-divided into three further concepts – socioeconomic status, social class and disadvantage – depending upon whether socioeconomic position is conceptualised as a continuous, linear hierarchy (socioeconomic status), in terms of discrete categories (social class), or in terms of a dichotomy (disadvantage).

2.2 Socioeconomic Status, Social Class and Disadvantage

*Socioeconomic status* refers to as a finely graded hierarchy of social positions which can be used to describe a person’s overall social position or standing. It can be indicated by a number of (sub-) concepts such as employment status, occupational status, educational attainment and income and wealth (Graetz 1995a) (see Figure 2). That is, socioeconomic status is usually understood as a multi-dimensional concept.

![Figure 2 Concepts Relating to Socioeconomic Position](image)

When measuring the socioeconomic status of school students, there are empirical and pragmatic reasons, discussed later in the paper, for focussing on the occupational status of parents. The most prestigious or highest income occupations (such as surgeons) would be at the top of the hierarchy and the least prestigious at the bottom.

Parental education is also an important aspect of the socioeconomic status of school students because it is expected that parental and student education are strongly correlated. Highly educated parents are more likely to instil more positive values about education to their children, have a better understanding of what schools require and are probably better equipped to help their children in their school-work.

*Social class* provides an alternative method of defining socioeconomic position. Although social class, like socioeconomic status, is based on access to scarce and valued resources, classes are understood in categorical terms, with a working class distinguished from other classes. Social classes are not necessarily hierarchical; that is, the class groups are not readily placed on a continuum ranging from high to low.

It should be emphasised that while there is some overlap in the type of data used to generate measures of socioeconomic status and social class (both may use occupational data), the
resultant measures are distinct. The occupational dimension of socioeconomic status is based upon the assumption that occupations can be placed along a finely graded socioeconomic hierarchy, while social class measures are based upon the assumption that these same occupations can be placed into a relatively small number of discrete social groups.

The final concept, disadvantage, refers to persons who are systematically socioeconomically disadvantaged in respect to social (especially educational) outcomes. When socioeconomic disadvantage is defined broadly, it can encompass elements that are not generally understood as socioeconomic, such as family structure, Aboriginality, ethnicity, and disabilities.

Nevertheless, it is possible to define socioeconomic disadvantage more narrowly in terms of socioeconomic position, either as those persons below a certain cut-off on a socioeconomic status continuum or as belonging to a particular social class. This narrow definition does not include other aspects of Australian society that are associated with disadvantage such as family structure, Aboriginality, ethnicity and disabilities.

2.3 Theories on Socioeconomic Background and Educational Outcomes

Our general discussion of socioeconomic status and social class has highlighted the point that socioeconomic background is not a uni-dimensional concept. Rather, it is comprised of elements relating to education, occupation and wealth. Explanations for the relationship between socioeconomic background and students’ educational outcomes must be considered in order to identify the most theoretically appropriate indicators for application to school students. In this section we provide an overview of the major explanations for the relationship between family background and schooling, with emphasis on the particular aspects of socioeconomic status or social class which each explanation highlights.

Explanations for the relationship between socioeconomic background and school achievement can be divided into three broad categories: genetic differences in ability; access to material (physical) resources; and cultural differences. The first explanation, that socioeconomic differences in achievement reflect genetic differences in ability, is not widely endorsed by educational researchers. Most current research and policy attention focuses on the second and third explanations.

The second explanation relates to the role of material resources such as whether the student has a desk at home or a room of their own, the number of siblings, the quantity of educational resources at home (e.g. books, computers), and the quality of the school infrastructure. Connell (1977:152-189) is a strong proponent of materialist explanations, and such explanations are implicit in policies that provide financial support to disadvantaged students or schools. This financial assistance is viewed as a means of overcoming the (financial) barriers to education among low socioeconomic status groups (Hauser & Warren 1997:179; Williams 1987:38-39; Williams et al 1993a:23).

The third explanation draws attention to cultural factors such as parent and teacher attitudes, and sub-cultural norms. For example, the book Learning to Labor suggests that the sub-cultural norms of working class youth are ultimately responsible for their less successful education outcomes (Willis 1977). Another cultural explanation is Bernstein's (1975) thesis on elaborated and restricted codes of speech which respectively facilitate and hinder the academic achievement of middle class and working class students at least in the United Kingdom. Bourdieu's (1973; 1984) explanation of socioeconomic differences in education
uses the concept ‘cultural capital’. He argues that social reproduction is maintained by the education system. The success of students from high status backgrounds, adept in the dominant culture, is enhanced since teachers and other gatekeepers judge and assess students by criteria set by the dominant culture. Coleman's (1987) concept of social capital also focuses on community level cultural factors. Social capital is defined as the ‘norms, the social networks, and relationships that are of value for the child's growing up’. This concept has been used to explain the high levels of student achievement of some ethnic groups in the United States, and the ability of well-integrated communities (such as those surrounding Catholic schools) to reduce the frequency of undesirable outcomes for their school students.

Material and cultural factors may operate at the student, family, school or community level (see Table 1 for examples). This is not to say that each explanation falls neatly into one or other cell of this typology. Some explanations focus on interactions between two or more levels, while others focus on both cultural and material factors. Indeed, a single-cause explanation is likely to be inadequate, as there are probably a multitude of factors that influence schooling outcomes. For example, not having the physical resources of a desk, a room, encyclopedias and books is likely to have a detrimental effect on academic performance. But similarly, the value placed on education by students, their families, schools and communities is also likely to influence schooling outcomes.

**Table 1** Typology of Explanations for the Relationship between Achievement and Socioeconomic Background

<table>
<thead>
<tr>
<th>Culture/Values</th>
<th>Material/Physical Resources</th>
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<tbody>
<tr>
<td><strong>Student</strong></td>
<td><strong>Ability, disability.</strong></td>
</tr>
<tr>
<td>Aspirations,</td>
<td></td>
</tr>
<tr>
<td>Feelings of self-worth,</td>
<td></td>
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<tr>
<td>Attitude to education.</td>
<td></td>
</tr>
<tr>
<td><strong>Family</strong></td>
<td><strong>Parents’ income/wealth,</strong></td>
</tr>
<tr>
<td>Aspirations for their children,</td>
<td>A room for study, a desk,</td>
</tr>
<tr>
<td>Parental attitudes to education,</td>
<td>Atlas, encyclopedia and other books in the home.</td>
</tr>
<tr>
<td>Cultural capital (with school)</td>
<td></td>
</tr>
<tr>
<td>(Bourdieu),</td>
<td></td>
</tr>
<tr>
<td>Elaborated and restricted codes of</td>
<td></td>
</tr>
<tr>
<td>speech (Bernstein).</td>
<td></td>
</tr>
<tr>
<td><strong>School</strong></td>
<td><strong>State of buildings, laboratories, library, computing,</strong></td>
</tr>
<tr>
<td>Attitude of teachers,</td>
<td>Class sizes,</td>
</tr>
<tr>
<td>Organisation of curriculum,</td>
<td>Quality of teaching.</td>
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<tr>
<td>Discipline,</td>
<td></td>
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<tr>
<td>Student body.</td>
<td></td>
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<tr>
<td><strong>Community</strong></td>
<td><strong>Physical environment of community,</strong></td>
</tr>
<tr>
<td>Ethnic and class sub-cultural factors,</td>
<td>Area attracts good/bad students and/or teachers.</td>
</tr>
<tr>
<td>Social capital (Coleman).</td>
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</tbody>
</table>

The type of explanation favoured may have implications for the operational definition of socioeconomic position. If adopting a materialist approach, socioeconomic position is most appropriately measured by reference to family income or wealth; that is, family material resources. In contrast, cultural explanations place greater emphasis on the attitudinal and behaviour aspects of socioeconomic position.
In the Australian context, Williams and his colleagues (Williams 1987; Williams et al. 1993a, 1993b) reported that the social components of socioeconomic status (parental education and occupation) have larger effects on educational achievement compared with their material counterpart (family wealth). They went on to argue that low retention rates in secondary school by lower socioeconomic groups can be largely attributed to lower aspirations, less encouragement and lower values placed upon educational attainment. That is, cultural factors have greater explanatory power than material factors in the generation of socioeconomic inequalities in Australian educational outcomes.

Explanations for the relationship between socioeconomic background and schooling outcomes should not be confused with monitoring this relationship. The purpose of this report is to develop a common measure which would monitor the influence of socioeconomic position on student outcomes. Whenever over-time or between system differences are identified as real, then the explanations discussed here could be operationalised and employed to help explain differences in the relationship between socioeconomic background and student outcomes. Furthermore, many commonly used measures of socioeconomic position such as occupational status, social class and parents’ education are not unambiguously operationalising a materialist or cultural explanation.

2.4 Conceptual Issues in the Measurement of Socioeconomic Position

2.4.1 Single, Multiple or Composite Measures

Socioeconomic position can be measured by a single indicator, by several indicators which are used separately, or by combining several indicators (or variables) to form an index. Most often in Australia, single variable measures are derived from responses to occupational questions. Multiple and composite measures are derived from a range of variables such as father’s and mother’s occupation and educational attainment, income and possessions (such as video recorders, television, cars, size of home, the number of books in the home, and home ownership). In this paper we distinguish multiple measures which consist of several independent indicators, and composite measures which are single measures constructed by combining several aspects of socioeconomic background. Composite measures tend to have stronger correlations with school achievement than single measures (see Ainley & Long, 1995). Similarly, analyses with multiple measures explain more of the variation in school achievement than do analyses with a single measure. This implies that a single measure does not capture all aspects of socioeconomic background. Graetz (1995b) provides a more detailed discussion on this issue.

However, there is a number of difficulties associated with the use of multiple or composite measures. First, it may be difficult to obtain reliable data for each of the components, especially from school students. Second, how the component parts are combined (that is, their relative weights) is open to debate, a debate that cannot be readily resolved. Third (and this is a conceptual issue) interpretation of the resultant scales is difficult. Earlier in this paper we argued that different dimensions of socioeconomic status might be linked to educational outcomes in different ways. Consequently, it is desirable to use several single measures when investigating the process by which socioeconomic background influences educational outcomes. This can not be examined when the different aspects of socioeconomic status have
been combined into a composite measure. And finally on a related conceptual issue, the interpretation of the relationship between a single variable measure and a given educational outcome is clear and can be expressed in the unit of measure of the single (predictor) variable. In contrast the relationship between schooling outcomes with composite measures is more difficult to interpret; the relationship cannot be expressed in the original metric but only in some standardised form. Standardised effects are problematic for comparisons between samples where the variables analysed have different variances.

2.4.2 Families, Men’s and Women’s Characteristics

Another important conceptual issue concerning students’ socioeconomic background is whether it is defined by the characteristics of their fathers, their mothers, or some combination of the two.

Occupation

Traditionally, studies of the effects of social background on educational outcomes have measured social class or socioeconomic status by father's occupation. This assumes that the class position of the family is determined by the occupation of the adult male and the woman's occupation is largely irrelevant. Since the mid-1970s the traditional view has come under attack from feminists and others who argue, justifiably, that women’s occupations are relevant to both their own social and economic position and that of their families. In the context of the immediate post-war years the traditional procedure was more understandable, men were viewed as ‘the provider’, ‘the head of the household’ or ‘main breadwinner’, and the proportion of married women in the workforce was considerably lower than it is today. Given the current situation of the high proportions of married women in the labour force, ‘career women’ and increasing numbers of househusbands, the traditional procedure is less attractive than it once was.

Three distinct approaches to the basis of a family’s socioeconomic position have appeared. The first is to use father’s occupation, the traditional procedure (Goldthorpe 1983, 1984). The rationale for the continued use of this procedure is that it is still the male adult who in the vast majority of households has the strongest attachment to the labour force. A second approach is to use the characteristics of the adult with the higher status occupation (Erikson 1984). This approach assumes that the adult with the highest status determines the family’s overall socioeconomic position. The problem with this approach is that it under-estimates the proportion of students from manual backgrounds since male manual employees are often married to women in white-collar occupations, which generally are of a higher status. A third approach is to use both mother’s and father’s occupation. This approach is difficult to present simply in cross-tabulations and complicates multivariate analyses.

In the ACER’s Longitudinal Surveys of Australian Youth (LSAY) and Youth in Transition projects (YIT), father’s occupation is generally used to indicate socioeconomic position,

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1 ‘Standardised’ in this context refers to statistical standardisation. Most commonly standardised variables have a mean of zero and a standard deviation (and variance) of 1. However there are a variety of ways to standardise variables.

2 In most comparisons the variances are likely to be more or less equal, but in the medium- to long-term the variances are likely to change, undermining comparability. To avoid incorrect interpretations it is safer to use both standardised and unstandardised measures.
when that data is not missing. If the data are missing (due to the absence of a father, non-response or unusable data), then mother’s occupation is used. This procedure is justified on the following grounds. First, fathers’ occupations are generally more stable than mothers’ occupations since men tend to spend a larger proportion of their adult life in the labour force. Their involvement to the labour market is predominantly full-time and there is evidence of stronger attachments. Second, increases in the proportion of women in the workforce may lead to compositional changes in mothers’ occupations, thereby adding complexity to over-time comparisons. The third justification is empirical. Mothers’ occupations tend to have weaker effects on educational and labour market outcomes than fathers’ occupations. And on a more practical issue, there are substantially fewer missing data on fathers’ than on mothers’ occupations. About 10 per cent of students have missing data (for any reason) on father’s occupation. This increases to around 25 per cent for mother’s occupation (Ainley et al., 1995). So whatever the theoretical merits of using mother’s occupation for data analysis, it is less practical given the higher levels of missing data.

Education
In the case of parental education is it often considered that the mother’s educational level is of primary importance. The argument is that mothers (compared to fathers) are more involved with the socialisation of a child; they spend more time with the child, spend more time reading and helping with the child’s homework, and generally are more aware of the child’s world at school. Although it is likely that in most families the mother is more involved in the child’s upbringing, empirical work does not overwhelming support this proposition. Most often the effects of mother’s and father’s education are comparable although it is more difficult to compare (in the same analysis) than occupational status because mother’s and father’s education tends to be more highly correlated. On the issue of missing data, there is no advantage in using one or the other, since both attract similar levels of missing data.

As in the case of parental occupational status there are several alternatives to the measurement of parental education. Either mother’s or father’s education can be used, or the average of both, or whichever is the highest. The average is only possible when continuous measures are used (i.e. years of formal education). In reports using the Youth in Transition data, mother’s education has generally been used in preference to father’s education, for the reasons outlined above. In cases where mother’s education was missing, father’s education was used. More recently some LSAY reports have used the mean of father’s and mother’s years of education. The use of one or other of these measures does not make large differences to the substantive interpretations of analyses examining the relationship between parental education and educational outcomes.

Family Structure
An important aspect of disadvantage is family structure. It is often believed that students living in one-parent or blended families do less well at school than students from more traditional nuclear families. Bilbarz and Rafferty (1993) found detrimental effects of family disruption on social mobility (of which most is through education). In addition, Evans et al. (1995) found negative effects of divorce on educational attainment. Preliminary analyses of the PISA\textsuperscript{3} data indicated that there is a negative (albeit small) association between students

\textsuperscript{3} The OECD Programme for International Student Assessment (PISA) is a study of the achievement of 15 year olds in reading, mathematical and scientific literacy. Field trial data have been collected and analysed. Data
from a single parent household and achievement (r < 0.10). This association survived after controlling for socioeconomic status. It is not clear if the negative effects of family disruption are physical (lower incomes), psychological (emotional scarring), or related to a reduction of adult-time available for help with school-work.

There is little doubt that it is desirable to monitor differences in educational outcomes between types of family structures. It is also true that the type of family a student comes from is relevant to measurement of parental occupation and education. However, it is not clear if family structure comes under the rubric of socioeconomic background or is a distinct source of educational disadvantage.

2.4.3 Relative or Absolute Conceptualisations

Concepts may be absolute or relative. In the literature on ‘poverty’ there is an ongoing debate between those advocating absolute measures based on, say, a basket of goods and services necessary for survival and relative measures which are based on cut off point on the distribution of income wealth or wealth. Obviously, the decision on whether to use absolute or relative measures has important implications as to the extent of poverty and changes over-time in the incidence of poverty.

The issue of whether a concept is absolute or relative is critical when conceptualising disadvantage. Socioeconomic disadvantage may be considered an absolute concept where families that do meet the criteria that a panel of experts have decided are necessary for a child’s educational development. For example, socioeconomic disadvantage could be defined in terms of housing tenure, income, size of household, labour force status and occupation of adult household members, and family type. In contrast, socioeconomic disadvantage may be understood as a relative concept, with socioeconomically disadvantaged students defined as students from families in the lowest part of the distribution of a continuous measure socioeconomic position.

Both approaches have their problems. With the absolute conceptualisation, it is difficult to get a panel of experts to agree on the criteria. The choice and use of indicators will make a large difference to the percentage of students defined as socioeconomically disadvantaged. It is a difficult exercise to show that each indicator has a strong, important and independent effect on educational disadvantage. Since the case for the use of a particular indicator is often debateable, it is unlikely that a conceptualisation developed for the monitoring of educational outcomes will be free from criticism.

The relative approach has all the problems associated with cut-offs. Arbitrariness, in the choice of cut off is a major problem. There is no particular reason why ‘educational disadvantage’ should be defined as the lowest decile, quartile or quintile of a distribution. Furthermore, the dichotomy between the educationally disadvantaged and not disadvantaged is crude and provides a too limited picture of socioeconomic disadvantage. In the absence of a ‘natural cut-off’ there is the problem of artificiality where it is difficult to justify a particular cut-off. For example, occupations, education, or income below a certain level are said to be indicative of social disadvantage whereas as those slightly above are not. Finally, a relative measure is by definition insensitive to increases or decreases in the overall (absolute) incidence of socioeconomic disadvantage.
2.4.4 Continuous, Categorical or Dichotomous Conceptualisations

As discussed earlier in the paper, socioeconomic position can be described in continuous, categorical or dichotomous terms. Socioeconomic status measures are based upon a notion of an underlying linear, continuous hierarchy. Social class measures are categorical, describing discrete grouping or classes. And dichotomous measures (defined in relative or absolute terms) can be used to distinguish between advantaged and disadvantaged groups.
3 MEASURES OF SOCIOECONOMIC POSITION

In this section we describe measures of the various concepts relating to socioeconomic position. First we deal with individual level measures relating to social class, the occupational, educational and income/wealth dimensions of socioeconomic status, and disadvantage (see Table 2). We then discuss area-based measures. In contrast to the majority of individual level measures described, the area-based measures are composite variables incorporating various aspects of socioeconomic position. Next we discuss problems associated with the use of these area-based measures for the reporting of individual student outcomes.

Table 2  Individual level measures

<table>
<thead>
<tr>
<th>Concept</th>
<th>Raw data</th>
<th>Constructed measure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social class</td>
<td>Parental occupation</td>
<td>e.g. ASCO2 major groups, ANU1 classes</td>
<td>Categorical</td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- occupational status</td>
<td>Parental occupation</td>
<td>e.g. ANU3_2 scale, ANU4 scale</td>
<td>Continuous</td>
</tr>
<tr>
<td>- education</td>
<td>Parental education</td>
<td>e.g. Years of schooling, qualifications</td>
<td>Continuous or categorical</td>
</tr>
<tr>
<td>- income/wealth</td>
<td>Various</td>
<td>e.g. Parental income, index constructed from ownership of home, possessions, etc</td>
<td>Continuous</td>
</tr>
<tr>
<td>Disadvantage</td>
<td>Various</td>
<td>e.g. Health Care Card status</td>
<td>Dichotomous</td>
</tr>
</tbody>
</table>

3.1 Individual Level Measures

3.1.1 Categorical Measures of Social Class

The Australian Bureau of Statistics (ABS) currently uses the second edition of the Australian Standard Classification of Occupations (ASCO2) to classify occupational data, and this classification is also widely used by academic researchers for the coding of survey data. ASCO2 was gradually incorporated into government and other data collections from 1996 onwards. It groups occupations according to skill level (educational level and previous experience required for entry into an occupation) and skill specialisation. The classification consists of five levels. In its most aggregated form, 5 skill levels and broad skill specialisation criteria are used to classify jobs into 9 major groups. These are: managers and administrators; professionals; associate professionals; tradespersons and related workers; advanced clerical, sales and service workers; intermediate clerical, sales and service workers; intermediate production and transport workers; elementary clerical, sales and service workers; and labourers and related workers. At progressively lower levels of the ASCO2 hierarchy, these major groups are subdivided on the basis of more refined degrees of skill specialisation. There are 9 major groups (1-digit level), 35 sub-major groups (2-digit level), 81 minor groups (3-digit level), 340 unit groups (4-digit level), and 986 occupational groups (6-digit level) (for a full description of the classification, see ABS 1997, 1998a).
While some researchers use the 9 major groups to classify occupations for the purposes of statistical reporting, this is not an ideal approach. A large degree of heterogeneity exists within major groups. For example, branch accountants and managers of financial institutions are included in the same major group as enrolled nurses and library technicians. The use of the more detailed levels of the classification for the reporting of educational statistics, however, would soon become unwieldy.

Goldthorpe’s class schema is commonly used in cross-national research on social stratification, occupational mobility and educational attainment. This schema includes class groupings of managers and professionals (the service class), routine white collar workers, self-employed and small business people, and three divisions of manual workers based on levels of skill and supervision (Erikson, Goldthorpe & Portocarero 1982).

In Australia, a similar class schema was developed by Najman and Brampton (1991) for health research. This four category schema comprises upper managers and professionals in group A, lower managers and professionals and supervisors in category B, skilled manual workers and lower non-manual workers in category C and unskilled workers, tellers and sales assistants in category D.

Another Australian measure of social class is designated as ANU1 (Broom et al 1977). It comprises the following discrete occupational groups: professional, managerial, other white collar, skilled, semi-skilled and unskilled manual workers. Although the ANU1 schema is based on an ABS coding framework which has now been superseded by ASCO2, it can be derived from the ASCO2 framework.

Further examples of categorical measures used in the United States and the United Kingdom, and a new measure being developed for use in Australia are described in Appendix A.

3.1.2 Continuous Measures of Occupational Status

Early small-scale studies of social stratification measured occupational status directly through the prestige of occupations. In these studies respondents were asked to rank occupations in terms of prestige and the social interaction and social consequences of this ranking were studied. Prestige was generally correlated with income and education although there were numerous exceptions such as the clergy (high prestige, low income), entrepreneurs (low prestige, high income) and scientists’ (high education, low income).

The limitation of early studies on social prestige was that they applied to only a limited number of occupations, those common occupations whose status was well understood. Therefore it was not possible to assign a status to individuals with occupations whose prestige was unknown or unclear. The solution to this limitation was statistical, based upon information on the income and education levels of occupations with a known prestige. Regressing income and education on the prestige measures isolated the effects of income and education on prestige. These effects were then used to estimate prestige (or occupational status) scores for all occupations by deriving mean levels of income and education for each occupation from census data (Duncan 1961).

In Australia, as in the United Kingdom and the United States, measures of occupational status are linked to official occupational codes. Before the mid-1980s occupations in the census were generally assigned occupation codes from the ABS Classification and Classified List of
Occupations (CCLO). From the mid 1980s, occupations in ABS surveys were classified according to the first edition of the Australian Standard Classification of Occupations (ASCO1) schema (Castles, 1986), and since the mid 1990s occupations have been classified according to the second edition of the Australian Standard Classification of Occupations (ASCO2). Most government and academic research have followed the ABS in using these classifications. The ANU2 measure of occupational status is linked to the CCLO classification (Broom et al 1977), the ANU3 scale is linked to the ASCO1 classification (Jones 1989), and the ANU3_2 scale is linked to the ASCO2 classification (McMillan and Jones 2000). The ANU2, ANU3 and ANU3_2 indices are highly inter-correlated.

The ANU4 scale has a different conceptual basis to the earlier ANU indices. Whereas the other measures are based on the concept of occupational prestige, the ANU4 index is designed to maximise the conversion of education to income through occupation. This logic is the same as that for the International Socioeconomic Index which will be used in this year’s international study of student achievement (PISA). Although it has a different conceptual basis, the ANU4 index is highly correlated with the ANU3_2 scale.

Further details of these and other measures of socioeconomic status are presented in Appendix B.

3.1.3 Parents’ Education

Data on parent’s education are often collected from students in studies of education outcomes. Usually the student is asked “What was your father’s/mother’s highest level of education”. The question is closed with a pre-coded response set consisting of categories such as “Didn’t go to school”, “Completed Primary”, “Completed Secondary”, “Trade Certificate” and “University”. The major difficulty with this type of the question is the status of a trade qualification. Is it in a hierarchical sense higher or lower than school completion? For questionnaire design, this problem can be overcome by asking a separate question on trade qualifications. However, the issue of whether the measure used in analyses is continuous (say years in formal education) or categorical remains.

The other major problem with questions on parental education is that they attract a large amount of missing data – some students simply do not know their parents’ education and/or are intimidated by the range of possibilities. In the PISA study, the missing data problem has been addressed by asking several (smaller) questions on parent’s education - on school, university and technical education. The logic is that most students will know the answer to at least the university question, so at least there is useable data on this important piece of information.

3.1.4 Income and Wealth

In surveys of students it is not possible to directly ask their parents’ income. A single question asking total family income is likely to attract substantial amounts of missing data and is considered more ‘private’ than parent’s occupation or education. In the United States information on parent’s income has been elicited by asking a series of questions on whether family income falls above or below a certain level and consequently asking a number of similar questions to define the income band.
In Australia, questions on parental income are not asked of students. Commonly ‘wealth’ is measured by asking a number of questions about the students’ home. These questions may include whether the home is rented or owned, the number of rooms, bedrooms, or bathrooms in the house, and a battery of items on possessions in the home. The possessions usually include household items such as telephones, televisions, microwaves and CD players. An unidimensional index of wealth is created using factor analysis (or some other statistical technique) or by some *a priori* understanding of which items are indicators of family wealth.

### 3.1.5 Socioeconomic Disadvantage

Socioeconomic disadvantage may be defined in terms of any one or several of the concepts under the rubric of socioeconomic position. It may be defined in terms of the distribution of a measure of socioeconomic status, for example the bottom quintile or quartile. Alternatively it may be based on a combination of several criteria such as family type, housing tenure, employment status and income. For example, Sammons (1995) used several indicators including eligibility for free meals, family size, student behaviour, occupation and employment status. Decisions on what criteria should be used and how each should be weighted add a degree of administrative complexity, not unlike that which accompanies area-based measures.

The measures of socioeconomic disadvantage used in Australian education (for funding not reporting purposes) include the School Card in South Australia and the (Federal) Health Care Card in Victoria (see Appendix C). Eligibility for these cards is determined by satisfying certain criteria. These cards provide a satisfactory measure of disadvantage but it must be noted that they do include non-socioeconomic elements.

The Health Care Card is automatically issued to people in receipt of most social security payments from Centrelink: Newstart Allowance, Special Benefit, Sickness Allowance, Partner Allowance, Widow Allowance, Youth Allowance (Job-seekers only), more than basic parenting allowance, maximum rate of Family Allowance, Mobility Allowance, and Carer Allowance (only for child with disability not parent). In addition, the Health Care Card is available to low income earners, foster carers (for child only), and Community Development Employment Participants. Health Care Cards may remain valid up to six months after social security payments are cancelled due to the recipient or their partner commencing employment.

The distribution of Health Care Cards in the Australian population is approximately 10 per cent of persons 15 years of age and older. Its distribution within the states and territories is presented in Table 2.
Table 2  Distribution of Health Care Cards in Australian: 1999

<table>
<thead>
<tr>
<th>State</th>
<th>Number of Health Care Cards</th>
<th>Per Cent of Persons 15 and older</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Capital Territory</td>
<td>21,537</td>
<td>7.5</td>
</tr>
<tr>
<td>New South Wales</td>
<td>516,050</td>
<td>8.6</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>20,069</td>
<td>11.6</td>
</tr>
<tr>
<td>Queensland</td>
<td>362,558</td>
<td>11.0</td>
</tr>
<tr>
<td>South Australia</td>
<td>147,206</td>
<td>10.5</td>
</tr>
<tr>
<td>Tasmania</td>
<td>57,970</td>
<td>13.2</td>
</tr>
<tr>
<td>Victoria</td>
<td>451,918</td>
<td>10.3</td>
</tr>
<tr>
<td>Western Australia</td>
<td>157,027</td>
<td>9.0</td>
</tr>
<tr>
<td>Not Recorded</td>
<td>12,131</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>1,746,466</td>
<td>9.9</td>
</tr>
</tbody>
</table>

1. Data from Knowledge Desk at FACS. 2. Population data on persons 15 years are older. From ABS Therefore estimates of percentage of Health Care Card recipients lower than for adults (18+).

3.1.6  Missing Data

In the collection of data for individual-level measures of socioeconomic position there will many instances where the data will be missing. Occupation and Education are the major concerns with higher levels of missing data than for other information such as books in the home, and possessions. There is no evidence that Health Care card status attracts a high level of missing data, and it can be assumed that those who do not know what a Health Care card is have not got a Health Care card. Missing data associated with area based measures is discussed in the next section.

Therefore in this section discusses the various strategies employed to minimise missing data for individual-level measures of occupation and education.

Occupation

For occupation missing data can be minimised by asking for previous main job if at the time of the interview the parent was not working. The amount of missing data for a family’s occupational group or socioeconomic status (as distinct from that of a particular parent) is further reduced by collecting data on the spouse’s occupation. The proportion of families where neither parent is presently working and neither has had a previous job is extremely small. If experience with field trial data indicates that this group is larger than expected then there are various procedures to impute socioeconomic background values for students from such families. However, it is expected that this group will be small enough not to alter the major interpretations of the data.
There are of course cases where one or both parents do have occupations but for some reason or other the data is missing (in essence a refusal). There are various procedures to estimate the occupational profile of this group. This includes comparing enrolment records with student responses, asking for the information a second time (when a proportion will provide adequate responses) and using census data for comparisons. However, it is a reasonable assumption that the occupational profile of this group is similar across the nation and over-time so the presence of this group will not undermine such comparisons.

In analyses of achievement it is possible to report on the mean achievement level for those students where parental occupation is missing. The mean achievement level of this group is frequently substantially lower than the mean achievement levels of all students. This information can be used to impute occupational scores to this group.
Education

Generally, a greater amount of missing data is found for questions on parent’s education than for occupation. This is because students are more aware of their parents’ present activities than their level of education. Furthermore, additional missing data may be produced if the response set is lengthy, complex and not mutually exclusive.

As in the case for occupation the procedures to reduce the amount of missing data for parent’s education include:

- Asking more than question with simple response sets. For example asking if the parent attended university (with response options yes and no) can easily be answered. In contrast including attendance at University among half-a-dozen or more response options is not as easy to answer.
- Using the education of the spouse as a proxy for both parent’s education when one parent is missing.
- Not ask for highest level since the higher of school completion and technical or trade qualification is not clear.

It is generally advised not to use occupation data to impute educational level. This increases collinearity in analyses and reporting of data, as well as being questionable for many occupations and in those cases where the parent was educated overseas.

Again as in the case for students with missing data for parental occupation, it is of interest to report mean achievement levels of students where the data for parental education is missing. Again this information can be used to impute an educational level.

3.2 Area-Based Measures

Measures of socioeconomic position may be derived directly from individuals or indirectly through the characteristics of the area in which they live or go to school (area-based measures). Area-based measures are often employed as measures of socioeconomic position, when the focus is on schools rather than on individual students. With area-based measures, the socioeconomic position of the student’s family is estimated by using information on the average characteristics of residents of the geographic area within which they reside. Similarly, a school’s socioeconomic position can be estimated from the socioeconomic characteristics of its students, or the school’s location.

Typically, Australian census data are used to generate area-based measures. Information from the Australian census can be used to assign socioeconomic scores to geographic areas defined by postcodes, Statistical Local Areas, Local Government Areas and Census Collection Districts (CDs). Since CDs are the smallest geographical unit identified in Australian census data (each consisting of approximately 250 dwellings), these are the preferred basis for the construction of socioeconomic area measures. However, for a number of pragmatic reasons postcode measures are sometimes used.
3.2.1 Socioeconomic Indexes for Areas

The ABS has produced five Socioeconomic Indexes for Areas (SEIFA) which can be applied to CDs or larger geographic areas (ABS 1990, 1994, 1998b).

They are:

- Urban Index of Relative Socioeconomic Advantage;
- Rural Index of Relative Socioeconomic Advantage;
- Index of Relative Socioeconomic Disadvantage;
- Index of Economic Resources; and the
- Index of Education and Occupation.

These indices comprise variables related to the economic resources of households, educational attainment, occupation, family structure, and ethnicity for people in a particular area. Some of the first four indices, which relate to disadvantage and advantage, are comprised of characteristics that are not strictly indicators of socioeconomic position (e.g., rurality, and the proportions of immigrants and indigenous people). The fifth index, which focuses on education and occupation, is closest to our conceptualisation of socioeconomic position.

A number of these indices have been used in educational contexts. For example, postcode level versions of the Index of Education and Occupation and the Index of Relative Socioeconomic Disadvantage have been used in various states to estimate the socioeconomic status of schools and school students; and the Department of Education, Training and Youth Affairs (DETYA) currently uses the postcode level version of the Index of Education and Occupation to monitor the socioeconomic status of higher education students.

3.2.2 Ross-Farish Indices

In 1974 when the Disadvantaged Schools Program commenced under the aegis of the Australian Schools Commission, separate urban and rural indexes of disadvantage were developed from census data (Ross 1983). These indexes made use of a number of census-derived variables with occupational status being the major component. Over the 1970s many school systems developed their own indicators for the identification of disadvantaged schools that differed in terms of the variables included, the weightings applied to the constituent variables and the extent to which other less formal information was used to identify disadvantage. By 1980 there were eight different indicators used to identify disadvantaged schools in Australia (Ross 1983). Subsequently Ross and Farish developed a revised methodology for using census data to provide an index of school disadvantage (Ross, 1983; Ross, Farish & Plunkett, 1988). The indexes developed from this methodology became widely known as the Ross-Farish indices. They have an outcomes focus in the sense that they were developed originally through a process that linked social background variables (at school level) to school average achievement measures in literacy and numeracy (Ross, 1983).

The Ross-Farish indicators of socioeconomic disadvantage have been extensively used in the identification of disadvantaged schools in the Australian context. The 1988 study on the
development of these indicators used CD data from 35 variables (Ross, Farish & Plunkett 1988). These variables were mapped onto 12 conceptually distinct dimensions. These dimensions comprise occupation, unemployment, education, income, family structure, accommodation (size of dwelling and improvised homes), tenancy, crowding, language and Aboriginality. The choice of dimensions and their relative weights in the construction of indicators of socioeconomic disadvantage is the next stage. The authors note this is the most controversial aspect of the procedure since the inclusion and weighting of particular dimensions needs to be justified. As a result about 20 indicators were developed each with distinct combinations of the 12 dimensions. For example Indicator A comprised occupation, education and income each with weights of one. Indicator Q was proposed as the new national measure (Graetz 1995b:37). It includes occupation, unemployment, education, single parent families and Aboriginality. However indicator Q never gained widespread acceptance as a national measure.

3.2.3  *Index AM from the SES Simulation Project*

Over a number of years the allocations of Commonwealth recurrent funding among non-government schools has been partly based on an *Education Resources Index* (ERI). As implied by its name this index was predominantly based on the resources available to and within each school. In the SES Simulation project (DETYA, 1998) an alternative to the ERI based on a measure of the socioeconomic composition of the population served by each school was developed. An index (*Index AM*) was developed as an equally weighted combination of measures of occupational status, educational status and income at CD level from the 1996 census. Appropriate census data for individual variables was combined using weights derived from a principal components analysis to form measures for each of these three composite variables (DETYA, 1998). Each composite is equally weighted in the final combination (being based on standardised scores). Hence, it is consistent with established definitions of socioeconomic status in research literature.

Computation of the *Index AM* for a school involves assigning students to the CD in which they live on the basis of their home address (geocoding) and averaging the values of the index after weighting those values in proportion to the number of enrolments from each CD. This is equivalent to assigning each student the index value for the CD in which they live and averaging these values over all students in the sample from the school.

As there is variability within each CD, individual socioeconomic status may not be the same as that for the CD. However, if school enrolments are drawn in a representative or random manner from each CD (and are not biased to the top or bottom of the distribution within CDs) the aggregate census-based index for each school should reflect what would be obtained if individual-based data were used. A range of concurrent validity studies suggest that *Index AM* correlate highly (in excess of 0.8) with aggregated measures derived from data collected from individual students and with other indicators of socioeconomic status (Ainley & Marks 1999).

3.2.4  *Area-Based Measures Compared*

It is evident that a range of composite area-based measures are available for use in the Australian context. Of these, two measures provide the closest approximations to our definition of socioeconomic position. They are the SEIFA Index of Education and Occupation and the *Index AM*. Other SEIFA indexes include elements which fall outside our
definition of socioeconomic position, and the Ross-Farish Indexes are based upon out-of-date census data.

3.3 Problems with Area-Based Measures

Since many systems use area-based measures, it important to point out that area-based measures are not appropriate for the reporting of the outcomes of individual students. This does not mean that area measures are inappropriate for funding purposes. Problems associated with the use of area-based measures for the reporting of individual achievement include misclassification errors, missing data, costs, and difficulties in making comparisons over time. Each of these issues is discussed below.

3.3.1 Misclassification Errors

The use of area-based measures such as CD- or postcode-level socioeconomic status scores to approximate individual’s characteristics is based upon an assumption of population homogeneity. That is, like people are assumed to live near like people. The validity of this assumption has been tested by comparing socioeconomic status scores assigned to individuals on the basis of their own (or family’s) characteristics, with scores assigned on the basis of the average characteristics of residents living within their CD or postcode area.

A number of authors have suggested that the relationship between individual and either CD or postcode-based measures is unacceptably low. For example, Ainley and Long (1995a:73) reported correlations between 0.36 and 0.45 between individual and CD measures in a sample of secondary school students. They argued that the greatest loss in precision occurs when one moves from the individual to CD level, and that the additional loss of validity when moving from CDs to larger spatial units such as postcodes is not great (Ainley & Long 1995b: 81-83; see also Jones n.d.). At a pragmatic level, it has been argued that any gains in precision from using a CD measure rather than a postcode measure are outweighed by the time and costs associated with coding student addresses to CDs (Martin 1994).

The assumption of population homogeneity within districts is particularly problematic in sparsely populated areas, with the correlations between individual level socioeconomic scores and postcode indexes being lower in rural than urban areas (Jones nd; Linke et. al. 1988; Western et. al. 1998;). Reasons include:

• the way postcode areas are constructed. Postcodes are defined by convenience of mail runs and deliveries, and in some remote areas, small towns may be grouped into single large postcode areas (Martin 1994:132).

• the principle of residential association (ie that like people live near like people) does not hold in sparsely populated areas (Linke et. al., 1985:13).

Measures of individual’s socioeconomic disadvantage based upon the socioeconomic characteristics of postcode areas are subject to error as a student is allocated the ‘average’ of all persons living within a particular area. Misclassification occurs because of the diversity of individuals within postcodes and discrepancies between the profiles of students and the profiles of other residents residing in the same areas.
The general conclusion of recent studies assessing the use of postcode measures is that the linking of postcode measures to individuals is subject to most error when applied to rural students (Jones n.d.; Western et. al., 1998) and low socioeconomic status postcode districts (Hyndman et. al., 1995; Power and Robertson 1987:113-4, 119). While some have argued that postcode measures may be adequate for monitoring group trends at the institutional or state level (Jones, n.d.; Linke et. al. 1985; Martin 1994), such measures should not be used for individual level analysis (ABS 1990:8).

3.3.2 Missing Data for Area Based Measures

A further problem with CD-based measures is the surprisingly large amount of missing data. In order to estimate a student’s socioeconomic position, their address must be coded according to the CD in which it falls; the student can then be assigned the socioeconomic score relating to that CD. Difficulties associated with the first part of this procedure, the coding of address information into CDs, can result in substantial amounts of missing data. Discussions with the ABS and two commercial mapping companies, ERSIS and ESRI, that produce geocoding systems to display mapped data spatially, suggest that approximately 20 to 50 per cent of student addresses will be uncodeable if students only report their house number, street, suburb and postcode. This problem arises because many streets cross two or more CDs and the ABS census maps produced for each CD indicate where the street crosses a CD boundary according to street intersections, but not according to house numbers. Therefore, student address information does not always provide sufficient information to code CD using the ABS maps or associated software. Problems also occur in the manner in which residents of rural areas describe their addresses, especially when trying to locate residences on geocoding systems. In order to increase the number of codeable addresses, it would be necessary to ask students to also indicate their rural property address and the nearest street intersections to their home address by sketching a map (Western et al 1998).

3.3.3 Costs

It is often assumed that area-based measures are cheaper than individual level measures for purposes such as the reporting of student outcomes. This is because individual level measures can require the collection of data from students (or enrolment forms), the coding of this data, and associated data processing costs. However, it must be stressed that the use of area-based measures at the CD level is not an inexpensive option, due to the labour-intensive procedures involved in the coding of address data into CDs.

3.3.4 Comparisons Over Time

An additional problem relates to the use of area-based measures over time. Since census data are collected every five years, the indices and dimensions need to be updated every five years. The reconstruction of scales and indices is time consuming and a question mark will always surround comparisons over time that use indices derived from different censuses. In addition, new indices from the most recent census are unlikely to be available within two years of that census given the time it takes to enter the data for the whole nation, code occupations and other information, and finally construct the indices. Therefore, area measures could be based on data up to seven or eight years old. In the case of the Ross-Farish indices this problem is compounded by the fact that these indices are not regularly updated.
4 MEASURES USED BY SCHOOL SYSTEMS

4.1 Australian School Systems

Table 3 summarises the measures of socioeconomic position used by the various education systems in Australia. Further details are provided in Appendix C. Although this summary is not complete several conclusions can be drawn from the table.

Generally these measures of socioeconomic status are used for the allocation of funds. None of the systems indicated that these measures were used for reporting purposes. In most systems, schools are assigned a socioeconomic status score and ranked from highest status schools to the lowest status schools. Therefore it is already possible in many systems that the data are available to report the relationship between socioeconomic status and educational outcomes at the school level. However, this is not recommended.

There is little consistency in the way in which school level socioeconomic status is measured between jurisdictions. In some instances area measures are used and in others, individual level data from surveys and administrative records. Of systems that use area measures some use the Ross/Farish indexes, others the indices developed by the ABS and in another indices developed from the Commonwealth Simulation study (DETYA 1998). If it is agreed that national reporting of the relationship between socioeconomic position and educational outcomes is desirable then measures designed for funding purposes (as presented in Table 3) do not provide a sound basis for a comparable measure for the reporting of outcomes.

Within the states and territories the Catholic school systems do not use the same measures as the government school systems. It is also noteworthy that generally the independent school systems do not collect systematic data on socioeconomic status.
Table 3  **Summary of Measures of Socioeconomic Position used by Australian Education Systems**

<table>
<thead>
<tr>
<th>System</th>
<th>Purpose</th>
<th>Measure</th>
<th>Area or Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New South Wales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>Disadvantaged Schools Program</td>
<td>Survey information from families with children at the school</td>
<td>Voluntary survey of parents</td>
</tr>
<tr>
<td>Catholic</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Independent</td>
<td>NA</td>
<td>Criterion is ability to pay fees. Indicators such as employment status.</td>
<td>Parents probably need to approach school</td>
</tr>
<tr>
<td><strong>Victoria</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>General Funding</td>
<td>Special Leaning Needs Index. Calculated from proportions of students: from families on government, benefits, transfer from other schools, are Koori, Non-English Speaking, single-parent, fall within particular occupation groups.</td>
<td>Mandated student records</td>
</tr>
<tr>
<td>Catholic</td>
<td>Recurrent Grants</td>
<td>Index of disadvantage. CD-level information on occupation, unemployment, educational qualifications and other socioeconomic indicators are combined to provide a weighted average.</td>
<td>Census</td>
</tr>
<tr>
<td>Catholic</td>
<td>Capital Grants</td>
<td>Index of disadvantage (above) is a component in the allocation of resources.</td>
<td>Census</td>
</tr>
<tr>
<td>Independent</td>
<td>NA</td>
<td>Socioeconomically disadvantaged identified by CentreLink indicators, self-identification by parents, and receipt of allowances such as the Educational Maintenance Allowance</td>
<td>No systematic data source., Ad hoc and self-identification.</td>
</tr>
<tr>
<td><strong>Queensland</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>Literacy Enhancement</td>
<td>Index of Relative Socioeconomic Disadvantage</td>
<td>Census</td>
</tr>
<tr>
<td>Catholic</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Independent</td>
<td>NA</td>
<td>Criterion is ability to pay fees. Other Indicators may be used.</td>
<td>Parental interview</td>
</tr>
<tr>
<td>System</td>
<td>Purpose</td>
<td>Measure</td>
<td>Area or Data Source</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td><strong>South Australia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>Disadvantaged Students</td>
<td>School Card</td>
<td>Income and Family Size</td>
</tr>
<tr>
<td>Government</td>
<td>Disadvantaged Schools</td>
<td>Per cent School Card holders and Aboriginal Students</td>
<td>School/Central Records</td>
</tr>
<tr>
<td>Catholic</td>
<td>Disadvantaged Schools</td>
<td>Per cent School Card holders and Ross Farish score</td>
<td>School/Central Records and Census</td>
</tr>
<tr>
<td>Independent</td>
<td>Disadvantaged Schools</td>
<td>Per cent School Card holders and Ross Farish score</td>
<td>School/Central Records and Census</td>
</tr>
<tr>
<td>Western Australia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>Commonwealth Literacy Program</td>
<td>Schools’ Score on Ross “H” Index</td>
<td>Census</td>
</tr>
<tr>
<td>Catholic</td>
<td>Capital Grant, Information technology, Literacy &amp; Numeracy</td>
<td>Schools’ Score on Index ‘H2’</td>
<td>Census</td>
</tr>
<tr>
<td>Catholic</td>
<td>Fee increases, Fee Monitoring</td>
<td>Schools’ Score on Index ‘A’</td>
<td>Census</td>
</tr>
<tr>
<td>Independent</td>
<td>NA</td>
<td>Various means to identify socioeconomically disadvantaged students</td>
<td>Parents, Enrolment data</td>
</tr>
<tr>
<td>Tasmania</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>Various Grants, Programs and Administrative Procedures</td>
<td>Educational Needs Index (ENI). Comprises proportion of students with government assistance and SES score of school. SES of school calculated from CD s of student addresses.</td>
<td>School Records, Census</td>
</tr>
<tr>
<td>Catholic</td>
<td>Capital Funding</td>
<td>Points system based on socioeconomic features of school population (70 pts.), financial indicators. eg. Discounts and comparative fees (20 pts.) and Ross Indicator of Disadvantage (10 pts.)</td>
<td>School Records, Census</td>
</tr>
<tr>
<td>Independent</td>
<td>Identification of socioeconomically disadvantaged students</td>
<td>Criteria include means testing, bursary applications, geographical isolation, requests for fee relief, eligibility for Student Assistance Scholarships (SAS), enrolment interview and staff observation</td>
<td>Students, Parents and Teachers</td>
</tr>
<tr>
<td>System</td>
<td>Purpose</td>
<td>Measure</td>
<td>Area or Data Source</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------</td>
<td>------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td><strong>Australian Capital Territory</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>Schools Equity Fund</td>
<td>Schools defined as disadvantaged (Priority) with 25 per cent or more of their students disadvantaged. Use Index of Relative Socioeconomic Disadvantage</td>
<td>Census</td>
</tr>
<tr>
<td>Catholic</td>
<td>Recurrent &amp; Capital Grants</td>
<td>Modified A Index. Comprises Income, Occupation and Education</td>
<td>Census, (SES Simulation Project)</td>
</tr>
<tr>
<td>Independent</td>
<td>NA</td>
<td>Socioeconomically disadvantaged students may receive scholarships, fee relief</td>
<td>Parental Interviews, Self-identification</td>
</tr>
<tr>
<td><strong>Northern Territory</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>Not Specified</td>
<td>Index of Relative Socioeconomic Disadvantage</td>
<td>Census</td>
</tr>
<tr>
<td>Catholic</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Independent</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
4.2 Overseas School Systems

Table 4 presents a summary of data collected by education systems overseas. This summary is only a guide and may not be completely reliable. It does show that many, but not all, education systems in OECD countries collect individual level data on socioeconomic position.

Given the range of approaches adopted by overseas education systems, no single Australian measure will provide data which is comparable across a broad range of countries. For example, in the United States the *National Assessment of Educational Progress (NAEP)* studies regularly report the relationship between parental education and student outcomes, while in the United Kingdom data are collected on fathers’ occupation.
### Table 4  Summary of Measures of Socioeconomic Position used by Overseas Education Systems

<table>
<thead>
<tr>
<th>Country</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium (French Speaking)</td>
<td>Gender, age, language spoken at home (French or Flemish).</td>
</tr>
<tr>
<td>Belgium (Flemish Speaking)</td>
<td>The following data is kept as administrative records: Gender, Age, Mother's Occupation, Father's Occupation, Mother's Education, Father's Education, Country of Birth of Student, Mother's Country of Birth, Father's Country of Birth, Rural/U rban Location, Language at home</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>Parent’s occupation collected by schools but not used centrally for reporting.</td>
</tr>
<tr>
<td>Demark</td>
<td>In Denmark a complete statistical coverage on student background is collected. These data include parents’ occupation and education. Since the registrar is so complete there is no need to collect this information again in state-wide testing programs. The registry information is used for reporting.</td>
</tr>
<tr>
<td>France</td>
<td>Official (central) records contain information on parents’ occupation and education.</td>
</tr>
<tr>
<td>Hungary</td>
<td>Hungary has a national student achievement sample survey (the Monitor survey). It is accompanied by student and school questionnaires. The student questionnaire includes questions about parents’ occupation and education. It is used in national reporting.</td>
</tr>
<tr>
<td>Ireland</td>
<td>The only information relating to social background which is kept on the national database is student's country of birth and location (urban/rural) which is a post-hoc classification. School-level databases may keep additional information e.g. religion, contact address etc. The type of information stored will most likely vary across schools.</td>
</tr>
<tr>
<td>Japan</td>
<td>No data collected.</td>
</tr>
<tr>
<td>Netherlands</td>
<td>The school collects information on students’ gender, age, mother’s and father’s country of birth, nationality. There is reporting by CITO (the National Testing Centre) of socioeconomic level but the measure includes immigrant status.</td>
</tr>
<tr>
<td>Norway</td>
<td>The followed data is collected from every student in Norway: name, address, date of birth, language (Norwegian or other) and name, address and telephone of the parents. Data on parental education and occupational is not collected from students. It is collected by the school.</td>
</tr>
<tr>
<td>Country</td>
<td>Comments</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Spain</td>
<td>The Ministry of Education collects a great amount of information about students, teachers and schools at the national level (some of this information can be accessed, in aggregate form, through <a href="http://www.mec.es">www.mec.es</a>). Also the 17 Autonomous Communities collect more detailed statistics in these matters (that, in some cases and for general information, in aggregate form can be accessed through their web sites (all of them listed in the above mentioned <a href="http://www.mec.es">www.mec.es</a>). Nonetheless, for confidentiality reasons, is never presented in disaggregated form (by student or school). The kind of information collected by the National Institute of Quality and Evaluation (INCE) about students, teachers and schools, and by the similar institutions of the Autonomous Communities, is very similar to the information that has been collected in previous international educational evaluations (IEA-RL, IEA-TIMMS, IAEP, and similar studies). This information can be only accessed by explicit permission of the Director of the INCE or the Director of the institutions of the Autonomous Communities. Nonetheless, selected results of evaluations and studies can be accessed through <a href="http://www.ince.mec.es">www.ince.mec.es</a>. The data collected include parental education and occupation.</td>
</tr>
<tr>
<td>Sweden</td>
<td>Parents’ ethnicity and parents’ education at individual level is collected. Available for all students when they complete year 9 (compulsory school)</td>
</tr>
<tr>
<td>United States</td>
<td>Each state, district, and even school may have its own data collection system. It is probable that some of these, most likely schools, do collect information about parental occupation and perhaps ethnicity. The NAEP asks students about their parent’s background by their level of education and whether a language other than English is spoken in the home. The sampled schools are asked about the location of the school (urban, rural, suburban) and for an estimated distribution of parental occupations.</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Individual level information on father’s occupation is collected in addition to the usual demographic information. Social background information is understood as necessary for studies of school effectiveness (see Sammons, 1999)</td>
</tr>
</tbody>
</table>
5 THE RELATIONSHIP BETWEEN SOCIOECONOMIC POSITION AND SCHOOLING

5.1 Correlation between Socioeconomic Position and Outcomes

5.1.1 Area-Based Measures

When area-based measures of socioeconomic position are correlated with area-based measures of educational outcomes, the correlations appear to be high. For example, Ross, Farish and Plunkett (1988:7) report correlations in excess of 0.70 between school socioeconomic status and mean school test scores. However, these correlations are misleading and cannot be understood as measures of the association between socioeconomic status and student outcomes at the individual level. The aggregate level correlations are high because there is no individual level variation.

Much lower correlations are found between area-based socioeconomic measures (based on the student's address) and individuals’ achievement scores. Ainley and Long (1995a:74) report correlations of approximately 0.20 for several area-based measures. In the Longitudinal Surveys of Australian Youth 1995 Year 9 cohort, the correlation of two SEIFA measures, the Index of Relative Socioeconomic Disadvantage and the Index of Education and Occupation, with achievement was 0.20 and 0.24 respectively (Marks and Fleming 1999).

It is important to note that the correlations between area-based measures of socioeconomic status and achievement differ substantially between rural and urban areas. According to Ainley and Long (1995b:80) the correlations in urban areas are around 0.25 but in rural areas 0.07 or less. The authors comment that area-based indicators exaggerate any difference between urban and rural areas in the relationships between socioeconomic status and achievement. Earlier we noted that the use of area-based measures to estimate individual socioeconomic position is subject to greater misclassification error for rural than urban residents.

5.1.2 Individual Level Measures

Empirical studies show that there is a moderate relationship between socioeconomic background and performance in achievement tests. The higher the socioeconomic status, or the more privileged the social class grouping of the family, the higher the level of achievement. An early review by Connell (1977:164-165) presents moderate associations with his own 1975 study exhibiting a correlation of 0.32.

More recent Australian studies find similar or lower correlations. Among Victorian Year 9 students in 1988 the correlations with father's occupation were 0.25 and 0.22 for mathematics and reading, respectively (McGaw, Long, Morgan, & Rosier, 1988: 93). Similarly, focusing on 14 year olds in 1989, Ainley and Long (1995a: 67) found correlations of 0.23 and 0.21 for father's occupation with achievement in maths and reading. According to the Third International Study of Mathematics and Science (TIMSS) (Lokan, Ford, & Greenwood, 1996: 38) the correlations of father's occupational status with Word Knowledge and Mathematics among 13 and 14 year-olds was 0.19 and 0.29 respectively. In the National English Literacy study, the correlation between reading achievement and socioeconomic background was around 0.3 (Masters & Forster, 1997).
The strength of the relationship in Australia is comparable with overseas countries. In a meta-analysis of data from a range of countries collected at different times, the average correlation coefficient between socioeconomic background and student achievement for individual level analyses was about 0.22 (White 1982). Across the studies included in the meta-analysis, the magnitude of the correlations varied widely, but few were above 0.40. In a further meta-analysis among the more economically advanced countries in the IEA Reading Survey, the correlation between socioeconomic status and achievement was between 0.1 and 0.2 (Elley, 1994).

Composite measures of individual characteristics show stronger relationships than single measures with achievement. This implies that they capture aspects of socioeconomic background not encompassed by as single measure. Ainley and Long (1995a: 74) reported correlation coefficients of around 0.30 with achievement for three composite measures comprising occupation, education and wealth. In the TIMSS study a composite measure including parental occupation, education and books in the home increased the correlation to around 0.40. Similarly, multiple measures explain more of the variation in school achievement than does a single measure. Australian field trial data from the OECD Programme for International Student Assessment (PISA) indicate a multiple correlation coefficient of 0.45 for regression analyses of achievement on a range of measures of socioeconomic status and other aspects of home background.4

5.1.3 Preliminary Results from PISA

Table 5 presents some results from the PISA field trial showing the correlations between different measures of socioeconomic status and achievement in the three domains of reading, mathematics and science.

| Table 5 Correlations of Achievement with Measures of Socioeconomic Position (PISA) |
|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
|                                                | FSEI  | MSEI  | UNI  | Wealth | BEAUX | EDREC | Books |
| 1. Reading Achievement                         |       |       |      |        |       |       |       |
| Australia                                     | 0.28  | 0.24  | 0.26 | 0.08   | 0.37  | 0.25  | 0.28  |
| All countries                                 | 0.26  | 0.23  | 0.21 | 0.23   | 0.31  | 0.37  | 0.27  |
| 2. Maths Achievement                          |       |       |      |        |       |       |       |
| Australia                                     | 0.37  | 0.28  | 0.22 | 0.13   | 0.31  | 0.32  | 0.23  |
| All countries                                 | 0.25  | 0.24  | 0.22 | 0.20   | 0.26  | 0.33  | 0.25  |
| 3. Science Achievement                        |       |       |      |        |       |       |       |
| Australia                                     | 0.22  | 0.18  | 0.22 | 0.04   | 0.32  | 0.28  | 0.20  |
| All countries                                 | 0.24  | 0.22  | 0.20 | 0.17   | 0.28  | 0.32  | 0.26  |

The measures FSEI and MSEI are Ganzeboom’s International Socioeconomic Index (SEI) derived from open questions on father’s and mother’s occupation. The education measure ‘Uni’ is a dichotomous measure distinguishing students where one or both parent(s) had been

4 These included mother’s and father’s occupational status, either parent attending university, wealth (measured by possessions), cultural capital possessions and books in the home.
to university. The wealth measure is derived from possessions at home specifically: cars, bicycles, telephones, and a dishwasher. The ‘Beaux’ measure is an indicator of cultural capital. It is measured by ‘high-cultural’ possessions in the home such as classic literature, musical instruments, books of poetry, and works of art. The educational resources index (EDREC) was constructed from students having their own calculator, computer, link to the Internet, desk for study, dictionary and encyclopedia. The final indicator is based on the number of books in the home. There are several notable features of Table 5. First, the occupational status of fathers has a larger effect on achievement in the three domains than the occupational status of mothers. University participation has a slightly weaker effect than occupational status. The wealth measure performs poorly in Australia. A measure based on the presence of cultural capital items in the home has a moderately strong correlation with achievement. The correlations between educational resources and achievement differ between the domain tested. Similarly, the number of books in the home has higher correlations with reading achievement than the two other achievement domains.
6 TOWARDS A COMMON MEASURE OF SOCIOECONOMIC POSITION FOR THE REPORTING OF EDUCATIONAL OUTCOMES

6.1 Why Adopt a Common Measure?

There are three principal arguments for adopting a common measure of socioeconomic position for the reporting of the outcomes of schooling.

- With present arrangements, it is difficult to conclude if the influence of socioeconomic position on educational outcomes is stronger in some educational systems than in others. Therefore, the community cannot judge the effectiveness of policies aimed at reducing the influence of socioeconomic position.

- Similarly, it is difficult to gauge if the influence of socioeconomic position on student outcomes is changing overtime.

- The relationship between socioeconomic position and achievement is not simple to understand. The complexity of the area-based measures and the plethora of individual measures make understanding the strength of the relationship difficult. A single common measure does not remove the complexities but provides a basis for evaluation.

6.2 Why Use An Individual level rather than An Area-Based Measure?

It is argued that the measure of socioeconomic position used for reporting on the outcomes of schooling should be based on individual data rather than an area-based measure. There is a number of reasons in favour of the use of individual level measures of socioeconomic position for this purpose.

- Individual student outcomes are best monitored by individual- rather than area-level measures.

- Many of the existing area measures include information (such as proportion of non-English speaking and Aboriginal persons) that is conceptually distinct from socioeconomic position.

- The interpretation of the effects of area-based measures such as SEIFA, which are a composite of various socioeconomic indicators with a variety of weights, is difficult.

- Correlations between aggregate measures (such as area-based measures of socioeconomic status and mean school performance) suffer from the ecological fallacy. Robinson (1950) shows that aggregate or area based correlations exaggerate the strength of individual level social relationships.

- Area-based measures of socioeconomic status (based on postcodes or CDs of the students’ addresses) are not good proxies for the socioeconomic status of individual students. The correlation rarely exceeds 0.50 and can be as low as 0.10. Consequently, the reporting of the relationship between socioeconomic position (as indicated by an area-based measure) and individual-level achievement measures will be subject to considerable error.
• Area-based measures are even less reliable measures of individual socioeconomic status in regional and rural Australia.

• The boundaries and characteristics of administrative units such CDs frequently change.

• It is not clear what information should be used to construct area-based measures of socioeconomic status. Should the measure be generated from information on the occupational characteristics of individuals or household heads? Should the characteristics of all households, households containing adults of similar ages to the parents of school age students, or only households containing school age students be used to calculate the area-based scores?

• The error associated for an estimate of the relation between an area based socioeconomic position and any educational outcome is too large for reliable conclusions to be drawn. There is a high likelihood that apparent trends or between system differences are artefacts of the large standard errors associated with areas based measures.

• Monitoring the individual achievement levels of students defined as socioeconomically disadvantaged is not possible with based measures.

• A generally agreed-on measure of socioeconomic disadvantage is probably not possible with area based measures.

• Individual measures based on parental occupation (either social class or occupational status) or parental education are simple. These measures can be understood by stakeholders in education.

• Individual level measures also give a far more accurate understanding of the relationship between socioeconomic position and educational outcomes.

• Individual level data must be collected anyway for reporting of the nationally comparable outcomes of other disadvantaged groups, specifically Indigenous students and students from non-English speaking backgrounds. The educational outcomes of these students cannot be monitored by area-based measures.

6.3 Why Use a Single or Multiple Variable Approach rather Than a Composite Variable?

There are three reasons why a single variable approach (such as one based on parental occupation) is to be preferred for the reporting of the outcomes of schooling in Australia.

• A composite variable approach requires all components to be measured in the same way on each occasion. A single or multiple variable approach is less restrictive, demanding that data for only one indicator need be collected (albeit collected in the same manner). In the case of data gathered from students it will be difficult to gather information that provides an indication of income or wealth in an accurate or consistent manner. In addition obtaining information at an individual level about parental education is likely to be more difficult than for parental occupation.

• Combining aspects of socioeconomic status reduces the ability to differentiate the role of different aspects of socioeconomic status. This point was also made by Graetz
For example, parental education may have a more powerful effect on early school leaving than parental occupation. Parents who are more educated may value education more highly and so encourage continuation with school. On the other hand, parents with high incomes but not highly educated may not be as interested in their children’s education. For example, in regression analyses the relationship between occupational socioeconomic status and educational outcomes can be readily interpreted, for example a unit or unit difference in occupational status relates to a difference of $x$ units in educational outcomes. Such an interpretation is not possible with more complex multi-dimensional measures.

- The relative weights (either explicit or implicit) in a composite measure, say of occupational prestige, education, wealth and other aspects is always debatable. This adds an additional element of uncertainty to comparative analyses.

6.4 **Both Continuous and Categorical Measures are Useful**

Both continuous and categorical measures have their advantages and disadvantages.

The advantages of *continuous measures* are:

- Their relationship with educational outcomes can be conveniently summarised as a correlation coefficient.
- Their interpretation in regression-type analysis is simple.

The disadvantages of *continuous measures* are:

- Although correlations and regression coefficients are understood by those involved in educational research, they are not understood by parents and many teachers.

The advantages of *categorical measures* are:

- Their relationship with educational outcomes in the form of cross-tabulations can be widely understood.
- They (arguably) distinguish between important socioeconomic groups.

The disadvantages of *categorical measures* are:

- They do not provide an overall single measure.
- Their interpretation in regression-types analyses can be cumbersome.

Therefore we believe that both continuous and categorical measures are useful for the reporting of the relationship between socioeconomic position and educational outcomes.

6.5 **Absolute Rather than Relative Measures of Socioeconomic Disadvantage are Preferred**

An absolute measure of socioeconomic disadvantage is preferred because:

- The cut-off for a relative measure is arbitrary and highly contentious.
Absolute measures are sensitive to changes in the overall levels of social disadvantage.

Absolute measures can incorporate aspects of disadvantage which general measures of socioeconomic status or social class cannot. For example family type (single headed versus other) and labour force status (unemployment) can be incorporated into both.

6.6 Advantages and Disadvantages of Particular Individual level Measures

6.6.1 Occupation

Advantages

• It is stable, in contrast to other aspects of socioeconomic status. Occupations do not change their status in the short-to-medium term.

• Basing comparable measures of socioeconomic position on occupation alone rather than education or wealth is a more reliable procedure. Adults know their own occupation and older students are more likely to know their parents’ occupation than their parents’ education, income or wealth. The PISA validity study showed that there are high correlations (from 0.7 to 0.8) between occupation measures collected from student reports and measures collected direct from parents (see also Hauser 1994).

• The same occupational data can be used to generate measures of socioeconomic status and social class. There are a number of well-established methods available for the scaling of occupational status and social class.

• Occupational data can also form the basis for a measure of disadvantage that relates to either social class or occupational status.

• Simple interpretation is possible as either a categorical (social class) measure or as the basis for a continuous (socioeconomic status) measure.

• It can be aggregated to create measures of school socioeconomic status. These measures could be used as an additional criterion for funding.

• Some systems already collect occupational data at enrolment or in surveys.

• Occupational data have been collected in many studies of student outcomes.

• There is some degree of backward comparability within Australia and international comparability.

Disadvantages

• It is not clear where socioeconomic disadvantage begins. The cut-off or boundary problem. (This disadvantage applies to all indicators discussed here except the Health Care Card).

• It involves coding of occupational data.

Note that extensive coding is required for other aspects of educational outcomes such as open-ended test questions.
• Typically 10 to 15 per cent of occupational data are missing; this problem is greater for mother’s occupation than for father’s occupation.

• Information on parental occupation cannot be obtained readily from young primary school students. This also applies to other indicators such as parental education and wealth.

• It may be argued that collecting occupational data (or any other individual level data about the student’s household) is intrusive.

6.6.2 Parental Education

Advantages
• Parental education has an important theoretical relationship with educational attainment. Arguably this measure encompasses concepts such as cultural capital.

• Empirical work confirms there is a moderate relationship with achievement outcomes.

• Parental education has an influence on educational outcomes in addition to other measures of socioeconomic position.

• Older students tend to know the educational attainments of their parents.

• Responses do not involve manual coding. Can be asked as a pre-formatted question.

Disadvantages
• Questions on parental education usually generate large proportions of missing data from students (and adults). Asking several questions can reduce this.

• Students tend to know the current occupations of their parents but are less likely to know what stage they finished their schooling. The exception is likely to be parental participation at university, which the evidence indicates students tend to know.

• Concepts such as ‘completed school’ have different meanings over-time and to some extent between states and territories. However this difference between meanings is becoming less of a problem.

• Year levels in education are not exactly equivalent across Australian states and territories.

• Difficulty in creating an ordinal measure of, for example, years in formal education because of the status of trade and other vocational qualifications. It is not clear if such qualifications are higher or lower than school completion.

• As for information about occupations, questions on parental education can be considered intrusive.
6.6.3 Wealth

**Advantages**
- The measure directly taps the concept of socioeconomic disadvantage.
- The measure is theoretically important.

**Disadvantages**
- It is not possible to ask students or their parents household income or total assets as this information is considered highly personal. Income questions typically incur high refusal rates by adult. School students are unlikely to accurately report their parents’ income even if they were happy to do so. There is an additional problem of equating self-employed incomes with wages and salaries.
- Can only be measured indirectly through possessions in the home and other characteristics of the students’ home.
- Possession of items is not stable over-time. Possessions such as a ‘mobile phone’ or ‘computer’ will change their distribution over-time so their status as an indicator of wealth will change.
- It is not always clear if household possessions such as a computer or a link to the internet are indicators of wealth or educational resources.
- The nature of the possession cannot be ascertained. If students are asked whether their family has a car, a late-modelled expensive car cannot be distinguished from a second hand car. On the issue of cars, the number of cars has a lot to do with the number of young adults in the household as well as household wealth.
- Wealth has only weak relationships with student achievement in the Australian context. (This may be due to measurement problems).

6.6.4 Labour Force Status

**Advantages**
- Unemployment is generally accepted as an indicator of socioeconomic disadvantage.

**Disadvantages**
- Unemployment is more often temporary rather than permanent. It would be too difficult to establish the length of unemployment.
- It doesn’t make sense to treat all short-term unemployed as an undifferentiated group. Individuals will differ in their access to socioeconomic resources such as savings from past jobs, educational resources in the home, cultural capital and so forth. An alternative strategy is to use an occupation measure and classify these persons according to their last occupation.
- The educational impact for students of parents categorised as ‘domestic duties’, ‘retired’, ‘students’ is unclear.
• Only in a very small percentage of households are both parents in long-term unemployment.

• Better to include unemployment as a component of a more general measure of socioeconomic disadvantage.

6.6.5 Health Care Card

Advantages
• Includes other aspects of socioeconomic (or social) disadvantage such as family type, labour force status and income.

• Health Care Card is a generally accepted measure of social disadvantage.

• The criteria for receipt of a Health Care Card has already been established. There is no need to develop a new framework. Changes to the Health Care Card criteria are likely to be small and are likely to reflect changes in ‘social disadvantage’.

• It provides a direct measure of socioeconomic disadvantage.

• Parents are aware that they have a Health Care Card.

• Approximately 15 per cent of the Australian population is in the receipt of a Health Care Card.

Disadvantages
• Health Care Cards may include parents who are arguably not socioeconomically disadvantaged or only temporarily disadvantaged.

• Criteria for receipt of a Health Care Card is likely to change over-time. Not inconceivable that the Health Care Card may be replaced by another scheme.

• Not internationally comparable.

• Schools are not always aware that a student’s parents are in receipt of a Health Care Card. Similarly, students are unlikely to know if their parents are in receipt of a Health Care Card.

6.6.6 Books in the Home

Advantages
• It has been used frequently in international studies.

• It is simple to collect these data and does not attract high levels of missing of data.

• Empirical investigations demonstrate that it relates to educational outcomes.

Disadvantages
• ‘Books in the home’ does not have a strong theoretical rationale. It is a mixture of educational background, socioeconomic status and possibly wealth. It is not clear why
it is correlated with achievement.

- There is a possibility that high achieving students may report higher levels of books in the home because they use them more frequently than low achieving students.

- Not a measure that would be readily accepted by the public and governments.

6.6.7 Educational Resources, Cultural Capital, and Social Capital

Advantages
- Add to the understanding of the process by which socioeconomic background influences educational achievement.

Disadvantages
- These concepts are distinct from socioeconomic position and therefore cannot be used as a measure of socioeconomic position.

- There is little agreement on how they should be measured.
7 PRACTICAL ISSUES AND COSTS

This section discusses practical issues and the costs associated with data processing for reporting on socioeconomic position and student outcomes.

7.1 Administrative Data Bases

Information about students attending Victorian government schools is stored in the computer package – CASES. The information from enrolment records is entered into a computer and exported (or downloaded) to a central administrative computerized database. The information collected includes occupation coded to one of five categories for both parents. We have been informed that the verbatim responses to the occupation questions are also entered. The data also includes ethnicity and disadvantage. Schools are asked to return student information twice a year (February and July). However, information is not updated unless a student changes schools within the government system. Therefore, for Victorian government schools the collection of enrolment data for reporting purposes requires only small changes.

However this is not true for all states. The Tasmanian education system keeps computerized records but we understand this is for only 50 per cent of students and does not include data on parental occupation or education. Again the database is only for students attending government schools. In New South Wales, there is a computerized administrative system called OASIS. However, we understand that it may not include information for all (government) schools. In South Australia, EDSAS is used but again we have been informed it does not cover all (government) school students.

Although most systems do not have a computerized data base already in place for the collection of the social background data, it is true to say that most are likely to have computerized records for all their students in the short to medium term. However, it is unlikely that non-government schools use comparable data bases.

The additional costs of incorporating standard questions on parental occupation, education and Health Care Card status to an enrolment form would be minimal. With computerized administrative systems such as CASES, the costs of converting information collected on paper to an electronic form is already largely covered. With the exception of a very small proportion of cases, there are no coding costs for parental educational and Health Care Card status. These are closed questions and few persons provide unclear or ambiguous responses. The coding of occupations is a necessary cost, which is approximately $1 per case at market rates. However, the techniques used by the Australian Bureau of Statistics for the coding of occupational data would significantly reduce the costs.

7.2 Student Surveys Accompanying State-Wide Tests

Most student achievement tests are accompanied by a small survey in which students are asked to complete details about themselves. This information typically includes the students’ gender, their year-level and school. Additional questions on social background could be readily incorporated into such surveys. The cost of student survey of say about 4 pages (including instructions and notes) would be in the vicinity of 25 cents a survey. The data from a such survey would need to be entered (and possibly verified) into an electronic data base. If schools were not involved in data entry the cost of data entry would be approximately $1.50 a student. (This cost would include data entry for the tests themselves). With verification the data entry costs are doubled. This figure may be reduced by using machine readable
technology for tests and forms. As in the case of administrative records, the costs of coding occupations would be $1 a case or less.

7.3 Costs Of Geo-Coding Student Addresses

There are costs associated with the application of area-based measures. As mentioned earlier it is not inexpensive. In the first step, student addresses need to be transformed into an electronic form. As in the case for individual-level measures this is little problem if education systems already have centralized computer records. Once in electronic form most addresses (from 50 to 70 per cent) can be automatically geocoded into electronic form. That is the address can be coded to a Census Collector District (CD). The next stage involves manual coding of the remaining addresses to CDs (eg addresses in rural areas, and incomplete or ambiguous addresses). There is a proportion of addresses where CDs cannot be assigned easily. As mentioned in the discussion of problems with area-based measures many ‘normal’ addresses cannot be automatically assigned CDs when streets cross CD boundaries. In addition post office box numbers addresses cannot be assigned to CDs. We estimate the cost of this step at approximately 15 cents per case and up to 50 cents per case for manual coding.

The final step involves linking the CD to measures of social background. The most convenient procedure would be to use already established measures produced by the Australian Bureau of Statistics. The ABS program CDATA allows researchers to link CD to any of several socioeconomic indices. The cost here is minimal since it is simply the cost of the CDATA program. However, if other socioeconomic indices were to be used the costs are considerably higher.
8 RECOMMENDATIONS

In this section we propose that a common measure of socioeconomic position can best be obtained by collecting data on the occupation, education and Health Care Card status of the student’s parents (or guardians). Such data allow the reporting of the relationship of socioeconomic background and student outcomes by a discrete social class measure, a continuous occupational status measure, a parental education measure and a disadvantage measure.

8.1 General Recommendations

1. That, an individual level measure be used in preference to an area-based measure. Although area based measures are cheaper, the level of inaccuracy is such that the slightly more expensive individual level measures are preferred.

2. That, enrolment forms should include questions asked of parents (or guardians) which enable measures of socioeconomic position to be constructed.

3. That state-wide testing for students is accompanied by a student survey which collects data (amongst other data) so that measures of socioeconomic position can be constructed.

4. That the precise nature of the measures of socioeconomic position to be reported be decided after appropriate piloting. Issues to be resolved include sampling, data collection procedures, coding, and variable construction. These issues can only be adequately dealt with using the data from pilot studies.

5. That in order for the reporting of the relationship between socioeconomic position and student outcomes to proceed, in the first instance, agreement be sought among the administrators of the government school systems.

8.2 A Set of Options

OPTION1:

1. That data on parents’ occupation and education, and family’s Health Care Card status be collected by enrolment forms and on student surveys accompanying state-wide testing. These data form the basis for measures of socioeconomic position.

2. That social class be measured by a five or six category schema similar to ANU1. This would be an appropriate compromise between having a small number of heterogeneous social classes and a schema with too many categories. One suggested measure is a five category variable comprising 1. Professionals, 2. Managers, 3. Routine White Collar Workers, 4. Trades and Skilled Manual Workers, 5. Unskilled and Semiskilled Manual Workers.

3. That occupational status be measured by the ANU4 measure of occupational status. The ANU4 scale is preferred over the ANU3-2 scale because it does not rely upon dated prestige rankings and is appropriate for the most recent occupational coding schema. It is conceptually stronger than other socioeconomic status measures since it scales occupations in such a way as to maximise the conversion of educational attainment into income via occupation.
4. That an additional aspect of socioeconomic position, parental education, be measured in a manner suitable for the reporting of the relationship between parental education and educational outcomes. We have no firm recommendation on the precise nature of the measure and recommend that this issue be discussed by stakeholders with advice from the ABS.

5. That socioeconomic disadvantage be measured (and reported) by Health Care Card status.

OPTION 2:

- As for Option 1 but with less data collection. Reporting be confined to two single indicators (occupational status and Health Care Card status) measured at the individual level and reported separately. This approach simplifies reporting procedures by relying upon fewer measures. However, the approach retains some flexibility. The occupational data required for the measurement of occupational status can also be used to generate a categorical social class measure if required.

OPTION 3:

- Similar to Option 2 except that reporting is bases on parental education rather than occupation. Reporting confined to two single indicators (parental education and Health Care Card status) measured at the individual level and reported separately. This option is less costly than Option 1, as educational data (which can be collected by using questions with a small set of precoded response options) is cheaper to process than occupational data (which requires some coding of open-ended responses).

OPTION 4:

- This is the least preferred option. Reporting would be based on a single area-based measure where the socioeconomic status of students is assigned by the socioeconomic profile of the census collector district their parents live in. The measure should be one which includes elements directly related to socioeconomic position, but excludes other (arguably related) characteristics such as family structure, ethnicity and Aboriginality. Two Australian scales developed from the most recent Census data fulfil these requirements: the Index of Education and Occupation developed by the Australian Bureau of Statistics, and the Index AM.
8.3 Ranking of Options

Table 6 provides a ranking of the four options.

Table 6  Ranking of the Four Options

<table>
<thead>
<tr>
<th>Rank</th>
<th>Reporting educational outcomes by:</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Occupational status, Social Class,</td>
<td>Recommendation</td>
</tr>
<tr>
<td></td>
<td>Parental education and Health</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Care Card Status</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Occupational status and Health Care</td>
<td>Second most preferred option after</td>
</tr>
<tr>
<td></td>
<td>Status</td>
<td>recommendation.</td>
</tr>
<tr>
<td>3</td>
<td>Parental education and Health Care</td>
<td>An option to be considered if more highly</td>
</tr>
<tr>
<td></td>
<td>Status</td>
<td>ranked options cannot be implemented.</td>
</tr>
<tr>
<td>4</td>
<td>Area-based measure</td>
<td>Least defensible measure</td>
</tr>
</tbody>
</table>

8.4 Other Recommendations

1. That data from enrolment records be used to report the relationship between socioeconomic position and achievement in the Year 3 and Year 5 testing.

2. That data from the survey accompanying state-wide testing be used to report the relationship between socioeconomic position and achievement in Year 7 and later year testing.

3. That data from both enrolment records and state-wide testing be used to report on other educational outcomes such as school completion.

4. That the analyses for reports be considered as part of a series of national reports which would be released annually in a format similar to the National Assessment of Educational Progress (NAEP) reports in the United States.

5. The nature and design of these reports be developed including ‘mock-up’ reports.

6. That sample surveys be used rather than total school system populations, wherever possible, for the reporting of the relationships between socioeconomic position and educational outcomes.
APPENDIX A: OTHER CATEGORICAL MEASURES OF SOCIOECONOMIC POSITION

Categorical Measures for Reporting in the United States

Parents’ Education Level

The relationship between achievement and parent’s education is regularly reported in the National Assessment of Education Progress (NAEP) studies in the United States (Campbell, et al. 1996). Students were asked to indicate the extent of schooling for each of their parents: did not finish high school, graduated from high school, had some education after high school, or graduated from college. The response indicating the higher level of education for either parent was selected for reporting.

Disadvantage

A second measure available used in the NAEP studies (until the early 1990s) is community type. This measure distinguishes between students living in disadvantaged rural and urban areas, advantaged urban and other areas. In later NAEP reports student achievement by this measure was not reported.

Goldthorpe and the UK’s New official Occupational class measure: the NS-SEC

In the UK, there is a long tradition of using categorical social class measures in the reporting of official statistics and academic research. The British Registrar General’s (BRG) social class, otherwise known as the Social Class based upon Occupation, has been used extensively for most of this century (see Brewer 1986 & Szreter 1984 for a review and critique). It groups occupations into six hierarchical classes. These categories are: professionals, intermediate occupations, skilled non-manual, skilled manual, semi-skilled and unskilled occupations. The BRG social class is not a ‘class’ in either Marxist or Weberian terms; rather, occupations are classified according to their skill level.

However, commencing with the next UK census, the BRG social class will be replaced with a new classification, the National Statistics Socio-Economic Classification (NS-SEC) (Rose & O’Reilly 1997, 1998). This measure is based upon Goldthorpe’s neo-Weberian social class schema (Erikson & Goldthorpe, 1992; Goldthorpe, 1980; Goldthorpe, 1983). A primary distinction is made between employers who buy labour and exert some degree of control and authority over it; employees who sell labour and place themselves under the control of employers in the process; and the self employed who do neither. Among employees, further distinctions are made in order to reflect the wide range of market and work situations experienced by employees. Similarly, small employers are distinguished from owners of large organisations. In its most detailed form, the NS-SEC consists of 13 class groupings; additional categories are provided for persons outside the labour force and full time students. These classes can be collapsed into classifications consisting of either 9, 8, 5 or 3 categories (see Figure B1).
Goldthorpe’s class schema, upon which the NS-SEC is based, is the most influential Weberian categorical measure of social class. It is commonly used in cross-national research on social stratification, occupational mobility and educational attainment. David Rose, who headed the research team responsible for the NS-SEC, is currently working with researchers at the Australian National University to develop and validate an Australian version which should be available in the first half of 2000.

In terms of suitability for use in the reporting of educational outcomes, it should be noted that only in its most aggregated form (managerial and professional, intermediate, working class), can the NS-SEC classes be ordered hierarchically. The amount of information required in order to accurately classify individuals is greater than that required for the various socioeconomic status scales described in Appendix B. Ideally information on current or last
job title and duties (coded to the 4-digit level of ASCO2), employment status (employer, self employed, manager, supervisor, other employee) and workplace size is required in order to classify individuals, although versions of the classification will be provided which require only the use of ASCO2 or ASCO2 and employment status.
APPENDIX B: MEASURES OF OCCUPATIONAL STATUS

Introduction

There are a number of different methods available for placing occupations on a hierarchy ranging from low to high socioeconomic status. The detail of continuous occupational status scales also varies. When reporting nationally comparable outcomes for schooling, it is necessary to use a scale which is sufficiently detailed, for example, to allow the most socioeconomically disadvantaged students to be identified.

There are four main approaches to the detailed scaling of occupations which have been used in Australia.

1. Occupational prestige scales: In early studies, respondents were provided with a list of selected occupations and asked to make judgements about their relative social standing or prestige. This information was combined to generate occupational prestige scales.

2. Socioeconomic indexes: Census data on the education, earnings and/or other sociodemographic characteristics of incumbents of different jobs have also been used to scale occupations. The main difficulty in this approach is deciding how to combine a number of characteristics into one measure. For example, it is not immediately apparent whether to give equal weights to education and earnings, or whether to accord one of these characteristics greater weight than the other. Two different methods of determining the relative weights of education, income and other sociodemographic characteristics have been used in recent years to generate Australian occupational socioeconomic indexes.
   a) The ANU3 scale and the ANU3_2 scale: The relationship between prestige rankings and characteristics such as education and income is used to determine the relative weights of these characteristics. These weights can then be used to calculate socioeconomic scores for occupations not included in the original prestige ranking study, but for which information is available on the average education, income and other characteristics of incumbents.
   b) The ANU4 scale: Information on the education, income and age of different occupational groups is used to generate the ANU4 scale. Occupations are assumed to mediate the effects of education on earnings. Consequently, occupations are scaled in order to statistically maximise the indirect effects of education on earnings, and to minimize the direct effects.

3. Scaling based upon friendship and marriage patterns: This approach assumes that modern societies are stratified according to generalised advantage and disadvantage, leading to distinctive patterns of social interaction in friendship circles, marriage arrangements and labour markets. The underlying stratification order is inferred by analysing the social choices that people actually make in their day-to-day interactions, especially their friendship and marriage choices. A comparison of the occupations of marriage partners has been used to develop an Australian occupational scale.

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6 This appendix draws heavily on recent work by two of the co-authors of this report (Jones & McMillan 2000; McMillan & Jones 2000)
This appendix provides a brief technical description of each of these approaches. If further information is required, the reader is referred to the references provided.

**Occupational Prestige**

One method of ranking occupations on a continuum is to allocate scores on the basis of prestige or social standing. During the 1950s and 1960s American and Australian studies of social stratification adopted this approach (e.g., Congalton 1963; Daniel 1983, Hatt 1950). These studies asked respondents to rank a selected group of occupations in terms of prestige or social standing. Prestige was generally correlated with income and education although there were numerous exceptions such as the clergy (high prestige, low income), entrepreneurs (low prestige, high income) and scientists (high education but relatively low income). There is a remarkable consistency in the ratings given to occupations both by different groups within a given society, and cross nationally (Hodge, Treiman & Rossi 1966; Kraus, Schild & Hodge 1978).

There are a number of concerns, however, associated with adopting this approach for the reporting of current Australian schooling outcomes. Most importantly, the most recent and extensive data containing information on the ranking of Australian occupations is now three decades old. Past findings of the consistency of prestige rankings over time must be balanced against the considerable changes to the nature of occupations and the labour market since these studies were conducted. It is uncertain whether similar rankings would be obtained if a similar study were to be conducted now. Second, prestige studies only provide rankings for a selected list of occupations. In order to provide an exhaustive ranking of occupations, methods need to be adopted to impute rankings for occupations not included in the initial ranking procedure.

**The Anu3_2 Scale**

Occupational socioeconomic status scores build upon the prestige scales described above in order to provide a more exhaustive ranking of occupations. A number of strategies have been used to assign socioeconomic scores to occupations excluded from the original prestige ranking studies. One approach, developed by Duncan (Duncan 1961; Blau & Duncan 1967), has been to use regression techniques to predict the prestige of occupations included in prestige ranking studies from the educational, income and other sociodemographic characteristics of incumbents of those occupations. The regression coefficients obtained by this process are then used to calculate occupational status scores for occupations not included in the prestige rating study.

In the Australian context, this strategy has been used to develop the ANU2, ANU3, and ANU3_2 scales. These scales were designed for use with data coded in accordance to ABS’s official occupational classification. They have been updated each time the ABS occupational classification has been revised. The ANU2 scale was developed for data coded to the CCLO; the ANU3 scale was designed for use with the first edition of ASCO (Jones 1989); and the ANU3_2 scale was released for use with the second edition of ASCO (McMillan & Jones 2000).

The current (ANU3_2) scale ranges from 0 (low SES) to 100 (high SES). Examples of occupations that rank near the top of the scale are medical practitioners, university teachers and legal professionals. Examples of occupations that rank near the bottom of the scale are various mining, construction and related labourers, forklift drivers, cleaners and product
assemblers. Ideally occupational data coded to the 4- or 6-digit level of ASCO2 are required for the application of the ANU3_2 scale, although summary scores for data only coded to more aggregated levels of the ASCO2 hierarchy are also available. As the ANU3_2 scale provides a finely graded hierarchy of occupations, it is very flexible for use in data analysis and reporting. It is a continuous measure, but can also be divided into deciles, quartiles or some other grouping for the purposes of reporting.

However, it must be noted that the current ANU3_2 scale, although linked to the most recent ABS occupational classification, is ultimately based upon prestige rankings which are over three decades old. In light of concerns of the current validity of these rankings, two additional well-established approaches to the scaling of occupations, which do not rely on prestige rankings, have also been adapted for use with Australian data, and are described below.

**The International Socioeconomic Index and the ANU4 Scale**

In 1992, Ganzeboom, de Graaf and Treiman developed an approach to occupational scaling that avoids any dependence on prestige rankings. They take as their point of departure Duncan’s conceptualisation of the temporal and functional relationships linking education, occupation and income. Namely, they conceive of occupation as a social engine that converts educational inputs into monetary outputs, or, to put in another way, they conceptualise these relationships in terms of a simple causal chain whereby educational effects on earnings are mediated, as far as possible, by occupational attainment (see Figure 1). In path analytic terms, they set the indirect effect of education on earnings (paths $\beta_{32}$ and $\beta_{43}$) to its practical maximum, and its direct effect (path $\beta_{42}$) to a minimum. Ganzeboom et. al. (1992) also introduce an age correction, to allow for historical increases in average levels of educational attainment (path $\beta_{31}$) and for life-cycle (experience) effects on earnings (path $\beta_{41}$).

Occupational scores are estimated by optimal scaling techniques; scores cannot be estimated in a single step but require an iterative solution which is described in their paper. Ganzeboom and Treiman (1996) have since updated this scheme for use with the 1988 International Standard Classification of Occupations. Their optimal scaling technique has also been used to develop scales for use with national occupational classifications in New Zealand (Davis et. al. 1997, 1999) and Australia (the ANU4 scale: Jones & McMillan 2000).

The Australian version, the ANU4 scale, ranks occupations coded to the unit group (4-digit) level of the second edition of ASCO. For the purposes of scale construction, the 340 unit groups specified in ASCO2 were collapsed into a smaller subset of around 100 occupations, each containing as close to one percent of the Australian labour force as possible. Optimal scaling techniques were then applied, using 1996 Australian census data.

The ANU4 scale ranges from 0 (low SES) to 100 (high SES), and like the ANU3_2 scale, is a continuous measure that can be divided into deciles, quartiles or some other grouping for the purposes of reporting. It provides a similar ranking of occupations to the ANU3_2 scale. For example, the three groups at the top of the scale are medical practitioners, legal practitioners and university teachers; the three at the bottom are agricultural labourers, general labourers not elsewhere classified and forklift drivers.
We would advocate the use of the ANU4 scale in preference to the ANU3.2 scale because the ANU3.2 scale is based upon prestige rankings, which are outdated in the Australian context and which more generally, have come under much academic criticism. The ANU4 scale, in contrast, was developed using the same methodology as the international Ganzenboom SEI measure, which maximises the role of occupation in converting education into income.

The Cambridge Approach and the Camsis-Oz Scale

Another approach to scoring occupational categories was developed by sociologists at the University of Cambridge during the 1970s (Stewart et al 1980; Prandy 1990). Described as a generalised scale of advantage and disadvantage, the Cambridge scale is based upon patterns of social interaction. Advantage and disadvantage are viewed as arising from the unequal distribution of social, cultural and economic resources. These inequalities promote the development and maintenance of different lifestyles, and both facilitate and help maintain distinctive patterns of social interaction in friendship circles, marriage arrangements, and labour markets (especially social mobility across generations). This underlying stratification order can be inductively inferred by analysing the social choices that people actually make in their day-to-day interactions, especially their friendship and marital choices. Initially the Cambridge scale was based upon an analysis of friendship patterns as indicated by occupations held by a circle of friends. However, recent applications have drawn upon the occupations of marriage partners (e.g., Bakker 1993; Jones & McMillan 2000).

The Australian version of the Cambridge scale (the CAMSIS-OZ scale) ranges from 0 (low SES) to 100 (high SES). Again, the three occupations that rank at the top of the scale are university teachers, medical practitioners and legal practitioners. The three that rank at the bottom are product packagers, forklift drivers and labourers not elsewhere classified. Indeed, the ANU3.2 scale, the ANU4 scale and the CAMSIS-OZ scale are highly correlated. A
recent analysis of Australian census data reported correlations greater than 0.9 between the three scales. While not strictly equivalent, they obviously index a common underlying structure of social inequality.
APPENDIX C: MEASURES OF SOCIOECONOMIC POSITION USED BY SCHOOL SYSTEMS

This appendix is based on information supplied by representatives of the various education systems and others involved in task force work. Generally the information is presented as it was sent although there has been some editing. The detail of information supplied varied greatly between systems and in some instances no information was obtained. Furthermore the complexity of the measurement procedures varies between systems.

New South Wales

Government

Schools serving Socioeconomically Disadvantaged Students

The NSW Disadvantaged Schools Program (DSP) seeks to improve the outcomes of schooling for students experiencing educational disadvantage related to their socioeconomic circumstances. The program provides direct financial assistance, consultancy support and additional staff to government schools serving the highest concentrations of students from low socioeconomic status (SES) backgrounds.

The schools are identified through a voluntary survey of the families (caregivers) of the students at the school. The survey collects data on a number of factors which are indicative of the SES of the family. An index of SES for each school is derived from an index of SES for the families with children at the school. Schools are placed on the DSP list starting from the school with the lowest DSP index up to the school where the cumulative student enrolments equal a predetermined number. This number is currently about 20 per cent of all government school students.

Approximately 20% of NSW Government schools containing about 20% of the students are designated as Disadvantaged Schools Program schools. In the NSW Disadvantaged Schools Program schools are identified through a voluntary survey of families, last conducted in 1996. The index takes account of factors such as parent’s/caregiver’s occupation and educational level and the size of the family.

In 1998 there were 479 schools in the Disadvantaged Schools Program with 154,000 students.

The index and survey instrument require revision to ensure that they reflect contemporary understandings about low SES and its relationship to educational disadvantage. The Department of Education and Training and school communities need to be assured that the survey instrument, the implementation processes and the DSP index do what is intended of them. For this reason, the index is currently being reviewed, with a new survey to take place in early 2000.

Catholic Sector

No information has been obtained for this school sector.

Independent Sector

The main criterion used by independent schools in the sample survey to identify socioeconomically disadvantaged students was their ability to pay fees, with other indicators
such as employment status (tenure, single income families) also being used. A very few of these schools did not find ‘socioeconomically disadvantaged’ a useful way to describe these students, with a clear distinction between "socioeconomically disadvantaged and ‘economically disadvantaged’ being made.

**Victoria**

**Government**

Victorian government schools with concentrations of socioeconomically disadvantaged students are identified using the Special Learning Needs (SLN) index. This index comprises six indicators. Information is collected from schools electronically, using standard reports generated from the mandated student record system, CASES. The components are weighted differentially before being combined into an index value, they are:

- Proportion of students receiving means tested Education Maintenance Allowance or Common Youth Allowance (1.0)
- Proportion of students who transfer into the school other than at the beginning of the year (1.0).
- Proportion of Koorie students (1.0)
- Proportion of students who speak a language other than English at home (0.5)
- Family status (weighted proportion of students from single parent family or who are homeless) (0.5)
- Occupational status (weighted proportion of students from families where the major breadwinner is in several occupational categories) (0.5)

Schools with index values over the threshold was entitled to funding calculated by the following formula:

Entitlement = (SLN Index score-Threshold index score) X Enrolment X Base Rate

In 1998, the Threshold was 0.8200 and the Base Rate was $345.

A minimum level of funding for schools with enrolments less than 500 was $2,000, for schools with enrolments of 500 or more the minimum was $5,000.

Volatility in individual schools’ index scores from year to year is taken into account by the provision of transition funding which limits the amount of funds a school can gain or lose.

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7 Occupational data are collected for every student from parents using a five category occupational class schema. Group 5 comprises managerial, professional and para-professional occupations, Group 4 comprises other para-professional, sales, clerical and technical occupations and farmers, Group 3 comprises tradespersons, Group 4 comprises operators, drivers and unskilled manual workers.
Catholic Sector

Needs based funding for Catholic schools in Victoria are determined by an index (or scale) similar to the Ross-Farish indices.

In 1996 schools were asked to provide residential details for the students attending their school. The student addresses were mapped on to Census Collector Districts. CD level information on occupation, unemployment, educational qualifications and other socioeconomic indicators were combined to provide a weighted average. Therefore an estimate of socioeconomic disadvantage is calculated for each school based on the census data of the socioeconomic characteristics of the areas the students’ families reside.

For primary schools the Catholic Education Commission of Victoria (CECV) applies a 16 level scale of disadvantage to the school’s index. Each level represents index scores within a certain band, with the lowest being those schools in greatest need and the higher level for better off schools. These socioeconomic levels are then used to as a component in the calculation of General Recurrent Grants paid to schools, in that assumptions are made as to the ability of each school to attract private income.

For recurrent grants to Catholic secondary schools the index of disadvantage is calculated in the same manner. However, instead of being applied to the sixteen levels, the index is used as a component of the formula used by the Grants Commission to apportion monies to schools.

The index of socioeconomic status is also used as one of the three components when allocating capital grants.

Independent Sector

Victorian independent schools had many ways of identifying students as socioeconomically disadvantaged. These included use of Centrelink indicators, self-identification by parents, and receipt of allowances such as the Educational Maintenance Allowance. Several schools assumed that most, if not all, of their students were socially disadvantaged. A majority of schools had socioeconomically disadvantaged students enrolled.

Queensland

Government Sector

The Literacy Enhancement for Special Program Schools Scheme (LESPSS) is one component of the Literacy and Numeracy Strategies for Education Queensland, which provides additional funds for socioeconomically disadvantaged students within government schools. Funds provided through the Commonwealth Literacy Programme are directed to schools with the highest concentrations of students from low socioeconomic background.

Extensive work has gone into refining the process used for determining schools to be funded. The Index of Relative Socio Economic Disadvantage is used as a basis for additional funding. During 1998, 388 schools received funding under this program.

The completion rate in Queensland government schools (from Year 11 in 1997 to Year 12 in 1998) was 85.4% overall. The completion rate in disadvantaged schools was slightly less than this, at 83.7%.
Catholic Sector

Queensland Catholic schools instituted a non-intrusive methodology for identification of socioeconomically disadvantaged in 1997. The identification instruments used in 1997 and 1998 indicated an increase in enrolments or an increase in identified students of 2%.

Independent Sector

Most schools had strategies for the identification of students who were socioeconomically disadvantaged. Some of the criteria used were parental difficulty in paying fees or information obtained during enrolment interviews. Educationally disadvantaged students were assessed on the basis of an initial interview and through close liaison between members of the teaching staff. Most schools surveyed classified their school locations as within high unemployment/low parental income areas. Over half of these schools aimed to attract students they described as socioeconomically disadvantaged¹ by offering scholarships, bursaries, fee concessions, and special services for indigenous students. A majority offered such services, including lower fee structures, literacy and special education programs and sibling discounts. Following enrolment students were offered specific services such as fee and excursion relief, scholarships and bursaries.

South Australia

Government Sector

Definitions used by the Department of Education, Training and Employment to refer to socioeconomically disadvantaged students

The department uses students in receipt of School Card as an indicator of socioeconomic disadvantage. School Card is a state-funded scheme to provide benefits to eligible full time students (from 4 years of age) receiving primary and secondary schooling. The cut-off point for eligibility for School Card is based on the number of children in a family and gross parental income.

Disadvantaged Schools Component of the Commonwealth Literacy Program

In the South Australian government sector, the three components of the Commonwealth Literacy Program are administered separately. In relation to the Disadvantaged Schools Component, funding is provided in direct grants to schools with significant percentages of socioeconomically disadvantaged students.

The Department currently uses a weighted index of per cent School Card holders and Aboriginal enrolments to declare and allocate funding under the Component. For 1998, a weighted index was calculated using data from 1994, 1995 and 1996 with weightings of 0.8, 1.0 and 1.2 respectively.

Early Literacy Component of the Commonwealth Literacy Program

Funding under the Early Literacy Component of the Commonwealth Literacy Program is provided by the Department in direct grants to schools. Schools declared eligible to receive funding under the Disadvantaged Schools Component of the Commonwealth Literacy Program with a Reception to Year 2 enrolment also receive Early Literacy Component funding.
**Catholic Sector**

Students qualifying under the SA Government’s School Card scheme’s criteria are determined to be socioeconomically disadvantaged.

For school grants under the Commonwealth’s Literacy and Numeracy Program, the extent of its school card numbers and a school’s Ross-Farish indicator are taken into account.

**Independent Sector**

Socioeconomically disadvantaged students

The definition used in this sector is the Farrish Index. Its eight variables are occupation, education and income (each receiving two units weighting); family, accommodation, tenancy, language and aboriginality (each receiving one unit weighting). In summary the allocation of State government funding to independent schools is based on a per capita plus needs approach. The latter element is distributed on the basis of the index of disadvantage derived from the variables mentioned above. This index and level of School Card recipients in each school are used to determine the allocation of Targeted Program funds to individual schools for a wide range of education programs, but in particular literacy and numeracy and special learning needs.

**Western Australia**

**Government Sector**

The Education Department uses the Ross-Farish H index as an index of socioeconomic disadvantage for resource allocation purposes.

The index of socioeconomic disadvantage is used to allocate Commonwealth Literacy and Numeracy Program funds, to allocate additional staff to schools as one component of the staffing formula, and for other resource allocation decisions. It is not used for the reporting of performance.

**Catholic sector**

The Catholic sector uses the Ross-Farish “H” index as a measure of socioeconomic disadvantage, and literacy funding under the targeted program is distributed among schools on this basis.

Primary schools are categorised (5 categories) according to socioeconomic status.

The 1996 Index “H2” is currently used determining capital grant allocations, information technology funding and grant money for literacy and numeracy. The 1996 Modified “A” index is used for recommending fee increases in secondary schools and moderating secondary fee levels across the system.

**Independent Sector**

The majority of schools have means by which they can identify students as socioeconomically disadvantaged
These include self-identification by parents, enrolment information, possession of government Health Cards, ability to pay fees, and the occupational, educational and/or employment status of parents.

A significant minority of schools had such students.

**Tasmania**

**Government Sector**

Socioeconomic status is a complex of factors including income, type of occupation, years of education and, sometimes, place of residence. An Education Needs Index provides a relative measure of socioeconomic status of each school. It is based on a socioeconomic status index, ABS information and the proportion of the school’s population on Student Assistance. There is a differential resourcing of schools according to the level of socioeconomic disadvantage.

In recent years there has been an increase in the number of students receiving Student Assistance in Tasmanian government schools and colleges. Over a six year period (1992 – 1998) the percentage of students receiving such assistance rose from 29.2 % to 38.6 %

**Measurement of Socioeconomic Status in Resource Allocation to Schools**

**Background**

The major resourcing mechanisms for Tasmanian Government schools are enrolment based mechanisms which incorporate weightings in respect of the different education sectors (primary, junior secondary, senior secondary) and which take account of a number of disadvantage factors measured in relation to each individual school.

One of the disadvantage factors is socioeconomic disadvantage. For each individual school the level of socioeconomic disadvantage is notionally reflected in the school’s ‘Educational Needs Index’ (ENI).

**The Educational Needs Index**

A school’s Educational Needs Index is calculated by adding: the proportion of its students receiving Government assistance to the school’s Socioeconomic Status Index (SES).

**Proportion of Students Receiving Government Assistance**

This calculation provides a direct measure of need, since it is based on students actually enrolled in a school. It is calculated yearly (based on the previous year's data) using:

- the number of students in a school who were approved for the Student Assistance Scheme\(^8\) at July (for special schools a minimum sixty per cent of the enrolment is allowed);

and

- the number of students in care.

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\(^8\) A financial assistance scheme which grants levy exemptions to students from low-income families.
The resultant total number of students in receipt of Government assistance is divided by the headcount of eligible school enrolments at February and the result is expressed as a percentage. (This calculation excludes part time enrolments, who are ineligible for the Student Assistance Scheme.)

**The School’s Socioeconomic Status Index (SES)**

The index serves as an indirect measure of the socioeconomic status of a school, since it is based on the community which resides in the school’s feeder area rather than the students actually enrolled at the school. It has been determined in respect of the feeder area of each school, by mapping a sample of students onto census collector's districts. Various socioeconomic statistics for the collector's districts were obtained from the Australian Bureau of Statistics which were built up into a composite index.

The Socioeconomic Status Index had the following dimensions:

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupation</td>
<td>50%</td>
</tr>
<tr>
<td>Family income</td>
<td>20%</td>
</tr>
<tr>
<td>Unemployment</td>
<td>10%</td>
</tr>
<tr>
<td>Aboriginality</td>
<td>5%</td>
</tr>
<tr>
<td>Educational level of parents</td>
<td>15%</td>
</tr>
</tbody>
</table>

The index was scaled to an average of twelve and most schools fall into the range of four to twenty. The higher the score, the greater the educational need. The index was initially prepared using 1986 census data. It has not been updated since it was first developed. It is currently under review.

**Application of the ENI in Resourcing Mechanisms**

The two major resourcing mechanisms which use the ENI are:

- the School Resource Package; and
- the allocation of teacher staffing quotas.

**The School Resource Package (SRP)**

The SRP is the mechanism whereby funds for responsibilities devolved to schools are allocated. The SRP comprises a number of general and specific-purpose funding pools. Two of the major pools within the package have components distributed on the basis of the school’s ENI while a third major component is specifically based on the ENI.

**General Support Grant.** The General Support Grant comprises approximately 20% of the total SRP funding pool. Of that 20%, approximately 25% is distributed on the basis of ENI.

**Maintenance Funding.** Maintenance Funding comprises approximately 10% of the total SRP funding pool. Of that 10%, approximately 7% is distributed on the basis of the ENI. In this context, the school’s socioeconomic status has served (relatively unsuccessfully) as a proxy indicator of a likelihood of vandalism.

In these two instances, every school’s enrolments are weighted by appropriate sector weightings and by the school’s ENI and then summed to calculate a total number of ‘units’ which need to be funded. A ‘per-unit’ rate is then determined which is used to produce a set
of per-capita sector rates which are applied for each school’s enrolments weighted by the school’s ENI.

**Commonwealth Literacy Funding.**

The majority of the funding made available by DETYA from the *Literacy and Numeracy Programme* is distributed to a group of schools on the basis of them being the most needy schools according to their ENI index. For 1999, the program set out to support 30% of the total student enrolment. This was achieved by placing all schools in order of their ENI and then including schools one by one, starting with the most needy, until the included schools accounted for the targeted 30% enrolment level.

**Teacher Quota Allocations.**

Approximately 9.5% of the teachers allocated by formula to schools on the basis of enrolments are determined on the basis of the schools’ ENI’s. Each school’s enrolments are weighted by the ENI to determine their appropriate share of the available pool of teachers. No sector weightings are applied in the determination.

**Other ENI based Allocations**

From time to time other funding allocations might be distributed on the basis of socioeconomic need. For example, each of the six educational districts within the State currently receive some special education funding allocations on the basis of their total ENI weighted enrolments.

**Reporting by Socioeconomic Status**

The Productivity Commission requires the agency to provide information on cost-of-education and retention to be supplied annually in socioeconomic grouping of high, medium and low. This is done by ranking schools according to their ENI.

**Catholic Sector**

The BGA has decided that for the time being educational disadvantage is best measured by consideration of schools’ relative socioeconomic status.

Factors which influence socioeconomic disadvantage are listed below.

The factors have been ranked in importance which will attributed in the order of importance which will be attributed to them by this BGA when assessing need in the area of socioeconomic disadvantage.
### A Points Allocations in Respect of School Population

<table>
<thead>
<tr>
<th>Part 1</th>
<th>Parent Occupation-</th>
<th>Possible Maximum</th>
<th>30 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployed</td>
<td>1 to 5 %</td>
<td>2 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 to 10 %</td>
<td>4 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 to 15 %</td>
<td>6 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 to 20 %</td>
<td>8 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Above 20 %</td>
<td>10 points</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td>Possible Maximum</td>
<td>20 points</td>
<td></td>
</tr>
<tr>
<td>Aggregate of Managers and Administrators, plus professionals and paraprofessionals (ASCO categories)</td>
<td>Less than 5 %</td>
<td>20 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 to 10 %</td>
<td>18 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 to 15 %</td>
<td>16 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 to 20 %</td>
<td>14 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 to 25 %</td>
<td>12 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26 to 30 %</td>
<td>10 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>31 to 35 %</td>
<td>8 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35 to 40 %</td>
<td>6 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>41 to 45 %</td>
<td>4 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>46 to 50 %</td>
<td>2 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>More than 50 %</td>
<td>0 points</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 2</th>
<th>Commonwealth Benefit Recipients</th>
<th>20 points (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Each percent</td>
<td>1 Point</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 3</th>
<th>Single Parent Families</th>
<th>5 points (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 to 5 %</td>
<td>0 points</td>
</tr>
<tr>
<td></td>
<td>6 to 10 %</td>
<td>1 point</td>
</tr>
<tr>
<td></td>
<td>11 to 15 %</td>
<td>2 points</td>
</tr>
<tr>
<td></td>
<td>16 to 20 %</td>
<td>3 point</td>
</tr>
<tr>
<td></td>
<td>21 to 25 %</td>
<td>4 points</td>
</tr>
<tr>
<td></td>
<td>25 % and above</td>
<td>5 points</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 4</th>
<th>Single Income Families</th>
<th>5 points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 to 5 %</td>
<td>0 points</td>
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<tr>
<td></td>
<td>6 to 10 %</td>
<td>1 point</td>
</tr>
<tr>
<td></td>
<td>11 to 15 %</td>
<td>2 points</td>
</tr>
<tr>
<td></td>
<td>16 to 20 %</td>
<td>3 point</td>
</tr>
<tr>
<td></td>
<td>21 to 25 %</td>
<td>4 points</td>
</tr>
<tr>
<td></td>
<td>25 % and above</td>
<td>5 points</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Part 5</th>
<th>Aggregate of Aboriginal, ESL students and students with disabilities</th>
<th>10 points (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 or 2 %</td>
<td>0 points</td>
</tr>
<tr>
<td></td>
<td>3 or 4 %</td>
<td>1 point</td>
</tr>
<tr>
<td></td>
<td>5 or 6 %</td>
<td>2 points</td>
</tr>
<tr>
<td></td>
<td>7 or 8 %</td>
<td>3 point</td>
</tr>
<tr>
<td></td>
<td>9 or 10 %</td>
<td>4 points</td>
</tr>
<tr>
<td></td>
<td>11 or 12 %</td>
<td>5 points</td>
</tr>
<tr>
<td></td>
<td>13 or 14 %</td>
<td>6 points</td>
</tr>
<tr>
<td></td>
<td>15 or 16 %</td>
<td>7 point</td>
</tr>
<tr>
<td></td>
<td>17 or 18 %</td>
<td>8 point</td>
</tr>
<tr>
<td></td>
<td>19 or 20 %</td>
<td>9 points</td>
</tr>
<tr>
<td></td>
<td>2% and above</td>
<td>10 points</td>
</tr>
</tbody>
</table>

**TOTAL PART A** 70 Points
B Points Allocations in Respect of Financial Indicators

<table>
<thead>
<tr>
<th>Part 1</th>
<th>Comparative School Fees Assessment</th>
<th>Possible Maximum</th>
<th>10 points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Charging up to 80% of average fee</td>
<td>10 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charging 81 to 90% of average fee</td>
<td>8 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charging 91 to 100% of average fee</td>
<td>6 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charging 101 to 110% of average fee</td>
<td>4 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charging 110 to 120% of average fee</td>
<td>2 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charging above 120% of average fee</td>
<td>0 points</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 2</th>
<th>% Fee Discounting in the Past Year</th>
<th>Possible Maximum</th>
<th>10 points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 to 4%</td>
<td>0 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 to 8%</td>
<td>2 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9 to 12%</td>
<td>4 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13 to 16%</td>
<td>6 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 to 20%</td>
<td>8 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21% and above</td>
<td>10 points</td>
<td></td>
</tr>
</tbody>
</table>

**Total Part B** 20 points

C Points Allocations in Respect of the Ross Indicator of Disadvantage

<table>
<thead>
<tr>
<th>Part 1</th>
<th>Ross Indicator of Disadvantage</th>
<th>Possible Maximum</th>
<th>10 points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Score Below 77.50</td>
<td>10 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>77.51 to 80.00</td>
<td>9 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80.01 to 82.50</td>
<td>8 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>82.51 to 85.00</td>
<td>7 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>85.01 to 87.50</td>
<td>6 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>87.51 to 90.00</td>
<td>5 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>90.01 to 92.50</td>
<td>4 points</td>
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</tr>
<tr>
<td></td>
<td>92.51 to 95.00</td>
<td>3 points</td>
<td></td>
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<tr>
<td></td>
<td>95.01 to 97.50</td>
<td>2 points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>97.51 to 100.00</td>
<td>1 point</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Above 100.00</td>
<td>0 points</td>
<td></td>
</tr>
</tbody>
</table>

**Total Part C** 10 points

The significant factors are their rankings shall be as follows:

- the socioeconomic features of the school population
- financial indicators including fee discounts and comparative school fees
- other published measures of disadvantage which are published from time to time

Between and within each of these categories a numerical formula for assessing relative importance, based upon a system of one hundred points, is be applied.
In the final assessment of economic need, the greater the number of points gained by the school, the greater shall be deemed to be its need.

In the calculation of the schools socioeconomic profile, the first of these factors (a) is accorded 70 points, financial indicators (b) 20 points and the chosen index of disadvantage 10 points.

**Independent Sector**

Almost all schools surveyed had in place methods of identifying and providing assistance to socioeconomically-disadvantaged students. Criteria to determine the socioeconomic status of students included means testing, bursary applications, geographical isolation, requests for fee relief, eligibility for Student Assistance Scholarships (SAS), enrolment interview and staff observation.

**Australian Capital Territory**

**Government Sector**

The ACT Government continued to provide additional support for socioeconomically disadvantaged students through the Schools Equity Fund (SEF). For the purposes of this fund, disadvantage is determined using the Australian Bureau of Statistics Index of Relative Socioeconomic Disadvantage. Support was provided for programs in 14 priority schools. In a Priority School 25% or more of its student population lives in districts defined as socioeconomically disadvantaged. Territory funds were combined with Commonwealth funds to provide for a range of additional education support programs.

**Catholic Sector**

The ACT Block Grant Authority uses SES indicators as one of the criteria for determining the priority of capital grant applications. In the latest round of grant applications, it used the General Recurrent Grants funding index (formerly called Modified A ‘ Index) with information derived from the Federal Government’s SES simulation study. Modified Index A uses CD level information on Occupation, Education, and Income. (Income scores are derived half from income of all households and half from incomes of households with children).

**Independent Sector**

ACT schools identified socioeconomically-disadvantaged students, either through interviews with parents or through self-identification by parents in relation to fees or other costs. All schools in the sample had students they described as ‘socioeconomically disadvantaged’ and offered services to attract such students, including scholarships, bursaries, or very low fees.

**Northern Territory**

**Government Sector**

In the Northern Territory, the Australian Bureau of Statistics’ Index of Relative Socioeconomic Disadvantage (IRSED) is used to measure and report on student socioeconomic status. IRSED scores for the students are determined according to Collection districts to which the home addresses belong.
The Commonwealth

Year 12 Completion rates

DETYA contracts a consultant to estimate Year 12 completion rates annually. Estimates of completion rates are computed for males and females by region and socioeconomic status decile within State/Territory and nationally. They are derived by aggregation of postcode completions data to give estimates of completions by Statistical Local Area (SLA) and grouping SLAs to regional level to give total completions and total age 15-19 years population. Estimates by socioeconomic status decile are calculated by deriving postcode age 15-19 years population estimates from the SLA population (using the SLA to Postal Area Concordance) and aggregating the postcode population and completions data to give total completions and total age 15-19 years population in each socioeconomic status decile by State/Territory. Deciles 1-3, 4-7 and 8-10 are grouped into low, medium and high socioeconomic status categories respectively.

Preliminary estimates are derived each year in March-April based on a simple projection of the age-sex population. Final estimates are calculated in October-November following publication of the Estimated Resident Population by SLA data.

The database used by the consultant to define the completion rates combines the following data:

- ABS Estimated Resident Population by Statistical Local Area (SLA)
- Year 12 completions by postcode by gender provided by States and Territories in February-March of the year following completion.
- SEIFA indexes of Education and Occupation (EdOcc) and the Index of Relative Socioeconomic Disadvantage (IRSED).
- SLA to Postal Concordance File, derived from the Census.
- The Department of Primary Industry and Energy (DPIE) Rural, remote and metropolitan areas classification, which groups SLAs to one of the seven categories of the classification (currently based on the 1991 Census)

New Commonwealth Funding Arrangements for Non-Government Schools

In relation to Commonwealth funding for non-government schools, the measure links student addresses with the current ABS socioeconomic status index, and then obtains a socioeconomic status score for each school.

Forthcoming is new material on the new funding arrangements, including the December 1998 report of the socioeconomic status Simulation Project undertaken as part of the Review of the Education Resources Index (ERI) by DETYA.

The allocative mechanisms used to distribute funding to State and Territory government and non-government school authorities under DETYA's targeted programme for Literacy and Numeracy include a mechanism of socioeconomic disadvantage which uses the ABS Index of Relative Socioeconomic Disadvantage (IRSED). Details are provided in the Quadrennial
Administrative Guidelines 1997-2001 (see especially Appendix 2.3.1) which can be accessed on the DETYA website.

**Productivity Commission**

This year the Productivity Commission is reporting on Year 12 estimated completion rate by socioeconomic status (SES). The data was obtained from the Commonwealth Department of Education, Training and Youth Affairs (DETYA). The socioeconomic status has been determined according to the Index of Relative Socioeconomic Disadvantage developed by the Australian Bureau of Statistics (ABS).

The Commission's 2000 Report also has another table that looks at which jurisdiction collects learning outcomes for special needs groups, including students from low socioeconomic status. The 2000 Report is still in its drafting stage (so copies are not yet unavailable). However, this information (which jurisdictions collect learning outcomes for special needs groups) was obtained from the National Report on Schooling in Australia, MCEETYA and the various Education Departments' annual reports.
REFERENCES


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OECD PISA (1999a) *Correlations from Student Questionnaire Items and Constructed Variables*. Prepared for consideration at the September 1999 Questionnaire Review and Development Meeting.

OECD PISA (1999b) *Regressions of Selected Items and Constructed Variables from the Student Field Trial Data*. Prepared for consideration at the September 1999 Questionnaire Review and Development Meeting.


Williams, T., Long, M., Carpenter, P. & Hayden, M. (1993a) *Year 12 in the 1980s* Canberra: AGPS.

