DOCUMENT RESUME

ED 235 593 EA 016 158

AUTHOR Ainley, John
TITLE Six Hundred Schools: A Study of Resources in Australian and New Zealand Government Schools. Staffing and Resources Study Report No. 2. ACER Research Monograph No. 17.
INSTITUTION Australian Council for Educational Research, Hawthorn.
SPONS AGENCY Australian Education Council, Canberra.
REPORT NO ISBN-0-85563-250-X
PUB DATE 82
NOTE 225p.; For related documents, see EA 016 156-159.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Class Size; Elementary Secondary Education; Foreign Countries; Noninstructional Responsibility; Organizational Theories; Policy Formation; Principals; Public Schools; *Resource Allocation; *School Organization; School Personnel; School Size; School Surveys; Staff Utilization; *Teacher Distribution
IDENTIFIERS *Australia; *New Zealand

ABSTRACT

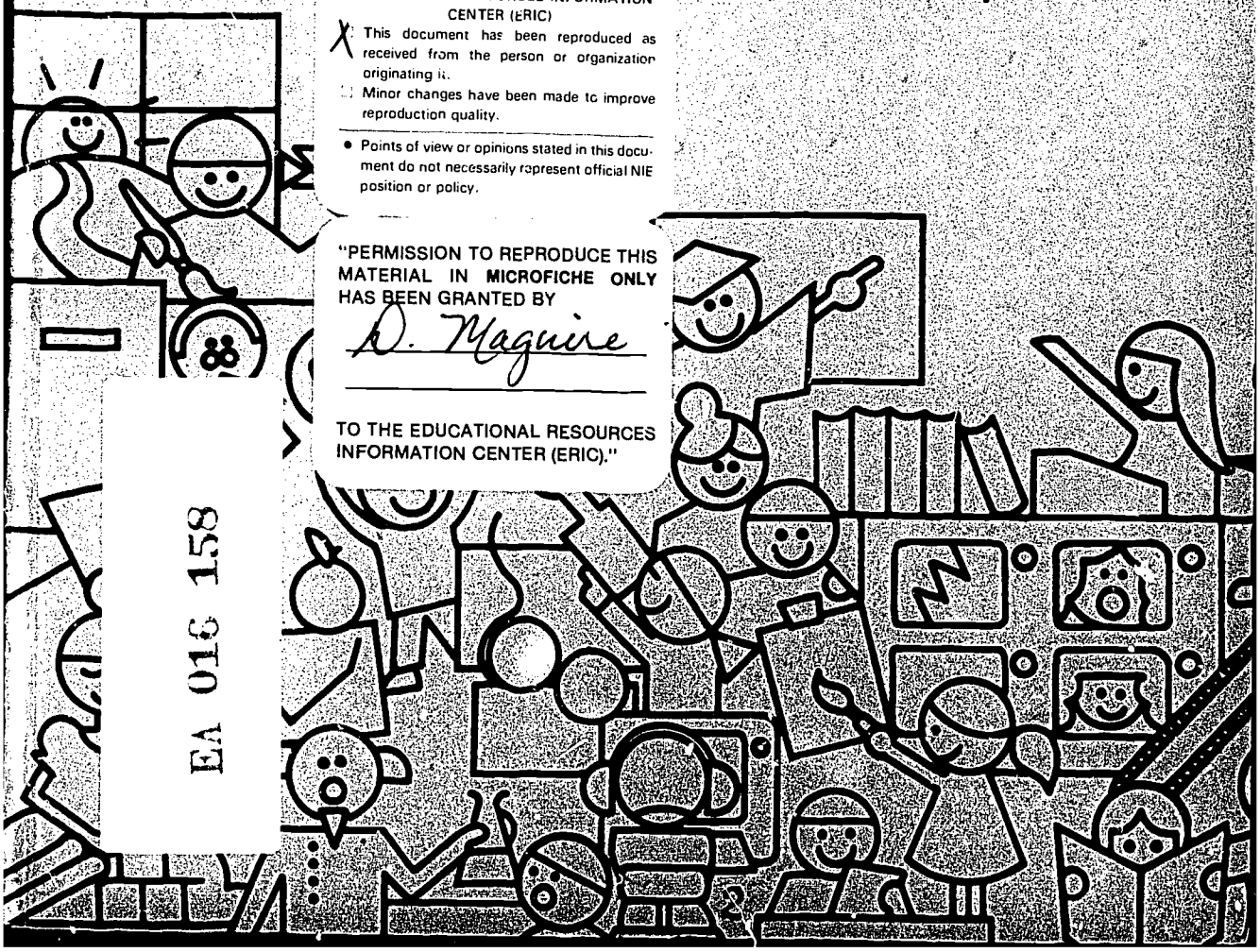
Questionnaire data underlie this analysis of the patterns of personnel availability and utilization in a sample of government schools in Australia and New Zealand. An introduction reviews research and outlines some theoretical issues relevant to school organization and resource allocation. The design and administration of the survey are reported in the second chapter. Personnel resources available in schools are described in chapter 3, which incorporates data on the number and type of teaching staff and support staff, the configuration of teaching and support staff in schools of different types, and the principals' report of emerging needs and priorities in staffing. In the following chapter school structures concerned with policy formulation and those concerned with policy implementation are examined in light of their influence on resource distribution. Chapter 5 considers details of resource allocation including the definition of class size, class size patterns at different school levels, and allocation of staff to noninstructional functions. The final chapter summarizes the discussion, concluding that resource allocation within schools is a complex network that needs to be understood in terms of purposes, circumstances, and structures, as well as student-teacher ratios and class sizes, and that staffing policies should be developed accordingly. Data are presented in abundant tables. (MJL)

ACER Research Monograph No. 17

SIX HUNDRED SCHOOLS:
A STUDY OF RESOURCES IN AUSTRALIAN AND NEW ZEALAND GOVERNMENT SCHOOLS

Staffing and Resources Study Report No. 2

John Ainley



ACER RESEARCH MONOGRAPH NO. 17

SIX HUNDRED SCHOOLS:

A STUDY OF RESOURCES IN AUSTRALIAN AND NEW ZEALAND GOVERNMENT SCHOOLS

Staffing and Resources Study
Report No. 2

John Ainley

This research study was financially supported by
a grant from the Australian Education Council.

Australian Council for Educational Research
Hawthorn, Victoria
1982

Published by
The Australian Council for Educational Research Limited
Radford House, Frederick Street, Hawthorn, Victoria 3122

Printed and bound by
Brown Prior Anderson Pty Ltd
Evans Street, Burwood, Victoria 3125

Cover design by Louise Coutts.

National Library Cataloguing-in-Publication data.

Ainley, John, 1945-.
Six hundred schools.

Bibliography.
ISBN 0 85563 250 X.
1. Teachers - Australasia. 2. School employees - Australasia. 3. Public schools - Australasia.
I. Australian Council for Educational Research.
III. Title. (Series: ACER research monograph; no. 17). (Series: Staffing and resources study report; no. 2).

371.1'4'099

CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGMENTS

This report is one of three arising from the Staffing and Resources Study. Two other reports have been written by other members of the project team: Phillip McKenzie and John Keeves, (Eight Education Systems: Resource Allocation Policies in the Government School Systems of Australia and New Zealand), and Andrew Sturman (Patterns of School Organization: Resources and Responses in Sixteen Schools). Extensive reference is made to these publications throughout this volume. It should be emphasized that there was a good deal of collaboration and shared work in designing procedures and collecting data throughout the study even though we divided the responsibility for the writing of reports. I thank my colleagues for their assistance and the consistent help and encouragement they gave throughout the study, and during the final writing stage.

Members of the Technical Committee appointed to assist the study offered valuable comments on our proposals, ideas, and drafts and greatly facilitated our contact with schools and Education Departments. Their help is gratefully acknowledged. The members of that committee were Warren Anderson (the Australian Capital Territory), Max Angus (Western Australia), Des Burge and Bill Moore (New South Wales), Gerald Burke (Monash University), Frank Charlton (Victoria), Bob Cooper (Tasmania), Pat Foley (New Zealand), Bob Lenahan (Queensland), Di Mildern (Schools Commission), Peter Tillett (South Australia) and Trevor Williams (ACER). For this help sincere thanks are expressed. Trevor Williams not only helped in the initial design for the study but continued to provide advice and assistance throughout.

Many school principals and staff members spent a good deal of time answering questionnaires. That time is much appreciated. Members of Education Departments supplied other data which proved invaluable to the analyses. Their help is gratefully acknowledged.

A number of ACER staff provided assistance in various ways during the study. Judith Clark and Rhonda Redfern typed the final manuscript with care and efficiency. Margaret Taylor and Win Boyce typed many of the associated documents during the study. Jeff Clancy supplied helpful advice when data were being analysed on computer. The contribution of those people and others at ACER is gratefully acknowledged. In addition Mike Plunkett and his staff at the Swinburne Computer Centre facilitated the analyses; for that help we are grateful.

John Ainley
December, 1982

PREFACE

This report is one of a set of three arising from the Staffing and Resources Study conducted by the Australian Council for Educational Research for the Australian Education Council. The other two reports in the set have examined patterns of resource allocation in education systems (McKenzie and Keeves, 1982), and school structures and resource allocation policies in 16 specially selected schools (Sturman, 1982). All authors worked in close co-operation on the reports, and shared the task of gathering data, so that throughout the present report reference is frequently made to the two companion volumes. Specific reference is frequently made to particular school policies discussed in detail by Sturman. It needs to be emphasized that in these cases the school names are fictitious. As explained by Sturman the names of Australian and New Zealand writers were used to designate schools and yet preserve anonymity. These names are not the real names of the schools which were visited and any resemblance of a school name used to that of an existing school is entirely coincidental.

In tables throughout this report abbreviations have been used to indicate the education systems being studied. The following abbreviations have been used.

ACT	Australian Capital Territory
NSW	New South Wales
Vic	Victoria
Qld	Queensland
SA	South Australia
WA	Western Australia
Tas	Tasmania
NZ	New Zealand

In addition some tables record information which was not applicable in a comparable form to all parts of all the education systems. In these cases the abbreviation n.a. has been used to denote not applicable.

CHAPTER 1

INTRODUCTION

This report examines the patterns of availability and utilization of personnel resources in a sample of government schools in Australia and New Zealand. It has been based upon responses obtained by means of survey questionnaires from 657 schools of a sample of 758. The general concern of the report is with mapping the diversity of resource allocation policies within government primary and secondary schools. As such it considers the detail of the types and level of personnel resources available in schools, the structures established in schools which shape the way those resources are allocated to different functions and groups of students, and the resultant patterns of resource allocation.

Structure of the Report

The present report has been based on data collected as part of a wider study of Staffing and Resources in government schools in Australia and New Zealand. This chapter outlines some features of that study, the place of the present survey as part of the general study, and some of the issues around which the survey was based.

Chapter 2 contains a report of the way the survey was conducted. It includes an account of the model underlying the survey questionnaire, information about the way the questionnaire was developed, and technical details about the sampling and administration of the survey. As an illustration of the properties of the sample of schools surveyed the chapter also contains a description of the size of the schools attended by students in Australia and New Zealand and a discussion of some issues arising from differences in the pattern of school size between States.

The personnel resources available in schools provide the focus of Chapter 3. It is concerned not only with the ratios of teachers to students but also with the mix of teaching and support staff in schools, the distribution of general teachers and specialist teachers, and the proportion of teachers who were in 'promotion' positions in schools.

In Chapter 4 attention is given to school structures of two types: those concerned with policy formulation and those concerned with policy implementation. These structures are examined in the context of their role in shaping the way in which resources are distributed throughout schools.

Details of resource allocation are presented and discussed in Chapter 5. This chapter contains a discussion of the ways in which class size might be defined, examines the patterns of class size in different levels of schooling, and describes the allocation of resources to school functions other than direct class teaching. Such other functions

include the administration of the school, the management of individual and small group learning, and the provision of various services.

Chapter 6 attempts to draw together the diverse themes contained in the other chapters so that some of the issues involved in the allocaton of resources to and within schools can be identified. It is not so much concerned with prescriptive conclusion as with suggesting some of the bases from which others might think about alternatives to traditional practice.

The Staffing and Resources Study

The Staffing and Resources Study was conducted by the Australian Council for Educational Research and was funded by the Australian Education Council. Seven terms of reference were specified for the study:

1 To examine existing policies, procedures and trends relating to the allocation of staff and resources to and within Australian and New Zealand schools.

2 To inquire into difficulties faced by school systems and schools in allocating staff and resources to and within schools.

3 To examine measures that are being taken at the present time at various levels to overcome these difficulties.

4 To review new developments and alternative arrangements in staffing schools.

5 To recommend action which can be taken by schools and school systems to improve existing arrangements or overcome problems experienced in staffing schools.

6 To recommend appropriate field studies or action research projects which school systems can carry out and which will enable the trying out of creative and practical ways of reorganizing staff at the school level.

7 To develop proposals which school systems in the longer term might adopt for the future direction of policies and procedures concerning the allocation of staff and resources to and within schools.

As an addition to these terms of reference nine contemporary issues were suggested as deserving attention in the study:

- the balance between primary and secondary staffing allocations;
- the determination of staffing formulae;
- alternative methods of staffing in use of aides, specialists, ancillary staff, part-time teachers;
- teacher work load and non-contact time;
- flexibility in deploying staff within schools;
- implications for staffing policy of various philosophies and methodologies of teaching;
- effects of alternative staffing arrangements;

- system awareness of and responsiveness to the needs of individual schools; and
- regionalism and staff allocation principles and procedures.

As part of the development of the proposal for the study attention turned beyond questions of providing 'more of the same kind' of resources to consider alternative methods of allocating resources to schools and within schools to students (Keeves and Williams, 1978).

Implicit in the terms of reference was the notion of two levels of resource allocation. The first appeared to be primarily involving school systems and thus suggested a study of the policies of school systems in allocating staff and other resources to schools, and of the ramifications of those policies for schools. System was used in the sense of the systems of government primary and secondary schools administered by Departments of Education in the six Australian States, the schools controlled by the Schools Authority in the Australian Capital Territory, and the analogous national system of schools in New Zealand.[1] The policies referred to were the policies developed and administered by the central state or national education authority which controlled the allocation of staff and resources to schools. Included in those policies were requirements that schools deployed staff and resources in particular ways which thus removed some of the discretion of schools regarding the use of staff and resources (see Keeves and Williams, 1978).

The information on which the system level study was to be based was to be provided in a series of reports produced by each of the education authorities involved in the study. The ACER co-ordinated the production of these reports mainly through the provision of a general framework which was developed in consultation with members of each of the education authorities. Based on the individual reports from each system a comparative analysis was undertaken and has been reported by McKenzie and Keeves (1982).

The second level of resource allocation concerned staffing policy decisions within schools which could be considered to be decisions about the allocation of limited professional teaching resources. It has been intimated above that some policies of systems would limit the freedom of schools in this area and it seemed likely therefore that schools would vary in the extent of their discretionary authority in this area. It was argued at the commencement of the study that little was known about the strategies used by schools in allocating resources within schools, or the effectiveness of different patterns of resource allocation (see Keeves and Williams, 1978). Similarly it was argued there was a need to be more informed about various adaptive strategies used by schools to rationalize the use of their limited professional teaching resources. One example

---

1 The Northern Territory was not included in the study.

suggested was a strategy which released teachers from the more routine aspects of teaching to use their professional skills in such activities as remedial instruction and curriculum design, by using material resources, support staff, and other members of the community.

At this level of the study two approaches were planned: a survey of a sample of schools, and a series of case studies in a small number of schools. The survey was planned as a means of mapping the diversity of school responses to issues of resource allocation across the government schools of Australia and New Zealand. Primary and secondary schools were to be asked about the staffing problems they faced, the policies and practices developed in response to those problems, structural changes in school organization developed in response to staffing pressures, staffing strategies devised to deal with special needs, the use of support staff and a number of related issues. The present report has been based on that survey.

A second approach to the study of school level staffing policies was planned as a series of case studies in selected schools. In the proposal it was argued that data from the schools survey would be used to identify 'exemplary' schools which had evolved unusually innovative and effective staffing policies and practices. In practice selection of the case study schools took account of the types of staffing structures reported by schools rather than a scientific criterion of effectiveness. The study of these specially selected schools was intended to:

(a) further elucidate staffing processes described in the survey;
(b) analyse in detail special innovative features of the schools in order to judge their general value to other schools in allocating resources or developing organizational structures; and
(c) study the effects of constraints such as school size, type of enrolment and system policies on those schools.

Thus the case studies of schools and the survey of schools were seen as complementing each other in providing to systems information about school responses to system policies and to schools a map of the wide range of staffing policies which were possible with detailed examples of how some schools had responded to particular influences and constraints. These were seen as providing schools with a basis on which to think about their own policies as well as suggesting the basis for the design of further studies which would attempt a more rigorous evaluation of staffing policies. A report which collates and synthesizes the observations made in the specially selected schools has been prepared by Sturman (1982).

Some Views of Important Issues

In an early stage of the study each of the education systems involved in the study, was

asked to provide an indication of the major issues which they saw as problems in the provision of appropriate resources to schools. Each person who attended meetings concerned with the study[2] was asked to list some of the major issues and questions which they believed the study should address. Those people were asked to consult their colleagues in the state education authorities in preparing the list of issues. Each statement was circulated to all the participants in the exercise together with a summary paper prepared by ACER. The summary paper contained a classification of the issues in resource provision which had been listed. The classification contained six primary categories which embraced 21 secondary categories. Three criteria were used to define these categories within the classification. First, it was intended that classification should encompass all the issues listed by the representatives of the education authorities. Secondly the categories were defined so that as far as possible each issue could be classified in only one of those categories. Thirdly it was structured in a way which was broadly compatible with the guidelines being developed for the system level study which was initiated at an earlier stage to the study of schools.

New Zealand participated in these deliberations at a later stage than the Australian systems of education. In the case of that system the classification was provided to district senior inspectors of schools. Those people were asked to indicate for each item whether it was of substantial importance, of minor significance, or of no significance. Additional perspectives were provided through discussions held with members of various teacher organizations.

The six major categories of problems were as follows:

1 Problems external to the education system such as those arising from demographic changes.

2 Problems related to system structure and management such as the appropriate devolution of authority, school size and planning methods.

3 Problems concerning the recruitment, allocation, and professional development of teaching staff.

4 Problems related to the provision of an appropriate balance of non-teaching and teaching staff.

5 Problems concerned with the quality and maintenance of material resources.

6 Issues concerned with school organization including administrative structures, student grouping, and curriculum organization.

---

2 In practice the members of the technical committee for the study.

Issues Arising from Other Research

In this section it is not intended to provide a comprehensive review of literature related to resource allocation policies. Some research literature pertaining to particular priorities in resource allocation has been reviewed in the chapters in which those practices have been discussed. The present discussion is concerned with identifying some trends in research and resource allocation in schools, and indicating the relevance of the material in the remainder of the report for some of the issues raised by recent research. It is argued that recent literature indicates a need to understand better schools as organizations and the ways in which school resources are made available to students. In addition it is suggested that there is an emerging recognition of the need to better understand the interconnections between different levels of the educational enterprise.

Studies of School Effects

In recent times a substantial body of literature has been established in the area which is sometimes categorized as school effects on student learning in the cognitive domain, and to a smaller extent in the affective domain. One recent review (Centra and Potter, 1980) has suggested a model which encapsulates many of the relationships investigated in previous studies and may provide a useful basis for future investigations. Though it was not published until the present study was nearly completed it provides a useful framework for reviewing some of the main issues discussed in this report. According to Centra and Potter variables relevant to school effects could be grouped into the following seven categories:

1 School or school district conditions such as school size, financial resources, pupil teacher ratio, administration teacher ratio, staff services, facilities, urban characteristics, social class and racial composition.

2 Within school conditions such as the administrative organization, the instructional organization, the class size, the amount of schooling and the ambience of the conditions.

3 Teacher characteristics such as qualifications, experience, aptitudes, knowledge of subject and of teaching, values and attitudes, expectations and social class.

4 Teacher behaviour such as the methods used by teachers in helping students learn.

5 Student characteristics such as social class and home background, aptitude, attitudes, expectations and learning style.

6 Student behaviour such as details of what students do in a learning situation.

7 Student learning outcomes incorporating numbers of basic skills, other cognitive outcomes and non-cognitive outcomes.

The model proposed by Centra and Potter envisaged each of these elements as being related in a structural model which has been summarized in Figure 1.1. Such a

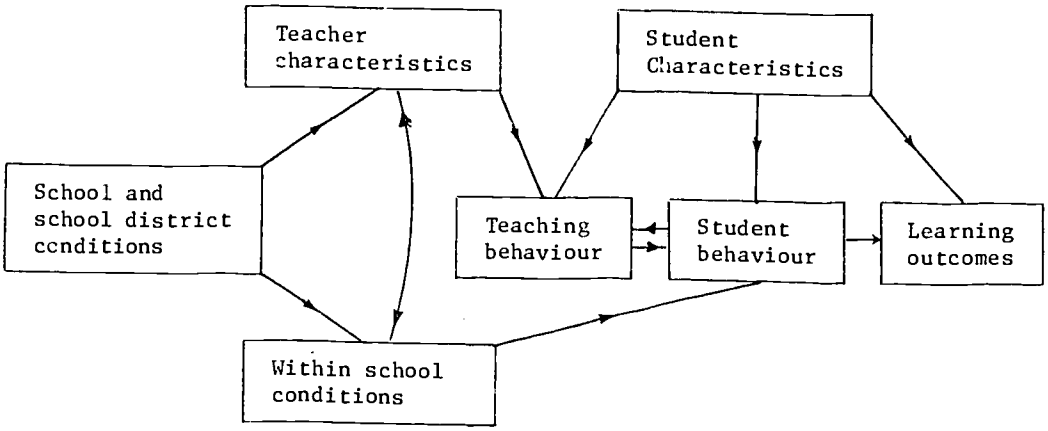


Figure 1.1 The Centra and Potter (1980) Model of School Effects

model is clearly not the only conceptualization possible but it does represent an attempt to provide a framework for synthesizing a number of different aspects of the process of schooling.

Some relatively minor amendments to the Centra and Potter model shown in Figure 1.2 make it even more suitable for discussing matters relevant to the staffing and resources study. First, in the Australian context it seemed useful to separate 'school system conditions' from 'school conditions' and consider the possible link between those two sets of variables, as well as that between school system conditions and 'teacher characteristics' and 'within school conditions'. In Australia system-wide policies can

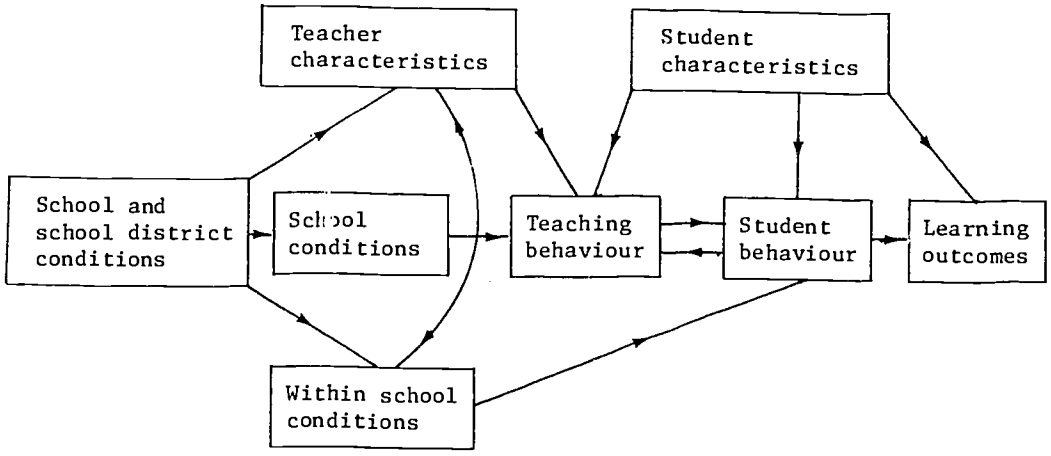


Figure 1.2 An Amended Version of the Centra and Potter (1980) Model of School Effects

influence both of those domains. Secondly, it seems worth including a potential link between within school conditions and teaching behaviour. There is a number of studies which have considered this general relationship (e.g. Ainley, 1978; Weinstien, 1979).

Generally the model proposed by Centra and Potter and the adaptation proposed here implies the need to give careful attention to different levels in the process of resource distribution.

Much of the literature concerned with school effects has involved an analysis of how much of the variation in student achievement could be attributed to variation in school conditions (or school district conditions), teacher characteristics, and student characteristics. Barr and Dreeben (1977) described this approach as being a 'production function' model of schooling which examines inputs and outputs but did not incorporate a study of the way inputs are transformed into outputs. Though such an approach could be applied at classroom level it has been generally applied at the school level. Barr and Dreeben commented that many studies assumed implicitly that mean school characteristics applied to all students equally and the authors maintained that the approach had not given sufficient attention to the ways in which resources were distributed through organizations to students. Moreover, they noted that where studies had used smaller units of analysis within schools the detected effects were stronger than when whole schools were used as the unit of analysis.

The production function model of schooling was contrasted, by Barr and Dreeben, with the classroom instruction tradition of research. This tradition was commonly expressed in studies of teaching behaviour and student learning which focussed on the detail of particular occurrences in classrooms (Dunkin and Biddle, 1974). Within this tradition Barr and Dreeben noted a tendency towards the studies of class management practices as a whole rather than separate incidents (e.g. Kounin, 1970; Bennett, 1976) and to factors which influenced what happened in classrooms (Dahloff, 1971a). Fordham (1980) has argued persuasively that studies of teaching behaviour need to give greater attention to the context in which that behaviour occurred. Barr and Dreeben argued that the two traditions of educational research to which they referred had developed and remained isolated from each other but that each could contribute greatly to the other if the two were combined. The two approaches were seen to be concerned with essentially the same issue at different levels:

> A complete formulation of school effects must treat the full range of organizational levels and their interconnections ... our primary concern is to establish the mutual relevance of production function research and classroom research. (Barr and Dreeben, 1978:102)

Production Function Models of Schooling

Prominent among publications which have been loosely placed in the production function tradition was the Report on Equality of Educational Opportunity (Coleman, Campbell,

Hobson, McPartland, Mood, Weinfield and York, 1966). Subsequent studies (e.g. Jencks, Smith, Acland, Bane, Cohen, Gintis, Hegnes and Michelson, 1972) and reviews (Averch, Carroll, Donaldson, Kiesling and Pincus, 1972) in this tradition have tended to confirm the conclusion that differences between schools appeared to have a modest or slight relationship to differences in student achievement. Centra and Potter (1980:277) point out that this is not the same as saying that schooling has no effect on student learning 'but only that the between school differences on the variables assessed are not highly related to student achievement after the socio-economic status of schools students have been taken into account'.

Much of the debate concerning studies of school effects has centred on issues of methodology relating to measures of outputs, design, analysis, confounding effects and unequal variance (Madaus, Airasian and Kellaghan, 1980). The debate on these issues seems likely to continue and in this discussion only passing reference will be made prior to discussing a more wide-ranging issue:

1 Measures of outputs. It has been argued that schools are multiple output organizations but that most production function studies addressed only a single output (Spady, 1976). The problem is even further compounded when it is realized that schools could allocate different proportions of their total resources to different aspects of schooling so that neither all resources, nor even the same proportion of total resources in different schools, would be allocated to one output such as cognitive achievement. Furthermore the types of measures of achievement which can be used in large scale studies have been critized for only limited sampling of higher order cognitive achievements (Bloom, Eraglehardt, Furst, Hill and Krathwohl, 1966).

2 Issues of design. Much of the data used in production function models of schooling have been cross-sectional. Though this is not necessarily a criticism it has been suggested that such data can produce results which differ from longitudinal data (see Centra and Potter, 1980). In general it seems cross-sectional studies have produced lower estimates of the magnitude of school effects than have longitudinal studies. Results from Project Talent (Shaycoft, 1967), a longitudinal study, suggested that quality of schooling did affect student cognitive development.

3 Issues of analysis. Spady (1976) noted that most of the studies of school effects which he reviewed had used a form of linear regression analysis. He argued that the assumption of linearity between resources and outputs was tenuous, and could involve threshold and interaction effects. The idea of threshold effects has since received some support from the meta-analysis reported by Glass and Smith (1978). If non-linear relations existed, the assumption of linearity would reduce the chance of detecting strong effects. Specific analysis techniques have also been debated in the context of one reanalysis of data from the Report on Equality of Educational

Opportunity which produced somewhat different interpretations (Mayeske, Wisler, Beaton, Weinfeld, Cohen, Okada, Proshek and Tabler, 1969).

4 Confounding variables. It has been argued (Bowles and Levin, 1968) that because student background variables have been counfounded by school variables (e.g. low socio-economic areas have poor provision of school resources) controlling for social class has underestimated school effects on achievement (see Centra and Potter, 1980). That issue concerns collinearity between measured variables. Another potential problem concerns the confounding effect of unmeasured variables. Correlational studies of the effect of class size on achievement have not allowed for the fact that beginning teachers or teachers judged to have 'weak class control' seem to be allocated to smaller classes and 'better' teachers may be assigned to larger classes. If this occurs to an appreciable extent one would expect it to reduce the chance of detecting relations between class size and achievement. Ryan and Greenfield (1976) in a review of the class size question note that very few studies have been controlled for 'teacher quality' which they see as a most important factor. Tisher, Fyfield and Taylor (1978) reported that 15 per cent of the beginning teachers in an Australian survey were allocated smaller classes.

5 Unequal variance. The argument advanced by Centra and Potter (1980) at the beginning of this discussion of production function models concerning the implications of the magnitude of the effect of school factors on student learning essentially derives from the natural variance among the variables usually studied. Since the variance in home background measures would usually be greater than that among school resources it would be likely that home background factors would potentially explain more of the variance in achievement scores. It does not necessarily follow that home background would be more important for school achievement than school factors.

The five methodological issues discussed above form part of the debate about the policy implications of studies of school effects. The important point is not that there are right or wrong answers to most of the questions but that the interpretation of results depends upon an appreciation of how various aspects of methodology were addressed in a particular study. It is also important that in most studies the effect of decisions taken about these issues of methodology would be to underestimate the size of school effects on learning.

Within School Conditions

Bidwell and Kasarda (1980) have argued a perspective which extends beyond the particular methodological issues discussed above. They urge that a conceptual distinction be made between 'school' and 'schooling'. In summary they assert:

> Studies of 'school effects' must make a clear conceptual distinction between school and schooling. School is an organization that conducts instruction; schooling is the process through which instruction occurs. Schooling, which is a structure of action by students and teachers, is conditioned by the social organization of classrooms, curricular tracks, and other instructional units. A theory of schooling must include a conceptualization of its social organizational components. A theory of school effects must show how the organizational forms of schools affects schooling. In research on school and schooling, it is important to differentiate levels of analysis to be sure that the level of analysis matches the level of conceptualization. Very different results may be obtained by research that does and does not maintain these conceptual and corresponding operational distinctions. (Bidwell and Kasarda, 1980:401)

These authors then propose an approach to the analysis of schooling which examines instructional units within schools as part of the process which distributes resources to students. School structure would thus be viewed as affecting 'the resources that their instructional units provide' (Bidwell and Kasarda, 1980:403). As part of their argument the authors draw attention to a set of school-effects studies which have measured school attributes at a level of aggregation close to where the work of schooling occurred; in the classroom (e.g. Murnane, 1975) or the high school curricula track (e.g. Alexander, Cook and McDill, 1978). In contrast to studies conducted at a higher level of aggregation these studies yielded strongly consistent positive results concerning the effect of various school factors on student learning. In this respect Bidwell and Kasarda elaborate the points made by Barr and Dreeben (1978) concerning the differential allocation of resources to students within classrooms. They conclude:

> The measurement design and findings of the track and the classroom studies imply that when school attributes are measured in a way that is sensitive to the differential allocation of school resources among students (e.g. the different curricula of high school track, or the varied teaching experience of teachers in different classrooms) these measures are likely to affect students performance. (Bidwell and Kasarda, 1980:404)

The twin thrusts of the argument advanced would appear:

(i) to support the need for studies of the school as a social organization since it is the social structures of the school through which resources are distributed; and
(ii) to urge that in analyses of resource measures careful account be taken of the effects of aggregation.

In fact Bidwell and Kasarda extend the argument even further to consider the proposition that in some classrooms students may not have equal access to resources such as teacher time. For the present study attention is drawn more to the distribution of resources to classrooms rather than within classrooms.

One further aspect of the argument advanced by Bidwell and Kasarda was an examination of measurement and differential bias through a series of simulated models relating 'academic achievement', 'family background' and 'school inputs'. They considered four models. The first had all data measured at student level, the second had

'school inputs' aggregated to school level, the third had 'family background' aggregated to school level and the fourth had both 'family background' and 'school inputs' aggregated to school level. The authors concluded that whenever resources were unequally distributed to instructional units then the aggregation of 'school inputs' to school level would produce 'downward biases in estimated effects of school inputs to schooling, even if true score estimates were substantial' (Bidwell and Kasarda, 1980).

Experimental Studies of Class Size

The size of a class is one measure of the school resources provided to the unit at which schooling occurs. Much of the research concerned with this issue has been considered inconclusive (Porwell, 1978) but has generated considerable debate and interesting theorizing (e.g. Ryan and Greenfield, 1975; Ryan and Greenfield, 1976). Some of the research evidence would have been gathered by correlational studies so that its interpretation would be dependent on a knowledge of how various methodological issues discussed above were treated. Other studies have been experimental or quasi-experimental (e.g. Shapson, Wright, Eason and Fitzgerald, 1980). Two meta-analyses have sought to integrate the findings of experimental research in this area. One (Glass and Smith, 1978) considered the relation between class size and achievement and the other examined the relationship of class size to classroom processes, teacher satisfaction and affective outcomes (Smith and Glass, 1979).

Concerning the meta-analysis of class and achievement the authors concluded that there was a relation between class size and achievement but that the strength of that relationship was stronger for well controlled than for poorly controlled studies. The general finding was that as class size diminished student achievement increased but that the size of the increase was greater for smaller classes. In fact it has generally been reported that the gains are substantially greater for a given reduction in class size below 20 than for a class above 20. Roughly expressed, the original research suggested that a reduction in class size from 30 to 20 would result in a gain of three to four percentile ranks in average achievement but a reduction from 20 to 15 in class size would result in a further gain of four additional percentile ranks (see Glass and Smith, 1978:44). However a more recent publication suggested that this conclusion needs to be qualified somewhat (Glass, Cahen, Smith and Filby, 1982). In that more recent analysis Glass et al. separated studies of a long duration (involving more than 100 hours of instruction) from those of short duration (involving less than 100 hours of instruction). Studies of long duration reported larger achievement gains for a given reduction in class size over the range of class size from 30 to 20 than did studies of short duration (Glass et al. 1982:49). Gains in achievement for a given class size reduction were still greater for classes smaller than 20 but the differential gain was not so dramatic as for studies of short duration. In drawing implications for what might happen in real classes a

judgment needs to be made as whether greater reliance should be placed on studies of longer duration.

The second of the two meta-analytic studies (Smith and Glass, 1979) was concerned with the effects of class size upon affective outcomes for students, on teachers satisfaction, and on teaching environments and methods. All three domains were positively influenced by reduced class size but the effect for teacher satisfaction was greatest. In these three domains the effects of class size were fairly uniform across the spread of class sizes.

Studies by Filby, Cahen, McCutcheon and Kyle (1980) based on a small number of schools posited some explanations for the results obtained. First they suggested that the smaller classes made classroom management easier and more effective. Secondly they noted that teachers spent more time with individual students and knew more about each students progress. Taken together these results suggest that the linking variable could well be an increase in 'academic learning time' as defined by Berliner (1979) as the time for which students were directly engaged in learning material of an appropriate level of difficulty. Berliner distinguished between this concept which depended upon classroom management, and 'allocated time' or even 'engaged time'. This hypothesis tends to be supported by the results reported by Campbell (1981) who found that students in smaller classes spent more time engaged in work-related tasks with less time being spent on classroom management. Thirdly, and finally, Filby et al. (1980) suggested that in smaller classes there were not major changes in curricula or teaching methods but that most teachers added more enrichment activities in the curricula.

Though these results have sometimes been taken as providing unequivocal support for providing additional teaching reources in schools the policy implications would seem to be a little more complex than first appears. First, it has been noted (Glass, Cahen, Smith and Filby, 1979) that reducing class size will not guarantee improved achievement in every case but rather create the potential for increased learning by increasing 'academic learning time'. In passing, the comment of Ryan and Greenfield (1976) that many correlational studies of class size have failed to control for the most important variable - quality of teaching - can be noted: an ommission that is important in that less capable teachers may often be assigned smaller classes. Secondly in the range of class size from 30 to 20, which contains most primary school classes the achievement gains for reduced class size were less than the gains in affective outcomes. The implications for policy therefore partly depend on the values to be attached to each type of outcome. Jencks et al. (1972) asserted that:

> Instead of evaluating schools in terms of the long term effects on their alumni, which appear to be relatively uniform we think it wiser to evaluate schools in terms of their immediate effects on teachers and students. Some schools are dull, depressing, even terrifying places while others are lively comfortable and

> reassuring. If we think of school life as an end in itself rather than a means to some other end, such differences are enormously important. (Jencks et al., 1972:256)

Thirdly, since achievement appeared to increase more rapidly for a given reduction in class size in classes of less than 20, and since it may be expensive to finance very small classes everywhere (Glass et al., 1979) the policy implications may concern alternative use of resources in schools as much as additional resources. Some alternatives suggested by Glass et al. included more use of paraprofessional staff and volunteer parents, scheduling and grouping in schools, and directing resources so as to create small groups where the need appears greatest (e.g. reading programs, younger students).[3] It follows from this third implication that if there were to be additional resources for schools they would prove more effective in creating small groups for special purposes than in a more uniform reduction of class size and, if there were not additional resources schools should be freed from those constraints which impede their use of resources in alternative ways.

This third implication drawn from the studies by Glass and co-workers tends to reinforce the conclusion reached after the discussion of within school conditions: that it was important to understand the organizational structures of schools through which resources were allocated to instructional units.

One further aspect of the implications of the class size and achievement literature is partly related to the distribution of resources. Consider a system of schools in which there was a mean class size of 29 with a standard deviation of 4. If resources were supplied such that the mean class size was reduced to 27 it might be argued that the effect on average achievement would be small. However, if the distribution of class size was normal the percentage of classes with less than 20 students would be approximately doubled under these conditions. This would occur even without any change in the way resources were distributed within schools. The provision of resources in schools need not only be seen in terms of average class size but in terms of the opportunity to provide small group instruction for some purposes and some students.

School Organization and Resource Allocation

The argument presented above has addressed the need to study schools as organizations in order to understand better the way resources are distributed among students. There would appear to have been two main strands in the literature related to this area. The first includes a very wide range of studies of the organizational structures of schools and principles of educational administration (see for example Musgrave, 1968; Erickson, 1977). Gorwin (1974) argued that research in this area was leading to the development of

---

3 This would appear to raise issue of values, priorities and beliefs beyond the realm of empirical research.

models for the study of educational organizations which would better inform research concerning the effects of schools on students. An important development identified by Gorwin was the 'contingency theory' of organizations which related organizational practices to the conditions in the organization and the environment. This area of theory would appear to have important applications in understanding the interconnections between different levels in the educational enterprise.

The second strand in literature concerned with school organization is that concerned with the detail of resource allocation. A fundamental work in this area is that by Davies (1969) in which a system of representing different patterns of curriculum organization in secondary schools was proposed. Davies used that system, which was based on matrix symbolism to clarify the decisions which secondary schools needed to make about the allocation of resources to year levels and curriculum areas. In this Davies introduced the notion of 'basic classes', 'bonus classes' and 'borrowing resources' to explain questions of priorities in resource allocation. From the premises established Davies showed through a series of 'laws of the curriculum' the limits on curricula as they were imposed by the resources available. A similar study by the Scottish Education Department (Scotland, 1973) attempted to relate the effects of different curricular assumptions on staffing requirements in secondary schools. The approach differed from that of Davies both in its methods of analysis and in that it was concerned not only with resource allocation within schools but with resource allocation to schools. Even though primary schools have traditionally had less complex patterns of curriculum organization and resource allocation Courtney (1979) has explored the various ways in which available resources could be deployed in such schools; especially those in rural areas. In this way Courtney suggested that more flexible patterns of resource allocation in primary schools might be possible than had been previously imagined.

It is argued through the present report that these two strands in the study of schools as organizations need to be more closely linked. Through such a link, it is suggested, organizational structures would be studied as providing the elements through which resources were distributed in schools. Further, it is argued that a better understanding of those aspects of schools would facilitate a deeper knowledge of the impact of schooling.

Some Implications: The School as an Organization

The main thrust of the argument presented in the section above has been that an important aspect of the study of resources in schools is to examine the organizational structure in schools. However, it is necessary to emphasize that the importance of this topic of study extends beyond the intrinsic value of extending the pool of knowledge about patterns of administration (see Gorwin, 1974). The organizational structure in

educational systems needs also to be understood as part of the process by which resources are allocated. Patterns of resource allocation need to be understood as part of a precursor to examining the impact those resources have upon students.

The present report is one of three reports arising from different facets of the staffing and resources study. Each of the three reports has examined patterns of resource allocation through various organizational structures at different levels. McKenzie and Keeves (1982) have examined patterns of resource allocation and organizational structures at the level of education systems. The present report has examined patterns of school structures and resource allocation policies at school level by means of survey data gathered from 657 schools. Sturman (1982) has provided a more detailed analysis of the structures and resource allocation patterns in 16 specially selected schools with an examination of reasons why those schools adopted the policies observed. Taken together the three reports have been intended to provide an account of resource allocation throughout the government schools of Australia and New Zealand which will inform discussion about priorities and policy.

At various points in the present report reference has been made to detailed descriptions of school policies described by Sturman (1982) and to discussions of system policies elaborated by McKenzie and Keeves (1982). It is important to note that where reference is made to particular schools the names used are fictitious. As explained by Sturman the names are those of Australian and New Zealand writers and are not the real names of the schools visited.

CHAPTER 2

CONDUCTING THE SURVEY

In this chapter the way in which the survey of resource availability and allocation in Australian schools was conducted is discussed. It begins with some sketches of a few selected features of schools which were visited or discussed with people during the time that the survey questionnaire was being constructed. Then follows a description of the questionnaire and the other sources of data which were used to supplement or complement the survey questionnaire. Sample design is an important feature of any survey, and the particular sample design adopted in this study has been discussed in detail in a later section of the chapter. Basically it has been argued that the design which was chosen enabled the reporting of results which referred to what was available to or experienced by students in schools rather than simply what was distributed to schools as such. This important distinction has been discussed in greater detail later in the chapter. It has been illustrated through a consideration of the size of government schools from both the perspective of the size of schools provided in each system and from the perspective of the size of school attended by the majority of students. A discussion of some research relevant to the size of schools concludes the chapter.

Sketches of Schools

During the development of the survey questionnaire discussions were held with a number of people in education departments, in teachers organizations and in schools about the problems of resource allocation. A few schools were visited so that some idea of the contending influences shaping decisions about resource allocation could be gleaned in order to guide the questions to be asked. The overwhelming impression was of the complexity of the operation and in retrospect more time could have been profitably spent in this phase of questionnaire development.

This section contains a few brief sketches of selected features of schools which highlighted some of the general issues around which the questionnaire was structured. Where possible the issues raised in the sketches have been elaborated by reference to relevant research literature. It is by no means an exhaustive listing of issues but rather an indication of some practical manifestations of the issues of interest in resource allocation within schools. Some issues, such as student-teacher ratios in schools, were so accepted as part of the data to be collected that they have not been mentioned. Those which have been raised are merely some of those which at first glance might not have been thought to fall within the ambit of a resources study.

Schools which Provide Both Primary and Secondary Education

> A rural school not far from a major city provided education from Years K to 10. Teachers for Years K to 6 were provided by the primary schools division and those for Years 7 to 10 were provided by the secondary schools division. Years 7 to 10 were more generously staffed than in secondary schools because of a policy of supporting these secondary sections of small schools but many of the 'secondary staff' acted as specialist resource personnel for Years K to 6. There had been some attempt to develop a coherent curriculum structure across the 10 years of schooling but only tentative steps had been made at that time.

A significant number of schools, though they catered for a small proportion of students, in Australia and New Zealand had both a 'primary' and 'secondary' section. These were known variously as District High Schools, Area Schools, Secondary Departments, Central Schools and Rural Schools (see McKenzie and Keeves, 1982). They were schools facing unique problems and unfolding commensurate opportunities. There had been tentative steps towards developing a K-10 curriculum structure for such schools and concomitant flexible patterns of staff deployment. Such developments may be impeded by the traditional bifurcation of some education systems into primary and secondary divisions and the expectations held for primary and secondary education: particularly with regard to the breadth of 'subjects' expected in the latter. A number of education systems had recently established 'functional' divisions rather than divisions directly related to primary and secondary schools but even so staffing allocations to primary and secondary schools were usually considered separately. The study, including the survey, was intended to be sensitive to issues concerning such schools which provided education over both primary and secondary Year levels. Sturman (1982) has examined the way in which some of these general issues impinged on the operation of one such school in a rural area.

Sub-schools

One response to the problems felt to arise from large schools has been the creation of 'sub-schools' based on small semi-autonomous organizational units within the larger structure. The problems of size principally concerned an alienation of students from their peers and from their teachers and lack of opportunity for staff involvement in management. Sub-schools had been established within a number of schools to overcome these problems.

> One large secondary school described by Williams (1978) had changed its organization to one based on four sub-schools. One was horizontal embracing Years 11 and 12 while the other three were parallel vertical sub-schools spanning Years 8 to 10. Williams reported benefits in the welfare of students, staff participation in management and school-home liaison. He noted little immediate impact on curriculum organization and felt that such sub-schools required additional resources.

Williams concluded that sub-schools should be seen as a means to certain goals such as student welfare, staff professionalism, and curriculum improvement rather than as a

panacea for all the problems of school management. The existence of sub-schools seemed to be an important issue of school organization related to questions of the size and roles of schools. Patterns of school size are discussed later in this chapter and Sturman (1982) has described how one school attempted to create sub-schools which would foster closer contact between members of the school community.

School Decisions about Resources

> An urban primary school in Tasmania used funds made available to it to employ a part-time teacher who provided enrichment activities for some students in a composite class, two part-time teacher aides and one part-time library aide. This use of funds was a decision taken within the school. A nearby secondary school used a little more than half its allocation of funds to employ five part-time teacher aide and the remainder to supplement other funds available to its four faculties for the purchase of materials and equipment.

These schools were part of an education system which made approximately 70 per cent of Schools Commission general recurrent grant funds allocated to the system available to schools for spending at the discretion of the school including the employment of personnel. A general report on the use of funds allocated to the schools (Perchard, 1979) suggested that:

1 in primary schools some 44 per cent of these monies was used to employ teacher aides and 38 per cent was used to employ part-time teachers, and

2 in secondary schools some 60 per cent of these funds was used to employ teacher aides and only 4 per cent was to employ additional teachers.

Through the survey an attempt was made to determine the priorities which would guide the decisions of other schools if additional money for the employment of personnel was made available to them. By this means an interpretation could be made concerning areas felt to be of greatest need. In addition, observations such as those recorded above served to emphasize that the allocations of staff to school were not entirely governed by closely prescribed formulae and that small areas of flexibility may allow support for important aspects of a school program.

School Based Decision Making

In 1977 the Schools Commission together with state education authorities sponsored a national conference on school based decision making. The reports (Schools Commission, 1978a, 1978b) of that conference provide an interesting review of the policies in each State regarding structures and participants in decision making in various areas. At various points in the present report reference will be made to these documents. They highlight the need to examine structures in schools which might have influenced decisions about the type of resources to be acquired or the way in which resources could be deployed. The relationship between school structures and the broader requirements of education systems has been discussed in a companion volume by McKenzie and Keeves (1982).

Organizational structures concerned with decision making could be considered as of two types. The first would be those which involve a significant number of people other than the professional staff of the school. Such structures as reported by Fitzgerald and Pettit (1978) varied in function between States and to some extent within States.

> As an example of one development differing from State policy a primary school had altered the structure and composition of the parents association so that it functioned as a school council in a State which did not have schools councils as statutory bodies. The exercise of its functions depended upon the principal of the school supporting it and accepting its guidance.

The second type of organizational structure would be one which primarily involves the professional staff of the school. Such structures might be the vehicles through which many resource allocation decisions were taken. They involved staff time themselves, they provided the means by which it was attempted to secure commitment to school policy, and they provided the framework for review and change of that policy. Two principles which formed part of the rationale for these sorts of structures were 'devolution', whereby decisions were to be taken as close as possible to the point of action, and 'participation', whereby as many staff as possible were involved in decisions about broad policy.

> One suburban high school had developed structures which illustrated these principles. It had a regular formal staff meeting each fortnight so that broad policy could be formulated by staff. These meetings considered inter alia the proposed budgets for money available to the school. In addition the school was organized around four faculty groups (creative arts and technology, English and social studies, mathematics and science, and the rest). Each faculty group was responsible for its internal organization and budgeting. Timetabling was arranged in half-day sessions so that the whole of each Year level (from Years 7 to 10) was in a faculty group for half of a day at a time. Grouping of students for instruction was the responsibility of the faculty group and varied between those faculties and from time to time.

In terms of future policy the involvement of professional staff in decisions about schools seems likely to become a more important issue as the age distribution of the teaching profession alters in a way which allows fewer opportunities for promotion into positions of responsibility for experienced teachers. In any event Stackhouse (1978) counselled that schools were better viewed as 'loosely coupled' organizations than bureaucratic networks. Loosely coupled organizations are more decentalized, less constraining of individual activities, and exhibit more fluid co-ordination than do bureaucratic networks. For this reason it seemed worth knowing something of the way schools were organized and worth exploring some of the ramifications of different patterns.

Shared Resources

> In an inner suburban area of Melbourne a number of schools had formed a co-operative network for sharing some resources. This sharing of resources involved a total staff curriculum day, a common school to work transition

committee, and a survey research study to guide curriculum planning. It was also planned to use the co-operative to rationalize the provision of courses in the senior sections of the school so that resources were effectively used to provide diversity for students in the area.

A group of schools in the Huon Valley in Tasmania participated in a scheme for resource sharing in a sub-regional zone. The development arose from a research study (Behrens, O'Grady, Hodgson, Hoult, and Hughes, 1978) and involved sharing material resources (e.g. a computer terminal) and personnel (music teachers and remedial education staff). It primarily involved government high schools and their feeder schools but there was some participation by non-government schools.

Other forms of resource sharing between schools occurred when specialist teachers of such subjects as music and physical education were appointed to more than one school on a fractional time basis or when peripatetic teachers served a large number of schools. However, from discussions with senior staff in schools it appeared that there were organizational impediments to extensive resource sharing other than that formalized by the education department. Such arrangements, it seemed, sounded fine in principle but were hard to implement. In the context of schools wishing to provide specialist services but faced with declining enrolments the idea of sharing resources seemed sufficiently appealing to warrant investigation, though little has been reported in the present volume.

Other Resources in Schools

A secondary school had an annex, or sub-school, established in a previously unused church hall. It made extensive use of community resources as a consequence of its philosophical orientation. Even in specialist areas it was able to draw upon resources from its surrounding neighbourhood (Hicks, 1979) and it had been suggested that it was a very cost effective provision of schooling (Hill, 1979).

The example above represents a reliance on community resources far beyond that of most schools but there appeared to be many schools which made use of resources beyond that provided by the education systems themselves. Such use would extend from the relatively trivial use of sports grounds, through the joint use of libraries, to the involvement of parents and other students in teaching programs. The latter two possibilities represented ways by which resources could be 'stretched' to provide a broader base for school instruction. However, parental involvement can vary between communities depending on the time available to and confidence of parents and the attitudes of schools towards this practice. It therefore seemed relevant to examine the differences between schools in the involvement of parents in the school program.

The use of some students to teach others has been an informal practice in small rural schools over many years. More recently such practices have been introduced in a few larger schools (Mayes, 1978) and have been claimed to be beneficial for both the recipient and the giver of the instruction. It seemed that the use of students as teachers was an innovative use of resources within schools which deserved exploration.

Table 2.1 Class Organization in One Primary School

Year	Class A	B	C	D	E	F	G	H	Enrolment
K	27	6							33
1		12	9	10					31
2		6	10	8	5				29
3			11	10	19				30
4					5	4	5	8	22
5						11	12	10	33
6						15	13	9	37
Class size	27	24	30	28	29	30	30	27	215

Multiple Year Levels Rather than Single Year Levels

> A relatively small primary school in a suburban area had formed a number of composite classes rather than basing its organization on single year levels. It had a total teaching complement of 11.3 including a non-teaching principal and 2.3 specialist staff. The composition of classes is shown in Table 2.1.

The conventional practice in primary and secondary schools has been for students to progress through schooling in age related year levels and to be grouped for most teaching purposes in classes comprising students from a single year level. In small rural schools this has never been possible and students have been taught in one or more multi-year level groups (known as composite classes). Even in schools with more teachers than year levels a combination of staff allocation policies based on total enrolments and an uneven distribution of enrolments across year levels often necessitated composite classes if classes of approximately equal size were to be maintained. However, some schools such as the one above have adopted composite classes as a matter of policy arising from a set of educational beliefs concerning the best groupings of students.

Through the surveys and other data an attempt was made to determine the extent to which composite classes were used and to obtain some indication of the reasons suggested for this practice. In Chapter 4 the issues involved in composite classes have been discussed in more detail. Issues pertaining to the use of composite classes seemed likely to be of increasing relevance as there appeared to be a decline in enrolments (Burke and Hudson, 1981) and decisions including the choice between amalgamating schools and maintaining small schools were being faced.

Ability Grouping

Where more than one class at a given year level is to be established, or where more than one composite class spanning a range of year levels is to be established, a choice exists as to the basis upon which students would be grouped. One option has been to group students according to perceptions of their learning capacity. Where grouping has been stable across subject areas the term 'streaming' has been used as a short title for the

Table 2.2 Ability Grouping in Year 9 Science Classes in 1975. Percentage of Schools in Each Category

State	All mixed ability	Some mixed ability	Homogeneous groups	Number of schools
ACT	22	33	44	18
NSW	7	12	79	42
Vic.	74	16	9	43
Qld	21	40	40	48
SA	40	31	29	42
WA	12	41	47	34
Tas.	15	15	70	33
Australia	29	27	45	

Source: Owen (1978)

practice; but where the groupings have been fluid with differences between the subject areas the term 'setting' has been used. Of course, it is also possible that ability groups could be the basis of forming some classes (e.g. the least able) but not others or that ability groups could be used in subject areas only. These considerations guided the way in which questions concerning ability groupings were structured.

> A large secondary school divided its science classes into three groups: higher ability, middle ability and lower ability. The one higher ability class and the one lower ability class were smaller than the four classes of middle ability students with the lower ability class being significantly smaller. However, this rather small class was assigned the least experienced teacher on the science staff.

Argument about the virtues of ability grouping has raged for some time both amongst practicing teachers and educational research workers. There have been numerous studies (e.g. Newbold, 1977; Douglas, 1964) which have suggested apparently conflicting results. A meta-analysis currently being conducted by McGaw (in preparation) may illuminate this issue. For the present study it seemed important to investigate the extent of ability grouping in various school systems, since Owen (1978) had shown differences between States in this practice in the teaching of secondary school science, and to examine whether or not resources were allocated to groups of differing ability on a disproportionate basis. From the results of studies in secondary science education it was known that in 1975 there were marked differences between States in the extent of ability grouping in that subject (Owen, 1978). Even though schools in all States made greater use of ability grouping in Year 10 than in the first year of secondary schooling, the pattern between state differences was the same at each year level. Victorian schools at that time formed science classes which were predominantly heterogeneous with respect to ability but schools in New South Wales formed science classes based on the perceived ability of students. Other States fell between these two positions as can be seen from Table 2.2 which records the extent of ability grouping in Year 9 science classes. From an earlier study (Ainley, 1978) there was a suggestion that lower ability

groups were often smaller but that smaller groups were sometimes assigned to teachers felt to have less effective class control.

Team Teaching

> A primary school in an urban area had sufficient students at Year 4 for three classes to be formed. Rather than have three separate classes with each being allocated an individual teacher those teachers worked as a team in a space which was the equivalent of three normal teaching spaces and which was openly structured.
>
> In another primary school the teachers at Year 5 shared planning and preparation of material and sometimes swapped classes but mostly taught one class in each separate room.

As Lovell (1966) remarks team teaching is a generic term and embraces a wide variety of organizational patterns. The two examples above both represent different forms of team teaching. In structuring the survey questionnaire the view of team teaching which was accepted was that where 'two or more teachers had the responsibility, working together, for all the teaching of a given group of pupils in some specified area of the curriculum'. The issue of team teaching seemed more oriented to primary schools and so in developing the questionnaire attention was focussed on teaching which involved more than one teacher in a room at the same time, and teaching which involved different teachers for lessons in different subjects (examples of this practice have been described in another section). These were felt to contrast with the traditional pattern of one teacher to one class.

The use of joint planning procedures was not considered to be a form of teaching in the survey; though in retrospect it might well have been. This form of preparation which was common in the New Zealand 'syndicates' could best be considered 'co-operative teaching'. Information about the extent of co-operative teaching could be inferred only from the frequency with which year level teachers met.

Specialized Teaching

> A small rural school with just two teachers was organized in a different pattern to that which normally applied in such schools. Most primary schools with such a complement of staff would place one staff member with a composite class of Years 3 to 6 and the other with a composite class containing Years K to 2 and with each performing general teaching functions. At this school one teacher had strengths and interests in mathematics and sciences and the other in English and humanities. Consequently, they organized so that each taught in these broad areas across all year levels.
>
> An inner suburban secondary school planned such that its Year 7 students were grouped in classes so that one teacher took them for nearly all lessons. The curriculum was not organized around subjects with specialist teachers for each subject but rather around a framework of integrated studies.

A strong tradition in Australian education has been that at primary school level teaching is conducted by generalists who cover all areas of the curriculum but at secondary school

level instruction is conducted by specialists with expertise in particular subject areas. The examples above are but illustrative of two ways in which this tradition has been varied. Another would be what is known as the 'Australia Street Plan' in which teachers specialize in particular subject groupings in specially equipped rooms to which primary school students move for their lessons. A less extreme variation from the traditional teaching pattern in secondary schools would involve organizing instruction so that a limited number of teachers were in contact with each class. Under such an arrangement students in the beginning years of secondary education could establish close contact with one or a few teachers.

The examples above represent decisions by schools as to how they use the staff available to them. In the survey specialized teaching in primary schools was recognized as one form of team teaching (Lovell, 1966). It was considered likely to be as unusual in primary schools as was generalist teaching in secondary schools. For both it was planned to find out the extent of use and some associated ramifications.

Another aspect of specialized teaching in primary schools arose less from decisions made at school level and more from system wide policies. This concerned the appointment of specialist staff in particular areas of the primary school curriculum such as music, art, physical education, and teacher librarianship.

> One example of differentiation in the staff complement allocated to primary school was as follows. A school in a low socio-economic area had a total enrolment of 500 students. It had 17 regular classroom teachers, and a principal and two deputy principals without class teaching responsibility. In addition, there were four specialist teaching staff: a teacher-librarian, a physical education teacher, a migrant education specialist and a half-time remedial education specialist.

Such a policy usually does not impinge on the major part of the curriculum experience of primary school students but does represent a small step towards a 'differentiated staff' provision (English and Sharpes, 1972) for primary schools. Several schools appeared to use the specialist staff at the school as a means to provide non-contact time for the general class teachers. Other possibilities would be to use those specialists in team teaching arrangements with other teachers or to use them to assist other teachers in preparation through an advisory function. Courtney (1979) has discussed various ways in which specialist staff can be used in primary schools.

In the survey one intention was to map the configuration of teaching staff available in a primary school and to explore some of the ways in which specialist staff were deployed.

Distribution of Resources

> A principal of a primary school had proposed to, and obtained the support of, the other staff at the school to withdraw one teacher from regular class teaching so as to provide small groups of students with intensive remedial instruction in key skill areas. The result was that average class sizes in the school were increased by

about seven per cent but students needing additional help were taught in groups of four or five.

The issues of how resources are distributed within schools raise important issues of cost-effectiveness and educational values. In the example above the policy could be justified in cost-effective terms by reference to the meta-analysis reported by Glass and Smith (1978). As noted in the previous chapter the function relating achievement to class size increased more steeply as the classes become smaller. On this assumption the gain likely to be achieved by the students placed in the small class would be greated than any loss experienced by those in slightly larger classes. However, to justify the policy it would be necessary to affirm the principle that the larger gains for these few students were more important that small potential losses for the many remaining in the slightly larger general classes. The principle would be rather hard to justify on any basis other than a consensus of values among the school community.

The example above was perhaps an extreme example of differences in the distribution of resources, but one which was thought might apply in many primary schools. A more common practice would be to allocate more resources to younger students in schools on the basis that close contact and effective learning at that level would endure throughout the school.

In secondary schools the issue of resource distribution within a school seemed a little different. A common feature of Australian secondary schools (see Fitzgerald, 1970) was a declining level of enrolments with each year level after Year 9 and a wider choice of subject offerings with each year through the school. Consequently, it was suggested that senior school students enjoyed far more of the educational resources of a school than students in the years below Year 10. Davies (1969) referred to this practice as 'borrowing' from one year level to staff another. It was also suggested that widening the curriculum in the compulsory school years could result in relatively small classes in some electives and large classes in 'core' subjects. According to Davies this must happen when the curriculum expands beyond the resources available at a given year if other things such as non-contact time for teachers are held constant.

These types of issue suggested that it was important to survey the levels of teaching resources allocated to different year levels in primary and secondary schools and to examine subject areas in which very large or very small classes were held. It also prompted an examination of curriculum diversity and organization in secondary schools in relation to resource allocation both to test supposed relations and to identify any unusual practices which maximised the diversity which could be achieved within a given level of resources.

A particular issue which arose concerning curricula diversity and resource allocation centred on Years 11 and 12. In two education systems, the ACT and Tasmania, senior colleges had been established to provide for the final two years of

schooling. While it was sometimes alleged that such a provision drew resources from the general education system there was little evidence which enabled comparisons to be made of Years 11 and 12 in those colleges and Years 11 and 12 in full secondary schools.

Non-contact Time

It has become accepted in Australian secondary schools that for part of the time that a school is open teachers should be free from direct responsibility for class teaching. The provision of non-contact time for teachers in primary schools was less recently established and only applied in some education systems. Hill (1977) identified three arguments used to support such a provision, namely: equity with other teachers, changed role expectations, and improved performance and morale. According to a survey conducted by the Australian Teachers Federation (1976) most primary school teachers had no non-contact time though there were differences between States with about half the primary teachers in Tasmania having 10 per cent of a week free from class teaching. A study in Britain (Hilsum and Crane, 1971) found that non-contact time was used for a wide range of tasks including clerical work, preparation, curriculum development, counselling and individual instruction. That study also suggested that nearly 40 per cent of the primary teachers' work involved essential professional tasks related to the actual teaching process. It could be argued on this basis that 'non-contact time' is a misleading term and that one should consider instead the pattern of allocation of resources to various school functions which facilitiate student learning. Class teaching would be but one of those functions.

> One urban primary school had arranged its non-contact time for teachers by using the senior staff in the school (the principal and deputy principals) to take classes and by using one assistant class teacher to take classes for specialist activities in physical education and music.

The methods used to provide non-contact time for teachers in primary schools has been explored in greater detail by Sturman (1982) in a companion report. In the survey the intention was to establish what provision was made for non-contact time in different types of schools and to examine any organizational features of schools which facilitated this provision.

The Framework for the Questionnaire

The sketches above provided practical illustrations of many of the theoretical issues related to school organization and resource allocation which were discussed in Chapter 1. The study, and therefore the questionnaire, embraced a wider range of issues than those above. Contact with schools, or with people close to schools assisted in the translation from abstract issues to practical questions which is the issue of questionnaire administration.

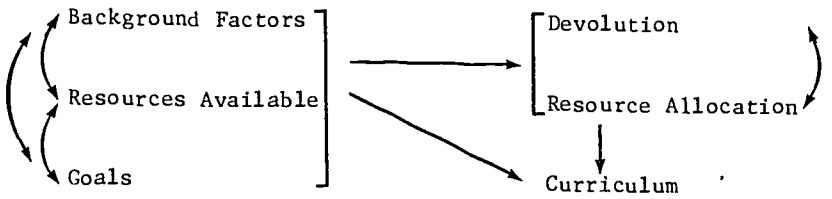


Figure 2.1 The First Model Proposed for the School Survey

When the first trial of the survey questionnaire was planned it was structured around a simple model based on the frame factor theory of Dahloff (1971a); though there were considerable modifications for the purpose of present study. The major elements of the modified framework were, firstly, those factors which were not readily amenable to change as a result of school decisions (frame factors), secondly the school's goals which represented medium or long term decisions by the school, and thirdly factors which were amenable to more direct influence by school administrative decisions (resource allocation). Finally attention was given to school curricula as outcomes of these influences.

A simple diagram proposed initially has been shown in Figure 2.1. It was emphasized at the time that the model tentatively suggested was not one which should be held too strongly or its importance exaggerated. It had been proposed to serve two functions. First, it was seen as a means of systematically organizing the descriptive data which needed to be collected. Secondly, it was suggested as a possible framework for testing the hypotheses that a school curriculum was not just an expression of its goals but would be influenced by the resources available and the policies guiding the allocation of the resources. It was recognized that such a framework was a long way from providing an organizational theory since it provided no indication of the means by which resource availability and allocation policies could affect what schools did. It was suggested however that the framework might provide a useful basis for theorizing in the light of notions of how material resources affected what happened in classrooms (Ainley, 1978).

In discussion of the model several points were elaborated. It was recognized that the assumption that frame factors were fixed constraints was a little crude. At that stage background factors were considered to include such factors as the location of the school, the age, grade, and sex distribution of its students, and its links with the community in which it was located. It was noted that for a secondary school the age, grade or sex distribution of its students could be altered as a result of curriculum decisions taken by the school. For example, providing a new curriculum in the senior

school might increase the rate of retention of older students. Similarily it was recognized that schools attempted to, and probably did, influence the personnel and material resources made available to them through a variety of bargaining processes with the relevant authorities. Recognizing the crudeness of this assumption did not lead to a rejection of it. It seemed valid to regard these 'frame factors' as relatively less amenable to school policy in the short-term than the other elements of the framework.

The relative day-to-day emphases given to the various general aspects of schooling were considered to be the result of decisions taken at the school level. However, such decisions were thought to be of a medium to long-term nature taken in the context of constraints imposed by a range of community expectations. Thus, school decisions about goals were considered likely to reflect variations in the emphases placed upon generally recognized functions of schooling rather than reflect entirely idiosyncratic goals.

Patterns of resource usage constituted the key element in the school questionnaire. The deployment of resources within schools was seen as representing the way schools had decided to implement their stated goals given a set of external constraints. It was an issue of interest both in providing descriptive information and in any subsequent analyses and follow-up case studies. Of prime interest in patterns of resource usage were such matters as innovative class groupings, innovative teaching methods, effective class sizes and non-contact time for teachers.

School curricula were seen as representing the extent to which schools were able to implement teaching programs designed to achieve their stated goals. The section concentrated on the broad curriculum structure and the breadth of offerings to students. It was originally intended to classify the curricula of schools according to the emphasis of each of the broad functions of schooling proposed by Mitchell and Spady (1978). In practice that intention proved not to be feasible.

During the process of developing the questionnaire through trial versions and discussion there were decisions taken about the feasibility of obtaining by survey information about some elements of the original framework. In addition the process of developing the questionnaire highlighted some distinctions not made clear in the original model.

Consequently the framework around which this report has been written and which best characterized the final version of the questionnaire was a modification of the original framework. The diagram in Figure 2.2 indicates the important elements of the framework which seemed to best describe the final version of the questionnaire. This revised model envisaged three levels of resource allocation policies. The first level included background factors characteristic of the schools' surrounding environment and the resources available to the school. Both of these blocks of variables were considered to be a fixed framework within which schools allocated resources; though it has been

BACKGROUND FACTORS
- level of enrolments
- nature of enrolments
- location of school
- other school characteristics
- system requirements

POLICY FORMULATION STRUCTURES
- internal school structures
- level of decision
- extra-school structures

RESOURCE ALLOCATION PATTERNS
- effective class sizes
- non-contact time
- curriculum range
- use of other resources

POLICY IMPLEMENTATION STRUCTURES
- teaching structures
  - grouping of students
  - grouping of staff
- curriculum structures

RESOURCES AVAILABLE
- numbers of teaching staff
- numbers of support staff
- staff characteristics
- level of material resources
- other resources

Figure 2.2 Conceptual Framework for the School Survey

acknowledged in the discussion above that those variables could to some extent be affected by policies and actions within schools.

The second level included policy-formulation and policy-implementation structures. The first of these two blocks of variables was concerned with the structures through which resource allocation policies were determined and the second was concerned with the teaching and curriculum structures within which those policies were implemented. The third and final level of the model contained one block of variables which characterized the detail of resource allocation policies in schools.

Causal arrows have not been included in the diagram but the convention applied has been that each block of factors could be regarded as potentially influenced by all blocks of factors to its left in the model. This convention has been developed in 'block recursive modelling' (Blalock, 1969:71). Even though the present report did not proceed through to this form of causal analysis it was a useful approach to organizing and interpreting data which was essentially descriptive.

Questionnaire Development

Initial Design

An initial trial form of the school questionnaire was developed between April and June, 1979. This version of the questionnaire was presented in seven sections:

A Background Data
B Resources Available
C Aims and Goals
D Decision-making Processes
E School Curricula
F Patterns of Resource Usage
G Problems and Solutions Related to Resources

Section G was concerned entirely with descriptive information about school resource allocation problems and practices. It related directly to difficulties faced by schools, measures taken to overcome these difficulties, and new arrangements in staffing schools.

Trials

The first trial version of the questionnaire was prepared for consideration by people in state education departments who had a general acquaintance with the schools in each system. As a result of comments received a number of questions were revised or deleted. In particular, as mentioned above, some of the questions related to aims and goals and questions concerned with the emphasis on various aspects of the school curriculum (expressed in terms of the Mitchell and Spady (1978) model) were substantially reduced or deleted. Considerable revisions were also made both to the questions concerned with class size because of difficulties of data collection and to the

section entitled 'problems and solutions relating to resources'. In general, as a result of comments made at this stage the questionnaire was reduced in length.

As a result of incorporating these modifications versions for trial in schools were prepared. In the versions for trial in Australian schools a questionnaire of background information was prepared in anticipation that this information might be obtainable from departmental records thereby reducing the length of the questionnaire and hopefully increasing the response rate. In addition separate trial versions were prepared for secondary and primary schools. Corresponding trial versions were prepared for New Zealand schools.

Some trials were organized in each state education system. Generally three primary and three secondary schools in each State were involved in the trials. Trial schools were chosen to include some large metropolitan schools and some small rural schools. Different methods were adopted in the trials in each of the systems. In some States schools returned the completed trial questionnaires direct to ACER, and in others the principals worked through the trial form with a staff member from the research branch of the education department. Both methods resulted in valuable information about the structure of the questionnaire. In addition to these trials ACER visited several schools with the questionnaire and held discussions about the document with school principals and other teachers.

Final Structure

The final version of the questionnaire was significantly reduced in length and altered in format as a result of the trials.

1 The proposal to gather some data from official records was dropped because of logistical problems thus all data were to be obtained from the schools, though eventually some data from official records were used (see below).

2 The format was altered so that separate questionnaires were not developed for primary as well as secondary schools. The final questionnaire was geared to both types of school and for those schools offering both primary and secondary education, though some questions were intended only for schools with secondary classes. Modified versions were developed for New Zealand schools and for senior secondary colleges in the ACT and Tasmania.

3 Some questions were deleted or extensively reduced, for example:

   (a) Many items concerned with 'problems and adaptations' were deleted.

   (b) The question concerning the size of classes in a school was deleted because of the complexity of the issue in open plan schools and the time which it appeared such a question took to complete. The trials revealed that this question proved extremely time consuming for principals to answer and

would have been a major impediment to obtaining a good response rate. The question was replaced by one which asked about the 'teacher hours' (for senior teachers and others) allocated to each year level. Combined with information about teaching allotments and enrolment levels this question enabled average effective class sizes to be calculated. The rationale and method for doing this is discussed in Chapter 5.

(c) The questions concerning the experience and qualifications of teachers was dropped because it also proved difficult for school principals to obtain the necessary data with which to answer this question.

(d) The questions concerned with decision making processes in the school were extensively modified.

4 Numerous amendments were made to other questions to try to ensure that terms were understandable in each system. This proved extremely difficult given differences in terminology between the systems.

In its final version the questionnaire was divided into two parts. Section A was concerned with school policy and practice in making use of resources and Section B was concerned with statistical information about enrolments and the timetable. Copies of the questionnaires have been included in Appendix I. The letter which accompanied the questionnaire suggested that principals might wish to answer Section A themselves in consultation with other staff and ask a deputy principal or timetable co-ordinator to answer Section B.

Other Data Sources

Because the final version of the questionnaire involved some loss of information, it was supplemented with extra information obtained from education department records. Examples of the types of data collected in this way were the detailed structure of composite classes in primary schools and the variation in class size across year levels in secondary schools. Following examination of the returned questionnaires it was apparent that the question concerning teacher hours at different year levels, which had replaced a more traditional class size question, had been poorly answered especially in primary schools. In retrospect it seemed that the concept behind the question would not have been readily understood. Consequently the information on which to base this calculation was obtained from department records. The procedure for developing a time-weighted average class size for secondary schools, which was the purpose of the original question, was able to be applied to the new data from the records equally as well as it would have been applied to the survey data. The Education Department records referred to were the staffing returns, school organization schedules and in one case a curriculum statistics survey.

Sample Design

Rather than a single sample, several samples were drawn separately for analysis:

(a) a sample of Australian government primary schools;
(b) a sample of Australian government secondary schools;
(c) a sample of Australian senior secondary colleges; and
(d) a sample of New Zealand government primary schools.

Each of these samples will be discussed in detail in the following sections. No sample of New Zealand government secondary schools was drawn for the study because the Post Primary Teachers Association of that country was opposed to participating in the study in 1979, the year of the survey administration.

The selection of schools in the samples was governed by the following criteria:

- the selection should be random within stratified groups;
- the sample should reflect the various types of school in the population of schools;
- sufficient schools should be chosen from each education system to enable accurate information to be obtained about different types of schools in each State; and
- the sample should reflect the numbers of students in different categories of schools.

Simple random samples were not thought to be the best possible approach. First, they would have lacked precision in the representation of each sub-group. Secondly, by giving each school an equal probability of selection it would have over-emphasized small rural schools in relation to the population they served. Accordingly it was decided to choose stratified probability samples for each State. The stratification does not imply a great departure from randomness since schools were still selected at random by a random start constant interval procedure from each stratum. It does reduce the standard error as a consequence of each stratum being correctly represented in the sample.

The sampling was generally performed so that each school had a probability of selection proportional to its size. This means that the samples so chosen represented 'schools as they served students rather than schools per se'. This is an important point for the interpretation of survey results which will be illustrated in greater detail by the discussion of the distribution of school size later in this Chapter. A survey based on a simple random sample or a total population of schools might conclude that the average class size in a given system was 27.6. That would not be the same as the size of classes in which students on average would find themselves for the distribution would be likely to be positively skewed (more small classes catering for relatively few students). By contrast a sample chosen with a probability proportion to size would indicate a larger

average class size under the circumstances described above which would reflect the size of class in which a student on average might find himself. Similarly, a statement based on a simple random sample of schools that say 50 per cent of schools had some vertical grouping does not imply that 50 per cent of students would be in schools with some vertical grouping.

Australian Government Primary Schools

For the purpose of this study the target population of primary schools was defined as that group of schools which enrolled at least one 10-year-old. It therefore excluded junior primary schools in Tasmania and Western Australia. No Northern Territory schools were included. It can be noted that this definition included those schools with primary and secondary grades.

The basic probability samples of primary schools in Australia were to contain 50 schools in each of New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania with 30 schools chosen from the Australian Capital Territory. Selecting a similar number of schools in each State enabled estimates of statistics for each State to be made with similar accuracy. Previous studies (Ross, 1978) suggested that a sample of 50 schools provided a suitable balance between reducing the statistical errors of measurement and keeping the sample size small. Additional samples were chosen from certain strata in each State where too few schools would have been selected on a probability basis: this enabled reliable estimates to be made of staffing characteristics of those schools which served just a few students. To achieve this the sampling fraction was multiplied by an integral value (usually 2). This technique enabled the basic probability sample to be retained where weighting would prove complex but provided a disproportionate stratified sample for between state comparisons.

The sampling frame for primary schools was assembled by State (super-strata), strata and sub-strata as shown in Appendix II. Within each sub-stratum schools were listed in order of postcode (and alphabetically within postcodes). From the sampling frame schools were selected within each stratum with a probability proportional to the number of 10-year-olds in the school. In practice this involved the following steps:

1 For each State the number of sample schools (a) was determined and the total number of 10-year-olds (N_T) and the number of students in each substratum (N_S) were calculated.

2 The sampling fraction for each State was calculated: $f = \frac{a}{N_T}$

3 The designed sample of schools in each substratum was calculated:
$= f \times N_S$.

Table 2.3 Summary[a] of the Sample of Australian Government Primary Schools

State	Sub-strata	Total schools	Total 10-year-olds	Sample schools[b]
ACT	1	58	2 991	30 + 0
NSW	4	1 728	64 080	5 [illegible] 5
Vic.	5	1 704	51 533	[illegible]
Qld	5	1 035	30 467	[illegible]
SA	6	493	19 [illegible] 9	
WA	4	541	18 [illegible]	
Tas.	5	192	6 [illegible] 5	[illegible] 4

a Greater detail has been provided in Appendix II.
b The figures shown represent the basic sample and the additional sample.

4 The constant interval number $(= \frac{1}{f})$ was calculated.

5 A random starting number between one and the constant interval number was obtained.

6 Sampling selection numbers were then calculated for the first substratum and schools containing these in the cumulative 10-year-old polulation tally were chosen.

7 For each subsequent substratum the random start was calculated as: (first excess sampling selection number) - (size of population of previous substratum).

8 The procedure was repeated for each substratum.

A summary of the structure of the sample of primary schools has been shown in Table 2.3. Greater detail has been provided in Appendix II.

Australian Government Secondary Schools

The target population of secondary schools was defined as that group of schools with at least one 14-year-old student enrolled. Again such a definition included those schools with both primary and secondary classes. As for the primary school samples no schools were included from the Northern Territory.

The basic probability samples of secondary schools were to contain 50 schools from New South Wales, Victoria, Queensland and South Australia with 40 schools from Western Australia, 30 schools from Tasmania and all 16 secondary schools from the ACT. Again additional samples were drawn from certain strata following the same principles outlined for primary schools.

The sampling frame for secondary schools was organized similarly to that for primary schools and analogous procedures were followed in drawing samples of secondary schools. In this case however schools were selected with a probability proportional to the number of 14-year-olds enrolled. A summary of the sample has been shown in Table 2.4. Greater detail has been provided in Appendix II.

Table 2.4 Summary[a] of the Sample of Australian Government Secondary Schools

State	Sub-strata	Total schools	Total 14-year-olds	Sample schools[b]
ACT	1	16	2 609	16 + 0
NSW	2	421	65 453	50 + 5
Vic.	3	430	49 544	50 + 3
Qld	2	198	28 998	50 + 3
SA	2	143	19 439	50 + 3
WA	2	129	17 308	40 + 4
Tas.	2	60	6 725	30 + 7

a Greater detail has been provided in Appendix II.
b The figures shown represent the basic sample and the additional sample.

Australian Senior Secondary Colleges

The sample of Australian senior secondary colleges was in fact all seven such colleges in Tasmania and all five colleges in the ACT.

New Zealand Primary Schools

The structure of the New Zealand education system differed from that of Australia in that it was made up of full primary schools (covering eight years equivalent to Years K to 7 in Australia) contributing primary schools (covering six years equivalent to Years K to 5 in Australia), intermediate schools (equivalent to Years 6 and 7), Forms 1-7 secondary schools (Years 6-12), Forms 3-7 secondary schools Years 8-12) and area schools (Years K-12). In tables of data for New Zealand, year levels which have been indicated refer to the Australian equivalent designation (eg. Year 2 is the equivalent of Standard 1). In sampling primary schools in New Zealand attention was directed to full primary, contributing primary and intermediate schools which are all administered as primary schools. Area schools which include primary classes were not able to be included as these are administered as part of the secondary school system. As a result not all primary school classes were covered by the survey.

For New Zealand it was decided to specify samples according to the three types of primary school: 30 full primary schools, 30 contributing primary schools and 20 intermediate schools. Details of the numbers of schools, and numbers of students in schools of each type are shown in Table 2.5.[4]

A sampling frame with the numbers of 10-year-olds in each school was not available for New Zealand. Hence the sample for each type of school was selected with a probability proportional to the total school enrolment. The sample shown was not stratified by school board but was simply a probability sample within each school type.

4 Ms P. Fenwick of the New Zealand Department of Education conducted the sampling for the study in New Zealand.

Table 2.5 New Zealand Government Primary Schools Sample

Type of school	Years	Number of schools	Enrolments (1978)	Sample
Full primary	K-7	1 010	123 386	30
Contributing	K-5	966	274 056	30
Intermediate	6,7	144	74 268	20

Administration of the Survey: Australia

Participation

At the beginning of August 1979 a letter inviting participation was sent to all the schools in the Australian samples. The actual dates on which the letters were sent were as follows:

3 August	Victoria and South Australia
6 August	Western Australia
8 August	New South Wales
9 August	Queensland
13 August	Tasmania and the Australian Capital Territory.

Schools which had not replied by 21 September were sent a reminder letter and those still outstanding at the beginning of October were telephoned by staff of the ACER, or in a couple of cases contacted by people located in each State to obtain a reply. Those schools which declined to participate were replaced by the next school on the list in the sampling frame. This procedure ensured that replacement schools were drawn as far as possible from the same location as those which declined to participate. However it does not follow that they were similar in other ways. In the cases where schools indicated their unwillingness to participate by telephone it seemed that some problem relating to staffing and resources was involved (e.g. the principal may have been on leave or ill, staff may have been overworked). Consequently the process of replacement may have resulted in some bias in the achieved sample. In some cases more than one replacement school was approached before an acceptance was obtained. The extent of replacement has been shown in Table 2.6. Overall about 85 per cent of those schools originally approached to take part in the study agreed to do so. Replacements were not possible for the sample of secondary colleges as all the population was included. In any event none were necessary as all agreed to participate.

Despatch

Questionnaires were sent to schools with an accompanying letter and a reply-paid envelope. The majority of the questionnaires were despatched at the end of September with the remainder being sent out in batches as acceptances were received from schools. The actual dates on which the questionnaires were despatched were as follows:

Table 2.6 Replacement of Schools not Participating in the Samples of Australian Government Schools

	ACT	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
Primary schools								
Designed sample	31	55	57	54	54	53	54	358
Number replaced	1	8	13	10	6	7	8	47
Number refused (not replaced)	0	2	2	2	0	1	2	10
Percentage of originals accepting	97	82	72	78	89	87	81	84
Secondary schools								
Designed sample	16	55	53	53	53	44	34	308
Number replaced	0	14	8	10	7	3	3	45
Number refused (not replaced)	1	1	0	0	0	0	0	2
Percentage of originals accepting	94	73	85	81	89	93	91	85

26 September	: 495
4 October	: 50
8 October	: 7
11 October	: 46
12 October	: 12
15 October	: 18
17-23 October	: 15
26 October	: 14
29 October	: 16
31 October and subsequently	: 7
TOTAL	: 680

For those questionnaires despatched on or before 11 October a reply date of 31 October was indicated. Schools which were sent questionnaires at a later date were asked to reply at a later date, usually three weeks after the date of despatch.

Follow-up

Reminder letters were sent to schools from which questionnaires had not been returned on 15 November. Finally, all schools whose questionnaires had not been returned by the beginning of December were contacted by telephone by ACER.

All schools which returned questionnaires were acknowledged with a note of thanks.

Response

The response rates to the survey by State and system are shown in Table 2.7. These rates have been calculated as the number of questionnaires returned divided by the design sample number of schools. No distinction has been made between the schools originally approached and replacement schools.

Table 2.8 shows the cumulative response rates over time for each State and system. For most States about half the schools responded by the time suggested with the remainder being returned after the follow-up procedures towards the end of the year.

Table 2.7 Response Rates to the Survey of Australian Government Schools

	ACT	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
Primary schools								
Designed sample	31	55	57	54	54	53	54	358
Returns	28	50	49	43	50	45	42	305
Percentage response	90	87	86	80	93	85	78	85
Secondary schools								
Designed sample	16	55	53	53	53	44	34	308
Returns	12	48	45	42	48	41	32	268
Percentage response	75	87	83	79	91	93	94	87
Secondary colleges								
Design sample	6	-	-	-	-	-	7	12
Returns	4	-	-	-	-	-	7	11
Percentage response	67	-	-	-	-	-	100	92

Table 2.8 Cumulative Percentage Response Rates

	ACT	NSW	Vic.	Qld	SA	WA	Tas.
Primary schools							
To October 8	3	4	17	2	4	9	11
October 22	29	20	38	9	28	26	33
November 5	61	53	58	44	57	47	57
November 19	77	71	68	59	68	57	59
December 3	84	82	75	65	86	72	69
December 17	84	85	81	70	87	79	76
Final	90	87	84	78	93	85	78
Secondary schools[a]							
To October 8	0	5	19	4	2	7	18
October 22	12	29	34	21	25	16	35
November 5	44	56	55	38	49	66	65
November 19	50	64	66	38	60	77	68
December 3	50	73	74	55	70	89	82
December 17	69	76	79	70	87	91	88
Final	75	82	83	77	92	93	94

[a] Not including secondary colleges.

Administration of the Survey: New Zealand

In New Zealand slightly different administrative prodecures needed to be adopted because schools were approached closer to the end of the school year and because of the difficulty of maintaining direct communication with New Zealand schools.

After the sample had been drawn a member of the ACER staff visited the New Zealand Education Department and several schools. During this visit on 12 November letters requesting participation were sent to each school in the sample. With the letter were enclosed a questionnaire and an air mail reply-paid envelope. About one week later the ACER staff member phoned each school to ascertain whether the school wished to participate in the study. In those cases where a school refused to participate a replacement was drawn with the assistance of the Education Department. Five of the 80

Table 2.9 Response Rates to the Survey of New Zealand Government Schools

	Type of school			
	Full primary	Contributing	Intermediate	Total
Design sample	30	30	20	80
Returns	25	28	19	72
Percentage response	83	93	95	90

schools indicated they would be unable to participate. Schools were asked to return the questionnaire direct to the ACER in the envelope provided. One reminder letter was sent in December and additional follow-up procedures occurred at the start of the 1980 school year. The response rates for the New Zealand samples of schools have been shown in Table 2.9.

Data Management

File Preparation

The returned questionnaires were coded according to prepared coding manuals and the data punched onto computer cards. Copies of the codebooks for the three versions of the questionnaire, Australia, New Zealand and senior colleges have been prepared as an annex to the report. The cards were then used to generate OSIRIS data files. A considerable amount of time was spent checking and cleaning the data which were encoded on the files prior to the analyses. Three data files were generated and formed the basis of most of the reported analyses after data encoded from official records were merged with the survey files.

Weighting

Weighting was necessary when estimating State and national values of various parameters because the sample was not a simple random sample. Three features needed to be considered when weighting. Firstly the non-response, though small overall, was different in different sub-strata. Secondly additional samples of some sub-strata were deliberately chosen to provide a more reliable indication of resource availability and allocation in schools from those sub-strata. Finally, even though equal size samples were drawn from each State, the total number of schools in each State was different[5,6].

---

5 For secondary schools in the ACT, Western Australia and Tasmania and for primary schools in the ACT the samples were smaller than in other States.

6 The reason for choosing equal samples from each State was to have equally reliable State estimates. Standard errors, given the same standard deviation, depend on sample size not sampling fraction.

A variable (state-weight) was calculated to allow for between State differences. For Australian primary schools it was based on the enrolments of 10-year-old students in each State. For Australian secondary schools it was based on the enrolments of 14-year-old students in each State. A second variable (weight-factor) was calculated to allow for differential non-response and the additional sampling. It was calculated from the number of 14-year-old students enrolled at schools in each sub-stratum and applied within States. These two variables were combined to give a weighting variable (total-weight) which was used in computing national values of various parameters. The details involved in the calculation of weighting variables have been recorded in Appendix III.

For New Zealand Schools three separate samples were drawn for full primary, contributing and intermediate schools. As indicated previously the samples were drawn with a probability proportional to the school enrolment but were not stratified according to the region in which they were located. Consequently no differential weighting was required.

For senior colleges the 'sample' consisted of all such colleges in the ACT and Tasmania. The response rate has been reported and weighting seemed inappropriate.

Sources of Error

There are three types of error in data such as that which the present survey has produced. Briefly errors can arise because a sample has been used to estimate population values, becaue not all schools which were sampled responded, and because inaccurate responses may have been provided.

Sampling Errors

Throughout this report statistics used to indicate the policies of schools generally have been based on information from samples of schools rather than from all schools. The exceptions to this were in the senior secondary college sectors of the Australian Capital Territory and Tasmanian where information was gathered from all schools. Any sample statistic can only provide an estimate of a corresponding parameter for the population from which that sample has been drawn. The means (as an example of one statistic) calculated for a given attribute from a series of samples drawn from a population would vary about a central point. The standard error of the mean provides a measure of the extent of that variation and therefore of the precision with which the sample statistic provides an estimate of the population parameter. The larger the standard error the less precise the estimate of the population parameter. The magnitude of the standard error will depend upon the size of the sample (the larger the sample the smaller the standard error) and the dispersion of the values of the attribute among the population (the greater the dispersion the larger the standard error). For the three statistics most commonly used

in the present report (the mean, the median, and the proportion of schools reporting a particular response) it is possible to estimate the standard error from sample statistics.

Even though the samples used were probability samples, which were stratified, an approximation to the standard error calculations could be made by treating the samples as if they were simple random samples. This issue is discussed further in a later part of this section. For a simple random sample the standard error of the mean can be estimated from the formula (Moser and Kalton, 1971:69-74):

$$S.E.(\bar{x}) = S\sqrt{\frac{(1-\frac{n}{N})}{n}}$$

where S = the standard deviation of the attribute in the sample
N = the size of the population, and
n = the size of the sample

It is possible to write this formula as:

$$S.E.(\bar{x}) = S.m$$

where $m = \sqrt{\frac{(1-\frac{n}{N})}{n}}$

This substitution shows that the standard error depends on the dispersion of the attribute being measured (S) and the properties of the sample from which the statistic is being estimated (m). Frequently in survey research $^{n}/N$ is small so that $m \simeq \sqrt{\frac{1}{n}}$, but in some of the samples in the present study the sampling fraction ($^{n}/N$) was not small so the more complex calculation was necessary.

McNemar (1969:88) suggests that the standard error of the median (the 50th percentile) can be estimated from the relation

$$S.E.(M) = 1.25\ S\sqrt{\frac{(1-\frac{n}{N})}{n}}$$
$$= 1.25 \times S \times m$$

For a proportion the standard error is similarly defined (Moser and Kalton, 1971:77) as:

$$S.E.(p) = m\sqrt{p(1-p)}$$

where p is the proportion being considered.

Table 2.10 contains estimated values of 'm' for each of the system samples considered in the present report together with some examples of standard errors. From the values of 'm' it is possible to calculate the standard error of a mean, median, or proportion given a knowledge of the corresponding standard deviation.

The examples shown in Table 2.10 refer to the median school size and the mean

Table 2.10 Standard Error Calculations for the Survey Samples

State	Primary schools			Secondary schools		
	m	Standard error		m	Standard error	
		Median[a] school size	Mean teacher ratio[b]		Median[c] school size	Mean teacher ratio[d]
ACT[e]	0.14	30 (462)	1.0 (51)	0.06	9 (743)	0.9 (83)
NSW	0.14	44 (550)	0.7 (44)	0.14	32 (858)	1.1 (73)
Vic.[f]	0.14	32 (432)	0.7 (49)	0.14	30 (674)	1.8 (89)
Qld	0.14	62 (537)	0.8 (44)	0.14	53 (860)	1.2 (72)
SA	0.14	32 (466)	0.6 (50)	0.12	37 (783)	0.9 (82)
WA	0.14	31 (444)	0.8 (43)	0.13	38 (972)	0.9 (72)
Tas.[g]	0.10	19 (400)	0.5 (49)	0.12	20 (634)	1.0 (75)
Australia	0.05	11 (492)	0.3 (46)	0.05	14 (814)	0.6 (77)
NZ (full)	0.18	28 (298)	1.3 (42)			
NZ (cont)	0.18	29 (417)	0.9 (41)			
NZ (inter)	0.21	37 (512)	2.0 (51)			

a Refers to information discussed in greater detail in Tables 2.12 and 2.13. Actual medians are shown in brackets.
b Refers to information discussed in greater detail in Figure 3.2. Actual means are shown in brackets.
c Refers to information discussed in greater detail in Tables 2.14 and 2.15. Actual medians are shown in brackets.
d Refers to information discussed in greater detail in Figure 3.3. Actual means are shown in brackets.
e Secondary schools data excludes senior colleges.
f Secondary schools data excludes secondary technical schools.
g Secondary schools data excludes senior colleges.

ratio of teachers per 1000 students. For each sample the standard error (calculated from 'm' and the standard deviation) has been shown together with the value of the median (for school size) and the mean (for teacher-student ratio). Thus, as examples, for Australian primary schools the median size was 492 and the standard error of that median was 11, and for Victorian primary schools the median size was 432 with a standard error of 32. Similarly the mean ratio of teachers to students in Australian secondary schools was 77 with a standard error of 0.6 and that for New South Wales secondary schools was 73 with a standard error of 1.1.

One method if interpreting standard errors is in terms of confidence intervals. If the distribution of an attribute does not deviate markedly from normal it can be stated that one can be 68 per cent confident that the true mean for the population will be within plus or minus one standard error of the sample mean, and 95 per cent confident that the true mean will be within two standard errors of the sample mean. Thus, choosing examples from Table 2.10, it would be said that, for the samples in the present study, the 95 per cent confidence interval for the ratio of teachers to 1000 students in Australian secondary schools would be from 75.8 to 78.2 and that for New South Wales secondary

schools would be from 70.8 to 75.2. Similarly on the basis of the samples in the present study, the 95 per cent confidence interval for median school size for Australian primary schools would be from 481 to 503 students and that for Victorian primary schools would be from 400 to 464.

On the basis of the standard errors thus calculated it is possible to calculate the significance of the differences between means, median and proportions (see McNemar, 1969:89-109). In the examples above for example the difference between the mean teacher-student ratio for Victorian and New South Wales secondary schools was significant at the .01 level, as was the difference between the means of the same ratio for Victorian and New South Wales primary schools. For the teacher-student ratios in general a difference in means of approximately 2.3 would be significant at the five per cent level of the primary school systems and a difference between means of approximately 3.0 would be significant at the five per cent level for the secondary school systems. Similar calculations can be made to determine whether the value of a statistic for a sub-group differs significantly from that for a total group (see McNemar, 1969:106-107). On that basis it can be calculated approximately that a difference of 1.4 in the mean teacher-student ratio for primary schools between a state sample and the national sample would be significant at the 5 per cent level. The corresponding critical value for secondary schools would be 2.8.

Using a similar approach to the difference between medians (McNemar, 1969:93-94) it can be concluded for example the difference between the median sizes of primary schools in Victoria and New South Wales is significant at the five per cent level but the difference between the median size of primary schools in Victoria and South Australia is not. Roughly a difference of about 120 in median size would be needed for significance at the five per cent level. A similar figure applies for secondary schools with, for example, New South Wales secondary schools having a significantly greater median size than Victorian secondary schools but having a median size not significantly different from South Australian secondary schools. The approach used by McNemar (1969:106-107) regarding the difference between the median for a sub-group and that of a total group could also be applied to median school size. On that basis differences in median school size between a state and the national sample of 52 for primary schools, or of 64 or more for secondary schools, would be significant at the five per cent level. For testing the significance between proportions an alternative to detailed calculations exists in the form of 'Zubin's Nomograph' (Oppenhiem, 1966:287-292). Given sample sizes the difference between proportions can be quickly tested.

Throughout the report where differences between systems, or between systems and the total Australian sample, have been commented upon those differences have generally been statistically significant at the five per cent level. On occasion, non-significant tendencies have been noted with an indication that they are tendencies only.

The discussion of sampling errors above has assumed simple random samples. In fact the samples used in the present survey differed in two respects from simple random samples. First, the samples were stratified by state and school class and secondly, the stratification was disproportionate in that similar size samples were drawn from each state.

Stratification results in increased precision over an equivalent size simple random sample when there is a difference in the means for each stratum (Moser and Kalton, 1971:85-100). On that basis the errors calculated above would overestimate the actual sampling errors in the present survey. However, the fact that the stratification was disproportionate would tend to result in less precision in national and state estimates. Ross (1982:5-17) has argued that for between-schools analyses using the type of sample design in the present survey the two effects compensate each other and errors can satisfactorily be estimated as a simple random sample has been used.

Errors from Non-response

When non-response to a survey is high the possibility exists that the characteristics of schools not responding differed from those of the schools which did respond. As a consequence estimates may be biased from the actual parameters being measured. In the present survey the response rates from schools sent questionnaires were 85, 87 and 90 per cent for Australian primary, Australian secondary and New Zealand schools respectively. On this basis it seems that any bias introduced by non-response would not have been large.

Errors in Data Recorded

Errors in the data recorded can arise from inaccurate information having been supplied on the questionnaires. As described in a previous section of this chapter a considerable amount of time was spent checking and cleaning the data which were encoded on files prior to the analyses. Where 'abberent' values were detected the cases were closely examined and for some variables checked against information from departmental records. These procedures were intended to minimize the errors which might arise from inaccurate data having been recorded. However, as for any survey, the possibility of some inaccurate responses having slipped through the net of precautions remains a further and unknown source of error.

Checking the Survey: Marker Variables

In the discussion above it has been indicated that it was possible to estimate sampling errors but not to estimate the bias arising from non-response or inaccurate response. A check on the validity of the survey data against an external source of information was possible with regard to the ratio of teachers to students in schools. This involved simply comparing the mean student-teacher ratios for each system and sector calculated from the survey data with those computed by McKenzie and Keeves (1982) from official

records. In this sense the student-teacher ratio was a number variable between two sets of data.

For such an assessment to be useful, it is important to compare like with like. In other words, the categories of teachers counted by the survey should match those encompassed by the system-level data. This consideration ruled out usage of the most widely published student-teacher ratio data namely those derived from data published by the Australian Bureau of Statistics (ABS) in Schools Australia (Cat. No. 4202.0) since the ABS data differ from the school survey in two important ways. First, the ABS categorizes special schools, their students and their teachers in the primary school sector; the school survey did not include special schools. Secondly, in the count of teachers conducted by the ABS teachers on unpaid leave are excluded but teachers on paid leave are included; in the school survey and any subsequent checking of system-level records, teachers on all forms of leave were excluded. These two factors combined mean that the student-teacher ratios calculated using the ABS data on student and teacher numbers would tend to be lower than those based on the school survey data.

To overcome this difficulty the statistical returns prepared by each of the Australian government school systems for the Schools Commission were utilized. These returns enable the separation of special schools data from the primary school sector and facilitate identification of the numbers of teachers on various forms of leave. As such, it is possible to use the returns to estimate sector-wide student-teacher ratio which correspond to the categories employed in the school survey, and which therefore provide a useful check on the accuracy of the survey. Such ratios are reported in Table 2.11. Before these data are discussed however, two important sources of potential divergence should be noted between the data contained in the system returns to the Schools Commission and the functions derived from the school survey.

First, the data derived from the survey relate only to primary and secondary schools which are 'stand-alone' units, that is they exclude data from combined primary-secondary schools. However, it was not possible to separate out from the system returns supplied to the Schools Commission the number of teachers located in combined primary-secondary schools. In most systems there are only a relatively small number of combined primary-secondary schools, and the primary and secondary units of these schools tend to be staffed in much the same way as self-contained primary and secondary schools (McKenzie and Keeves, 1982). Accordingly, it is unlikely that the sector student-teacher ratio calculated for example for all primary schools including the primary component of combined primary-secondary schools will differ greatly from that calculated for self-contained primary schools only. Nevertheless, this potential source of divergence should be noted when examining Table 2.11. Secondly, another potential source of divergence between the survey and system data concerns the nature of the sample. The sample was drawn with a probability proportional to size and therefore would contain a

Table 2.11 Survey and System Student-teacher Ratios, Australian Government School Systems, 1979

System	Primary sector			Secondary sector		
	Survey STR[a]	System STR[b]	Difference %	Survey STR[c]	System STR[d]	Difference %
ACT	19.5	20.7	-5.8	12.0	n.a	n.a
NSW	22.8	22.2	+2.7	13.6	13.2	+3.0
Vic.	20.3	20.0	+1.5	11.2	n.a	n.a
Qld	22.8	22.1	+3.2	13.9	13.7	+1.5
SA	20.1	19.1	+5.2	12.2	11.8	+3.4
WA	23.3	22.3	+4.5	13.7	13.3	+3.0
Tas.	2.03	20.4	-0.5	13.3	n.a	n.a

a Derived from the survey data reported in Chapter 3 of this volume.
b Derived from the government education systems statistical returns to the Schools Commission (see McKenzie and Keeves (1982) for an explanation of the classifications used for the calculations).
c For the Australian Capital Territory, Victoria and Tasmania the figures refer to high schools only.
d Comparable system data was not available for the three systems which contained two types of secondary school.

larger proportion of large schools than the whole population. As large schools tend to have slightly higher student-teacher ratio than small schools the use of a probability sample might be expected to give slightly higher student-teacher ratios than would apply to the population as a whole.

Table 2.11 shows the student-teacher ratio (STR) derived from the school survey and the system-level returns to the Schools Commission for each of the school sectors for which such calculations could be performed. The third column for each sector in the Table shows the percentage difference between the ratios calculated by each method. A negative value in this column means that the sector student-teacher ratio estimated from the school survey is lower than that estimated from the system-level data; a positive value indicates that the ratio derived from the survey is the larger of the two. As the table shows, in the majority of systems in the primary school sector the student-teacher ratio estimated from the survey data was higher than that calculated from system-level records. In other words, the school survey tended to under-estimate the number of teachers in primary schools by comparison with the data supplied to the Schools Commission. However, in general, the discrepancy was small, particularly when account was taken of the non-inclusion in the survey data of combined primary-secondary schools, and the nature of the sample as noted above. In the case of the secondary school systems the discrepancy was between the two ratios was quite small in each case. Overall, therefore, Table 2.11 enhances confidence that the school survey data concerning the number of teachers located in schools reflected the actual teacher numbers with a reasonable degree of accuracy.

In most of the present report the ratio of teachers per thousand students has been

Table 2.12 Distribution of Primary School Size

System	Probability sample			All schools		
	Median	Interquartile range	% >640[a]	Median	Interquartile range	% >640[a]
ACT	462	174	14	423	229	8
NSW	550	344	35	171	386	14
Vic.	432	288	11	128	349	5
Qld	537	655	45	91	310	10
SA	466	236	10	223	452	15
WA	444	261	15	171	386	8
Tas.	400	259	9	183	318	5
Aust.	492	318	25	152	421	10
NZ (cont)	417	225	14			
NZ (full)	298	323	0	Mean = 198		-
NZ (inter)	512	243	16	Mean = 508		-

[a] Percentage with more than 640 students.

used rather than the student-teacher ratio for reasons discussed in Chapter 3. The estimates of percentage accuracy in Table 2.11 are the same for these ratios as for the student-teacher ratio.

The Size of Schools

It was mentioned previously in this chapter that the nature of the probability samples chosen for this study was such that the results reported would reflect the educational provision experienced by students. The effect of this becomes apparent when the size of schools is considered.

Primary Schools

Figures 2.3 and 2.4 show the distribution of primary school enrolments according to the convention of 'box' plots suggested by Tukey (1979). These representations show the first quartile (below which fall 25 per cent of cases), the median (at which point 50 per cent of cases are greater and 50 per cent smaller), and the third quartile (above which fall 25 per cent of cases). Table 2.12 shows the median values and interquartile range for each education system. These measures of central tendency and dispersion are considered robust regarding the effect of aberrant values and make few assumptions regarding the normality of the distribution.

The data shown in Figure 2.3 refer to the population of primary schools in each system with each school counting equally regardless of the number of students in that school. Figure 2.4 refers to the probability samples of primary schools in which larger schools had a greater chance of selection than smaller schools. The difference is apparent for Australia as a whole. The median school size is 152 with 25 per cent of

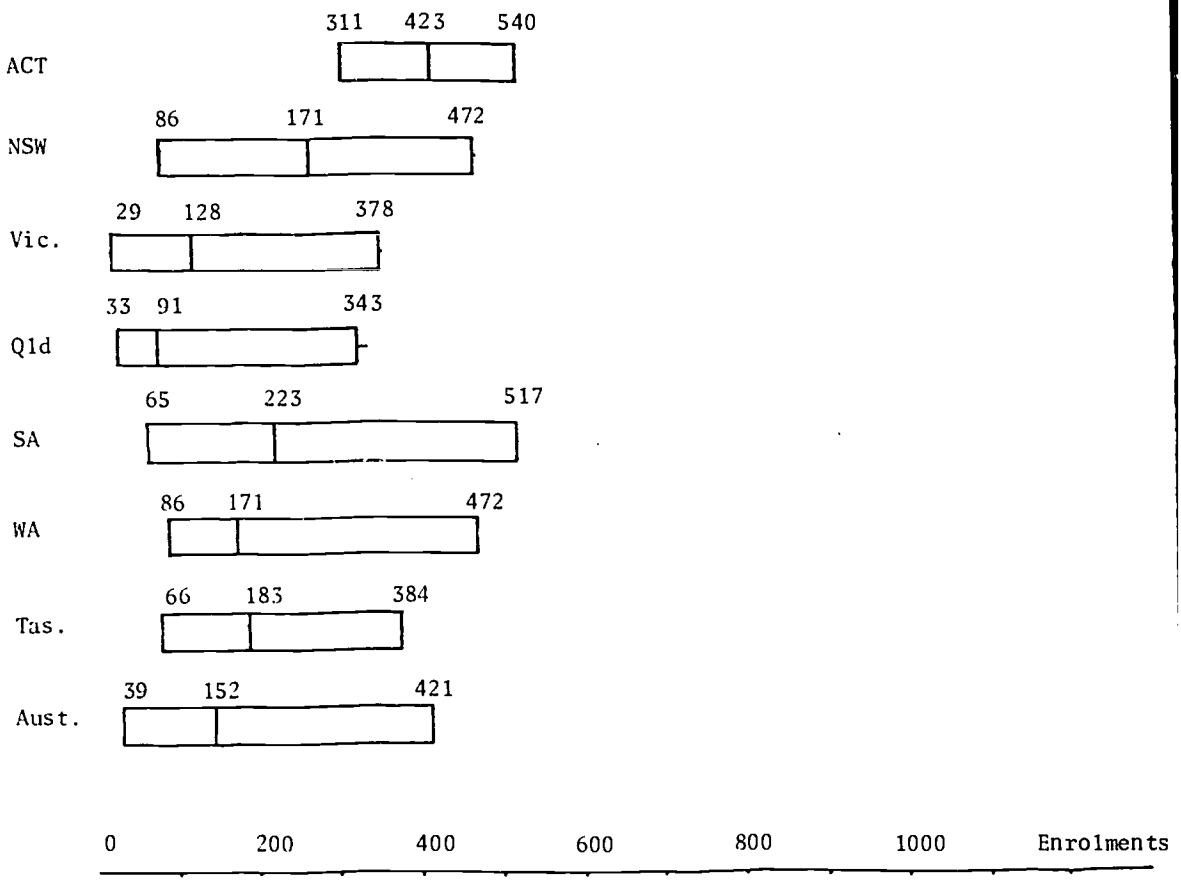


Figure 2.3 Enrolment Distribution of Australian Government Primary Schools by State

schools being smaller than 39 and 25 per cent larger than 421. By contrast Figure 2.4 suggests that a typical primary student (strictly a typical 10-year-old but the difference between these statements is slight) is in a school with an enrolment of 492 with 25 per cent being in schools with fewer than 319 students and 25 per cent of students being in schools of enrolments larger than 637.

In New Zealand the position is complicated by the existence of different types of primary school. The structure of that system has been described earlier in the present chapter. Based on official enrolment statistics for 1979 (Department of Education, New Zealand, 1980) it would appear that some 27 per cent of students proceeded through a full-primary school, and about 68 per cent proceeded through a contributing primary school followed by an intermediate school and about 5 percent proceeded through a contributing primary and then entered a 'Form one to seven' high school. Using these data in conjunction with that in Table 2.12 it would appear that the 'average' New Zealand primary school student (excluding those in intermediate schools) would have

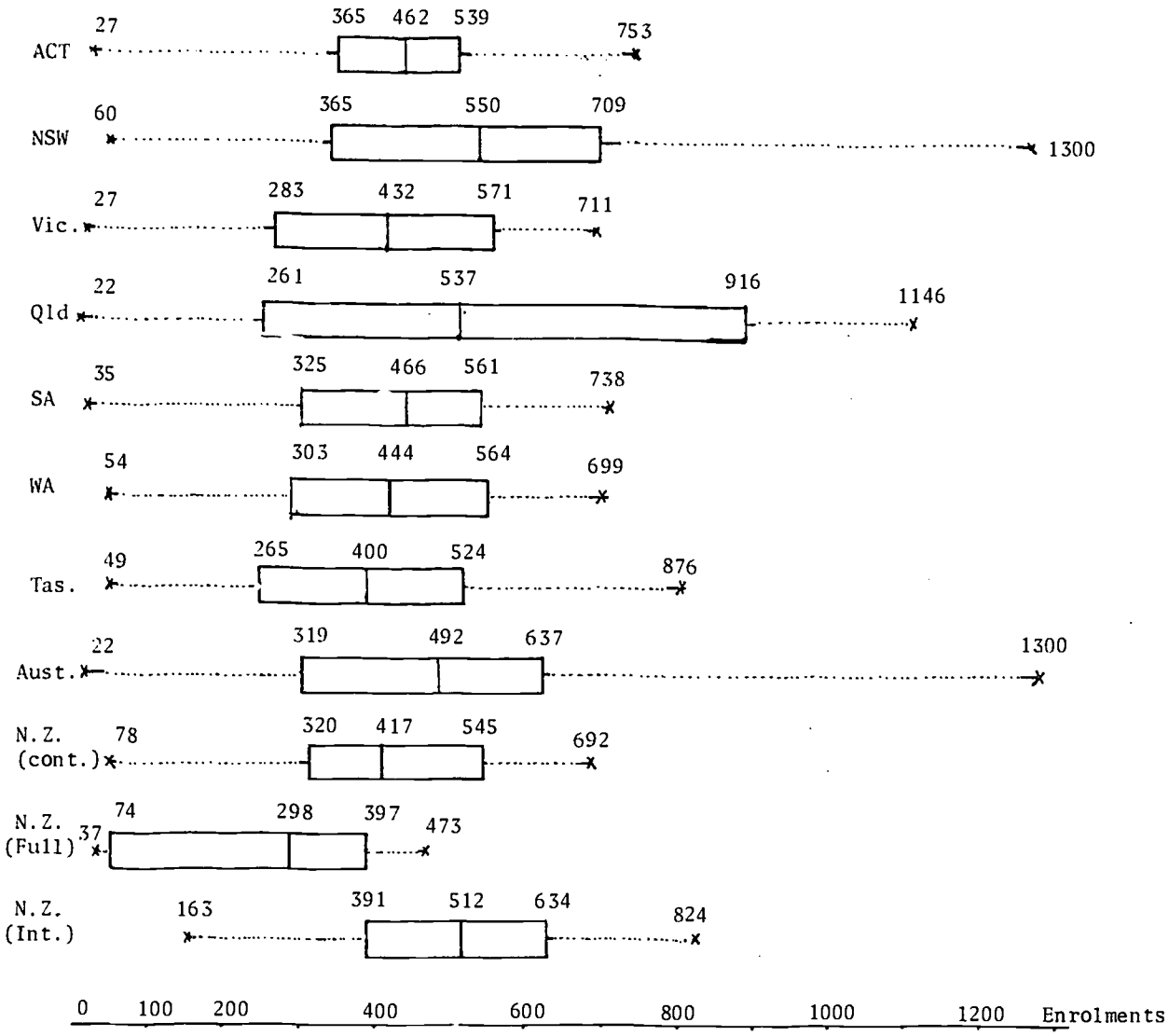


Figure 2.4 Enrolment Distribution of the Probability Sample of Australian Government Primary Schools by State

found himself in a school with a total enrolment of about 385. Those students who entered an intermediate school would then have moved to a larger school, and typically found themselves in a school with just over 500 other students. As a very broad generalization it would appear that New Zealand students find themselves in slightly smaller primary schools than their Australian peers for most of the years concerned.

The difference in approach in analysing school size is most apparent for Queensland. The median school size in a simple sample is lower than in any other State

but the median school size in a probability sample is higher than in that for any State except New South Wales. Generally it would appear that primary school students in Queensland and New South Wales are more likely to be in larger schools than their peers in other States. The mean school sizes for these states are significantly larger at the five per cent level than the mean school size for Australia. The means for New South Wales and Queensland were 552 and 592 respectively compared to an Australian mean of 495. This is not a conclusion which would necessarily be drawn from a simple inspection of the raw distribution of school size.

This argument is made more clear by considering students in 'large' schools. From the data above a 'large' primary school could be defined as one with more than 640 students since overall 25 per cent of Australian primary students were in schools of that size or larger (the actual figure for the cut-off is 638 but it has been rounded to the nearest 10). From Table 2.12 it can be seen that some 45 per cent of Queensland students were in large schools, compared to 35 per cent of New South Wales students and fewer than 20 per cent of students in any other State.

The provision of large numbers of very small primary schools is one policy response to providing education for a geographically dispersed population. However, the establishment of large primary schools in major population centres is a policy deriving from considerations other than geographic factors. Factors which might potentially influence such a policy could include both cost factors and educational factors. McKenzie and Keeves (1982) have shown that on present staffing policies the average recurrent costs per pupil in a larger school generally tended to be lower than those in a smaller school but that the cost differences were small where schools were larger than 300 students. Of course there would be differences in capital costs about which there were little data available. On educational grounds the weight of evidence would appear to favour smaller schools over larger schools though as Campbell, Coterell, Robinson, and Sadler (1979) indicate school size is unlikely to be a major influence on a childs development. The point deserves elaboration.

For some time research studies such as that by Barker and Gump (1964) have suggested a negative relationship between school size and the richness of the experience of pupils. Barker (1968) argued that this was in part due to the different ways in which people responded to environments which because of size exerted different styles of environmental influence. Campbell et al., (1979) tested a number of the propositions which derived from this area of research in a sample of Australian primary schools. They reported that students in small schools experienced a 'richer' environment, participated in more varied activities than their peers in large schools, perceived themselves to be in a more supportive climate, reported a greater 'concern for other people' and felt a greater 'sense of cohesion'. Campbell et al., urged caution in the interpretation of their findings but concluded that where possible small rather than big

Table 2.13 Distribution of Secondary School Size

System	Probability sample			All schools		
	Median	Interquartile range	% >960[a]	Median	Interquartile range	% >960[a]
ACT	743	170	0	708	177	0
NSW	858	295	32	857	424	38
Vic. (High)	674	332	7	658	384	10
Vic. (Tech)	681	348	-	-	-	-
Qld	860	708	34	745	591	34
SA	783	473	32	745	650	30
WA	972	385	50	847	517	42
Tas.	634	300	0	668	292	0
Aust.	814	342	24	735	450	27

[a] Percentage of schools with more than 960 students.

schools should be established and that where big schools existed attempts should be made to develop new structures within them. The extent to which this latter procedure is followed will be discussed in Chapter 4 of this report. Sturman (1982) discusses some issues involved in the implementation of these sorts of structure with reference to several primary and secondary schools.

It needs to be recognized also that there are possibly difficulties at the other end of the scale of school size. The small schools in the study by Campbell et al. all contained more than 168 students. Twenty-five per cent of the primary schools in Australia contain fewer than about 40 students. Queensland and Victoria in particular have 25 per cent of their schools with fewer than 33 and 29 students respectively. Even though such schools enrol a very small proportion of students (less than five per cent) the provision of adequate resources within which to promote 'richness' in those schools constitutes another important resource issue. In many cases there would be no alternative but to sustain such very small schools. McKenzie and Keeves (1982) discuss some of the ways in which very small schools are supported by state education departments.

Secondary Schools

For secondary schools the difference in the distribution of school size within a probability sample and within a simple sample was not so great as for primary schools. Figures 2.5 and 2.6 show the median, first and third quartiles for the population of schools and a probability sample of schools respectively. Table 2.13 shows the median values and interquartile range together with other data for each State[7]. The median

[7] In Table 2.14 analogous data have been shown for only those secondary schools without a primary section. The effect of including both types of school together does not affect the results substantially.

Table 2.14 Distribution of Secondary School Size Excluding Schools with Primary Sections (Probability Sample Only)

System	Median	Interquartile range
ACT	743	170
NSW	862	293
Vic. (High)	674	331
Vic. (Tech)	681	348
Qld	890	674
SA	830	410
WA	985	328
Tas.	657	278
Aust.	822	337

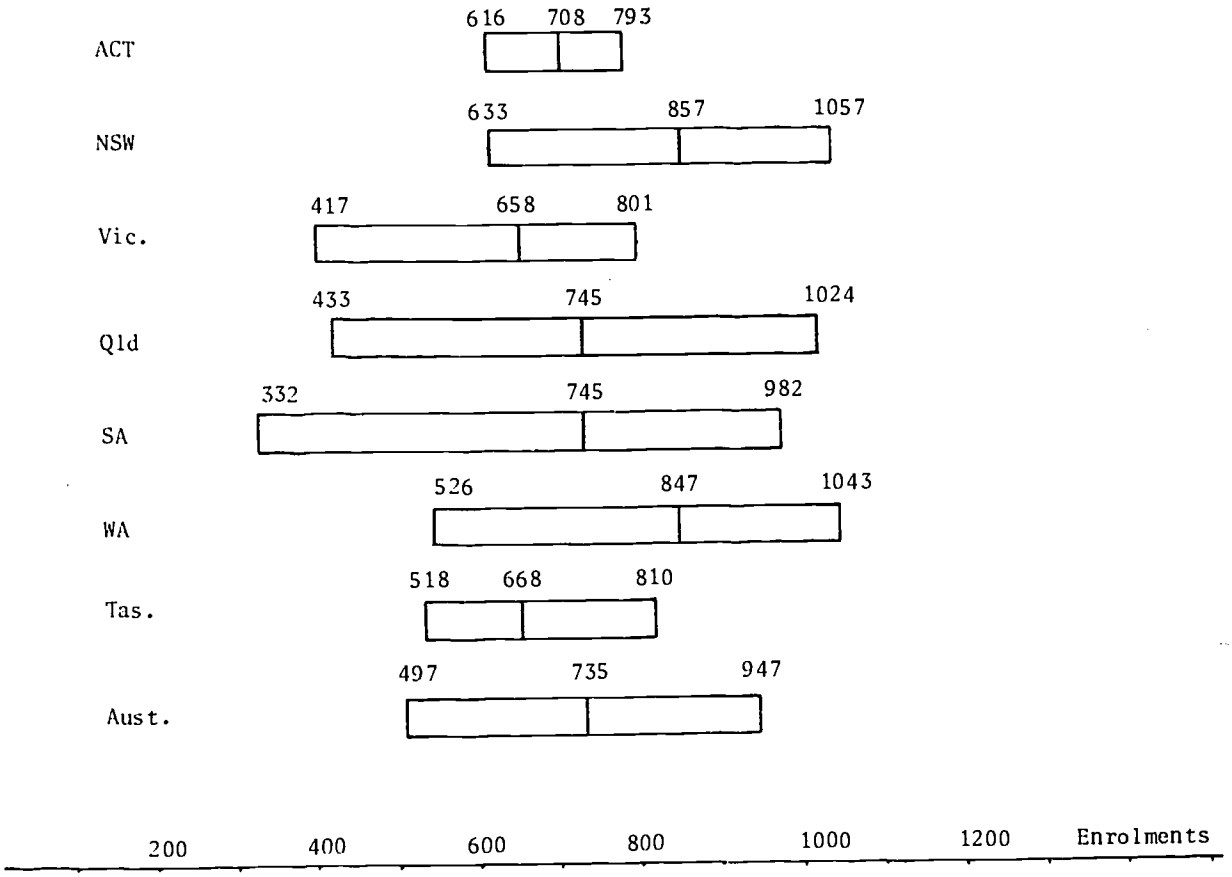


Figure 2.5 Enrolment Distribution of Australian Government Secondary Schools by State

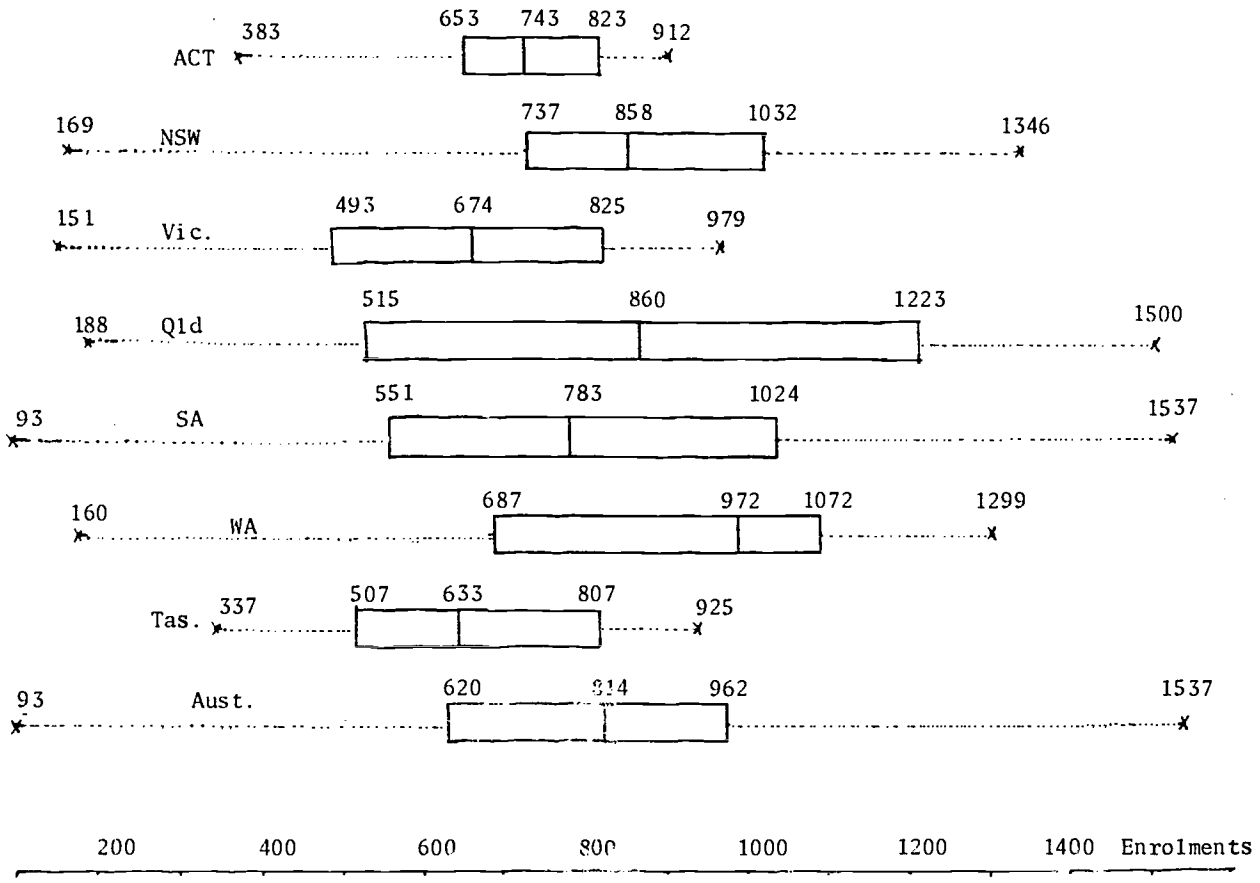


Figure 2.6 Enrolment Distribution of a Probability Sample of Australian Government Secondary Schools

school size for secondary schools in Australia was 735 with the lower quartile at 497 and the upper quartile at 947. Corresponding figures for a probability sample were 814, 620 and 962 respectively. There is in these data some evidence of a skewness in the size distribution towards small secondary schools but this occurred to a much smaller extent than in primary schools. Typically a 14-year-old student in Australia is in a secondary school with an enrolment of about 800. Though secondary schools in New Zealand were not included in the survey it was possible to estimate from official statistics a mean secondary school size of 748 and a median of 706 (with first and third quartiles of 479 and 1016). New Zealand secondary schools were thus of a similar size to their counterparts in Australia.

The median values of school size for the probability sample of schools is highest in Western Australia, and Queensland, and lowest in Victoria and Tasmania. When sample means are compared those for Western Australia (875) and Queensland (857) were

significantly greater than the national mean and those for the ACT (719), Victoria (671), and Tasmania (636) were significantly less than the national sample mean (789). In terms of actual schools the median values for New South Wales and Western Australia were the highest and those for Victoria and Tasmania the lowest. The quartile below which fell 25 per cent of schools was lowest for South Australia, Victoria and Queensland.

Defining a large secondary school as one with more than 960 students (according to analogous criteria to those which were applied in the discussion of primary school size) it can be seen that in Western Australia there was a greater preponderance of large schools. Roughly half the 14-year-olds in that State were in schools containing more than 960 students (and these constituted more than 40 per cent of the secondary schools in that State). In Queensland, New South Wales and South Australia about one-third of the 14-year-old students were in large schools as defined above and those constituted about one third of the schools in those States.

In discussing policy factors regarding the size of primary schools three issues were mentioned as relevant. These were:

1 the relative costs of small versus large schools;

2 the educational benefits of smaller (but moderate sized) primary schools; and

3 the necessity to provide some very small schools for geographic reasons.

An additional policy consideration affects the size of secondary schools because of the belief that a curriculum specialized around subjects needs to be offered in those schools, and especially in the senior years of those schools. In fact this belief is embodied in the nature of the public examination structures of most States. Conant (1959) strongly argued for secondary schools sufficiently large that a 'comprehensive curriculum' could be offered. In this he implied that the senior year contained at least 100 students. The arguments advanced by Conant in terms of the comprehensiveness of the curriculum in a large secondary school apparently strongly influenced policy in the United States (Skidmore, 1981).

It is worth considering the distribution of enrolments within a secondary school of 800 students given the retention rates calculated by Sturman (1979:51). A school of 800 students offering six years of secondary education would typically have 172 students in Years 7, 8 and 9, 149 students in Year 10, 84 students in Year 11, and 51 students in Year 12. If the school had only 500 students its Year 12 enrolment would typically be 32. The issue relevant to the size of schools is whether it is possible for a reasonable range of choice of subjects to be offered to those Year 12 students without excessively 'borrowing' resources from Years 7 to 10, or without additional staffing support from the education department.

It would appear therefore that the educational benefits of a small school which accrue in terms of the intimacy of the environment experienced by students in Years 7

to 10 might need to be balanced against the provision of diversity in Years 11 and 12 and even the variety of the behaviour settings which could be provided in the lower secondary school. Campbell and Robinson (1981), after considering the quality and teaching costs of arrangements for senior secondary students in South East Queensland suggest that the provision of 'medium sized' secondary schools (300-500 students) would be better than small secondary schools. However, they caution that cost functions in that area may not be generalizable to other locations.

At this stage of the report it seems sufficient to draw attention to the factors deserving consideration in developing a policy on school size, to note that there may be conflicts to be resolved, and to mention that there are differences in the patterns of school size between States which appear to reflect implicit policy as well as geographic factors. In addition it is important to reiterate the point stated at the beginning of this chapter. Some school systems have attempted to resolve these competing interests by creating new structures, such as senior colleges in the ACT and Tasmania, and some schools have attempted to provide smaller organizational units within schools by such means as the creation of sub-schools. These important policy initiatives will be discussed in Chapter 4.

In Summary

This chapter has been concerned with describing the way in which the survey of schools was conducted. Some sketches of schools at the beginning of the chapter illustrated the way in which theoretical issues discussed in the first chapter were manifest in practice. Such practical situations were important in structuring appropriate questions around the issues of interest. The questionnaire was based upon a framework which evolved from Dahloff's (1971a) frame factor theory.

Two important points concerning the sampling design for, and administration of, the survey warrant reiteration. First, the sample design was based on selecting schools with a probability proportional to size. This meant that results could be used to infer statements about conditions in schools as experienced by students. Within the body of the present chapter the implications of this possibility in a discussion of school size have been elaborated. The same principle has been applied throughout the report even though it has not usually been discussed in such detail. Secondly, the response rates to the questionnaire in all of the samples studied exceeded 85 per cent. Consequently any bias introduced by differential non-response would have been small. Of course non-response is not the only source of error in a survey but it is useful to know that that source of error was unlikely to be large.

CHAPTER 3

RESOURCES IN SCHOOLS

In this chapter attention has been focused on the resources available in the government schools in Australia and New Zealand. Throughout the discussion most attention has been given to primary schools and secondary schools as defined in the previous chapter.[8] However, special mention has been made albeit briefly on some occasions of schools which span both the primary and secondary sectors of education, and of senior colleges.

The resources upon which most attention was focused were p[illegible] resources, and within that category largely teaching staff though support staff have been discussed as an important component of the resource complement available to schools. Material resources have been mentioned but receive less detailed attention than personnel resources for reasons elaborated in Chapter 1. The chapter contains some discussion of the involvement of parents, and the use of community resources in the school programs. In conclusion the chapter contains a discussion of the views of principals about needs and priorities regarding additional resources in schools.

Teaching Staff

There appear to be three basic criteria on which the conventional distinction between teaching staff and support staff has been made in most discussions of the personnel resources available to schools. The first refers to the conditions under which personnel are employed. Using this approach to the issue the Australian Education Council Statistics Working Party suggested that:

> A teacher is defined as a person paid under th[illegible]achers Salary Award but excluding those paid above the highest paid school principal and not predominantly active in schools ... (AEC, 1979)

Predominantly active in schools was defined by the working party as spending more than half of the time for which the person was employed engaged in duties at a school.

The second criterion refers to the professional training of a person. Using this criterion a person would be classified as a teacher if professional qualifications in education were a relevant condition of their employment. According to this criterion a teacher aide who had completed teacher training would not be included because the professional qualification in education was not a necessary condition of employment.

---

8 Primary schools were those enrolling some 10-year-old students and secondary schools were those enrolling some 14-year-old students.

For government schools this criterion would give the same result as the first though for non-government schools this would not always be so.

The third criterion refers to the intended role of the person in the school. If the person's role was to be professionally involved in the educational program of the school then he would be classed as a teacher. If his role was to support that program in a less direct way he would be categorized as support staff. In practice this criteria would often be a little blurred. Involvement in the educational program need not necessarily include class teaching, though this would be an option for the school with respect to people classified as teachers. Such involvement would include responsibility for part of the school curriculum. According to this criterion a principal (even though the work may involve no class teaching) would be classed as a teacher but a registrar would not. A teacher librarian (such a person being intended to be responsible for an educational program in the library) would be a teacher but a librarian employed only to manage a library would not. A resource teacher in a New South Wales school would be classed as a teacher even though he may operate either:

> in a predominantly advisory capacity to assist the class teacher to understand and provide effectively for pupils with learning problems, or in a team teaching role with the class teacher so that particular pupils with learning problems may receive more individual attention. (Dukes, 1978)

In practice these three criteria coincide closely for government education systems. Figure 3.1 shows the question which was asked in the Survey Questionnaire concerning schools' teaching staff.[9] It indicated the types of staff to be included as teaching staff: in its formulation it was adopted from and resembled closely that proposed by the AEC statistics working party in their attempt to develop a format compatable with each state format system. The question as shown in Figure 3.1 did not include 'Youth Education Officers' who are employed in Western Australian secondary schools. Such positions were included in the questions concerned with support staff which is discussed below. However by each of the criteria above such people should be considered as teaching staff and were encoded as such for all the analyses in this report.

Attention has been drawn to the detail of the personnel categories designated as 'teachers' because it is necessary to emphasize that not all people so classified perform class teaching functions. Some have school management responsibilities and others have various specialist roles in schools. This is an important issue in the discussion of student-teacher ratios and class sizes, since a failure to specify the personnel categories included as 'teachers' can contribute to a mistranslation of the student teacher ratio as equivalent to the class size.

In addition to specifying the personnel categories included in the computation of

---

9 The question for New Zealand schools was a little different (see Appendix I).

5 In the table below provide the number of **equivalent full-time** teachers who are either appointed to or employed by the School[a], or who visit the school on a regular basis. The reference period is the week of the August school census date.

CATEGORY OF TEACHER	AT THE SCHOOL		VISITS THE[b] SCHOOL ON A REGULAR BASIS
	MALE	FEMALE	
Principal			
Deputy/Vice Principal[c]			
Senior Teacher/Subject master[d] (or equivalent)			
Assistant-class Teacher (or equivalent)			
Specialist Teachers[e]			
— teacher librarian			
— careers/guidance teacher			
— remedial teacher			
— migrant/ethnic education teacher			
— replacement teacher[f]			
— other specialist teachers (please specify): _____			
— Reserve/Excess Teachers[g]			

Notes

(a) Where teachers are required to perform part of their duty for other schools or agencies count only the proportion of the week for which they are able to be used by this school.

(b) This refers to teachers not appointed to the school but who provide teaching services throughout the school year. Do *not* include replacement teachers. The basis for calculating the equivalent full-time value of visiting teachers is the average number of days per week they spend in the school e.g. the teacher who visits for 1 day per fortnight would count as an average of ½ day per week, i.e. 0.1.

(c) In Western Australia include Principal Mistress in this category; in Tasmania include Infant Mistress in this category.

(d) For purposes of this study Senior Teachers are those who hold a promotional position on a salary level above the salary level for Assistant-class teachers. It does not include Assistant-class teachers being paid an allowance for higher duties in positions of responsibility. InQueensland, include Infant Mistress in this category.

(e) This refers to teachers appointed to the school *predominantly* to perform the specialist duties listed. It does not refer to teachers appointed to the school for general teaching purposes who have been allocated such specialist duties by the school. Where a person has been appointed at Senior Teacher level for one of the specialist teaching duties listed, this person should be counted in the Senior Teacher category.

(f) Include the equivalent full-time value of those teachers appointed principally to undertake general replacement duties at the school. Do not include those replacement teachers called in specifically to the school as the result of a particular teacher's absence.

(g) This refers to those teachers appointed to this school over and above the school's normal entitlement who may be transferred at short notice, and who have not already been included in the table.

Figure 3.1 The Question from which Numbers of Teaching Staff were Calculated for Australian Government Schools

total teacher numbers this chapter contains two additional elements to help clarify discussion of the issue. First, there is a discussion of teaching staff configurations so that it is possible to consider separately teachers whose prime responsibility is class teaching, teachers whose responsibility includes a significant amount of school management, and teachers whose prime responsibility is for a specialist section of the school program. Secondly there is a discussion of the support staff available to schools of different types in different systems. This is necessary because some schools may have greater numbers of support staff performing some of the functions of specialist staff or even management staff than in other schools. For example, schools of similar size might have different staff complements in their libraries. One may have one teacher librarian and two library assistants, compared to the other which has two teacher librarians. A simplistic examination of teaching staff by itself would provide only a partial description of the personnel available in those schools. Similarly the provision of greater administrative support in a school may enable a principal to have more opportunity to use his professional skill in teaching rather than be entirely a non-teaching principal.

In brief the description of the total teaching staff available in government schools has been based on the conventional definition of teaching staff but has been extended to include some detail about the types of teaching staff in schools. In a subsequent section the availablity of other personnel in schools has been considered so that the total configuration of personnel resources in different types of schools can be examined.

Total Numbers of Teaching Staff in Schools

In examining the staff available to schools it seemed worth beginning with the factors incorporated in the staffing policies of most education systems. As shown by McKenzie and Keeves (1982) the major proportion of the teaching staff in an education system was allocated to schools on the basis of school enrolments. In some systems total school enrolments were the basis for this allocation, while in others the staffing entitlement of a school was calculated separately for each year level (e.g. New South Wales secondary schools) or sections of a school (such as primary and infants sections in New South Wales primary schools). The formulae on which allocations of staff were made in relation to enrolments were not always smooth functions but sometimes incorporated discontinuities.

In addition to allocations of staff based on enrolments most systems provided staff to schools on other bases such as an assessment of special needs for disadvantaged schools, discretionary appointments to support curriculum innovations (e.g. at Palmer High School as described by Sturman (1982)), discretionary appointments to support particular circumstances, or as a result of schools being granted finance with which to employ additional staff. McKenzie and Keeves (1982) have noted that the overall staffing policies of the educational systems varied in the proportion of staff deployed in

this way but that the proportion was usually small. In some cases these 'special' allocations were also enrolment related.

As a result of these considerations it seemed worth beginning with the following general model function for the total staff available in a school.

$$T = f(E, \Sigma z_i)$$

where T is the total teaching staff in the school

E is the school enrolment, and

z_i represents the range of other factors considered when school entitlements to staff are calculated.

At this stage no assumption has been made about the form of the function or its smoothness. On the assumption that it could be separated into an 'enrolment related' component and a 'special factors' component and on the further assumption that these two components were additive it could be expressed as

$$T = g(E) + h(\Sigma z_i)$$

in which $h(\Sigma z_i)$ could also be enrolment related. It is important to note that $g(E)$ is not simply the basic staffing formulae since it would include a number of other staff allocations which were related to school enrolment. Other studies raised the possibility that the relations between the numbers of teachers in a school and school enrolment might be non-linear (Scotland. Education Department, 1973; Van der Wyst, 1979), though one would not expect non-linear relations given the nature of the staffing formulae in Australia and New Zealand and in practice a linear function of the form,

$$T = a + b\,E$$

provided the best fit to the survey data from schools in each system. In such a function the value of the constant 'a' provides an indication of the extent to which small schools were staffed more generously than large schools. A large value of 'a' would indicate that small schools received proportionately more staff than large schools. The value of the slope 'b' can be taken as an indication of the rate of increase in the number of teachers relative to school enrolments.

Primary Schools

The values of 'a' and 'b' for the regression lines for primary school staffing in each education system, together with relevant correlation coefficients between of numbers of teachers and school enrolment have been shown in Table 3.1. Plots of teaching staff against enrolments have been shown in Appendix IV. Table 3.2 contains the values of 'a' and 'b' for the regression line which would be obtained if the formula allocation of staff

Table 3.1 Teaching Staff as a Function of Enrolments in Primary Schools (Schools with secondary sections excluded) T = a + bE (Survey Data, 1979)

Sys	a	b	Correlation coefficient r
ACT	2.63	0.043	0.976
NSW	2.41	0.039	0.97
Vic.	1.27	0.045	0.980
Qld	1.32	0.041	0.990
SA	2.00	0.044	0.965
WA	1.19	0.039	0.974
Tas.	1.19	0.046	0.975
NZ (full primary)	0.64	0.038	0.979
NZ (contributing)	-0.33	0.042	0.957
NZ (intermediate)	8.51	0.032	0.947

Table 3.2 Teaching Staff Entitlement under Formulae as a Function of Enrolment in Primary Schools in 1979 T = a + bE

System	a	b	Correlation coefficient r
ACT	0.36	0.042	0.998
NSW	0.68	0.037	0.999
Vic.	0.73	0.037	0.997
Qld	0.37	0.039	0.999
SA	1.13	0.041	0.999
WA	0.94	0.040	0.999
Tas.	0.26	0.041	0.999
NZ (full & contributing)	0.41	0.032	1.000
NZ (intermediate)	1.30	0.037	0.997

Source: McKenzie and Keeves (1982).
Notes: See Appendix IV for details of calculation.

were plotted against enrolments (see McKenzie and Keeves, 1982). Differences in values of 'a' and 'b' derived from the survey data and those derived from staffing formulue could be interpreted as reflecting the differences between the level of staffing under formulae and that arising in practice after special needs and other non-formulae allocations have been considered. However, it needs to be remembered that two other factors could possibly result in differences between the two sets of data. The first would be the possibility of measurement error arising from inaccurate responses to the questionnaire. The second would be that the survey data was based on a probability sample of schools while the formulae data were based on a series of calculations from hypothetical enrolments which implicitly assumed a rectangular distribution of enrolments.

In all systems the value of 'a' for the regression line for the survey data was larger than that of the regression line for the formulae data. Except for Western Australia the

slope as indicated by the value of 'b' was also greater for the survey regression line than for the formulae regression line. Perhaps more importantly the percentage of the variance not accounted for by differences in enrolments was greater for the survey data than for formulae data. That primary schools had more staff than would be predicted on the basis on enrolment is not surprising. Such formulae were only intended to provide basic staff allocations, additional staff having been provided in response to a number of other characteristics of schools. However, in the case of Western Australian primary schools the formulae' did not appear to be a 'basic' allocation, which was supplemented. Rather it appeared to be an average around which there was little variation in staff allocation.

For all but one of the education systems the value of the constant 'a', obtained from survey data, was small. That exception was the Intermediate School system of New Zealand which was structured such that it incorporated some aspects of secondary schools and some of primary schools. The need for specialist staff, the provision of non-teaching management staff, and the restricted range of school size, appeared to result in the relation between numbers of teaching staff and enrolments resembling that of secondary schools in other systems, but with a less abundant provision of staff than in those systems.

An inspection of the graphs in Appendix IV suggests that there was considerable between school variation in the additional staff provided. Even though the linear equation still accounts for almost all of the variation in total staff the additional staff above formulae show variation between schools which is not simply related to school size. Other factors must have been taken into account in allocating such staff. Among factors which could have been considered were the school's need for additional support if it were a small schools, its location (or remoteness), whether or not it was classed as a disadvantaged school, the need for special multi-cultural education programs, and any special programs which might require additional staffing support. The extent to which these factors operate in practice is considered later. For the present the operation of some factors other than enrolments in determining a small proportion of the teaching staff allocation to a school has been noted.

Secondary Schools

Table 3.3 contains the values of 'a' and 'b' for the regression lines for secondary school staffing in each education system, together with the relevant correlation coefficients. For the purpose of these data the technical school system in Victoria has been treated as a separate system from the high school system in that State because separate staffing policies were applied in each. Plots of total teaching staff against enrolments for secondary schools have been shown in Appendix IV. The values of 'a' and 'b' which would

Table 3.3 Teaching Staff as a Function of Enrolments in Secondary Schools (Schools with Primary Sections Excluded) $T = a + bE$ (Survey Data, 1979)

System	a	b	Correlation coefficient r
ACT	11.91	0.065	0.95
NSW	12.91	0.057	0.95
Vic. (High)	13.10	0.066	0.91
(Tech.)	29.30	0.069	0.77
Qld	6.72	0.062	0.97
SA	8.72	0.070	0.98
WA	10.89	0.060	0.96
Tas.	8.63	0.061	0.91

Note: Does not include senior colleges.

Table 3.4 Teaching Staff Entitlement under Formulae as a Function of Enrolments in Secondary Schools $T = a + bE$

System	a	b	Correlation coeffient r
ACT	12.59	0.060	0.993
NSW	9.72	0.054	0.999
Vic. (High)	9.37	0.056	1.000
(Tech.)	4.35	0.069	0.994
Qld	5.06	0.052	0.998
SA	7.26	0.061	0.999
WA	7.70	0.050	0.999
Tas.	3.11	0.062	1.000
New Zealand	5.94	0.044	0.999

Source: McKenzie and Keeves (1982).
See Appendix IV for notes detailing assumptions involved.
Notes: Does not include senior colleges.

be obtained if the formulae allocation of teaching staff were plotted against enrolments (see McKenzie and Keeves, 1982) have been recorded in Table 3.4.

As was the case for primary schools in all systems, the value of 'a' for the regression line for the survey data was greater than for the regression line for the formulae data. Except for Tasmania the slope as indicated by the values of 'b' were also greater for the survey based regression than for the formulae based regression. For secondary schools the percentage of the variance in total staff not accounted for by differences in enrolments was not only greater for the survey data than for the formulae based data, but was rather greater than was the case for primary schools. However, except in the case of the Victorian Technical Schools the percentage of the variance within systems not explained by differences in enrolments was still very small.

Differences between secondary school and primary school staffing invite further

comment than the simple observation that secondary schools were staffed more generously than primary schools. In each system the values of 'a' were greater for secondary schools than those of the primary schools in the same State. This was apparent both from the regressions based on survey data and those based on data generated from the staffing formulae. Such would appear t· reflect a policy ar·· practice of providing additional staff for small secondary schools to a greater extent than for primary schools, reflecting the assumed need to maintain a suitable range of subjects in such schools. The respective values of 'b' for each system were also greater for secondary schools than for primary schools which reflects the more generally favourable level of staffing in those schools.

The fact that the variance in total staff numbers not accounted for by differences in enrolments was greater for secondary than for primary schools has been noted above. As shown in Appendix IV it would appear that factors other than gross enrolments were more important in allocating staff to secondary than to primary schools. The same general pattern applied in secondary as in primary schools, with a base level defined by a formula and a small number of additional staff being available in response to other factors. However, the proportion of additional staff was greater in secondary than primary schools. In addition to the factors mentioned as influencing additional staffing in primary schools there could have been in the case of secondary schools consideration of the desired curriculum breadth, each schools' enrolment profile, and an assumed need to sustain subjects at Year 12 in relatively small schools.

An Interpretation

An enduring theme in discussions of Australian education up to the sixties was its uniformity in provision and practice. Kandel (1937) characterized educational administration in Australia and New Zealand as preoccupied with formal efficiency but with a spirit flawed by an emphasis on standardized uniformity. He contrasted the education for efficiency found in Australia and New Zealand, with education for adaptation in England and the United States, education for cultural solidarity in France, and education for conformity in the totalitarian States. Nearly 20 years later Butts (1955) in an analysis of the assumptions implicit in Australian education repeated and extended the criticism offered by Kandel. He argued that it was still assumed that uniform policies for all schools were desirable and that it was efficient if all decisions were made by a few senior people in a hierarchy. Both Kandel and Butts acknowledged that part of the background to the development of centralized education systems was a concern to prevent inequalities in educational opportunity. However, Butts suggested that such systems were not the only possible responses to this concern.

It is generally acknowledged that since 1960 many aspects of the education systems described by Kandel and Butts have changed. Crittenden (1981) outlined some of these

changes and offered a critique of the rationale for them. He identified four major themes which dominated the discussion of educational theory and practice in the recent past. These four themes were the role of schooling in the ideal of social equality, the values which should be placed upon schooling, authority in the purposes of education, and the balance of unity and diversity in education. The first and the last of these themes would appear to have most relevance for the allocation of staff to schools.

In discussing the role of schooling in pursuing the ideal of social equality Crittenden drew attention to a shift in emphasis from a concern with equality in the provision of resources to a concern with a notion of equality of opportunity which incorporated the provision of compensation for social disadvantage and which might be directed towards equalizing the outcomes of education. It was a shift from that described by Crosland (1961) as a 'weak' definition of equal opportunity to a 'strong' definition of equal opportunity. In Australia such considerations resulted in the Schools Commission allocating grants to upgrade the resources of schools which were poorly provided and providing funds to schools serving areas identified as socio-economically disadvantaged. The latter policy was sometimes referred to as positive discrimination. Given that the theme was so important in Australian education it seems probable that it was also a factor considered in allocating resources from within education systems as well as the supplementary provisions coming from the Schools Commission. In either event, to the extent that these factors were considered one would expect variations between schools in the numbers of teachers which were not accounted for by variations in enrolments.

The fourth of the dominant themes mentioned by Crittenden was the encouragement of diversity in educational practice from one school to another. This theme was most clearly manifest in the propositions concerning school based decision making (Schools Commission, 1978a; 1978b) and school based curriculum development. Skilbeck (1975) has outlined the case for school based curriculum development and some of the problems associated with its operation. In principle the argument for school based curriculum development does not necessarily involve a consideration of resource allocation to schools. However, one way in which such aspects of devolution of authority might have been supported could have been through the provision of resources. Either additional resources might have been supplied to support an innovation or schools might have been given some autonomy in determining the nature of the staff in schools. There is some evidence of such factors having been considered. It was mentioned in Chapter 2 that the Tasmanian Education Department made a substantial proportion of Schools Commissions recurrent grants funds available to schools for the employment of additional staff at the discretion of the school. In other systems additional staff could be provided by the education authority to support a new curriculum development. Sturman (1982) noted one such case at Palmer High School and observed that problems

were to be created for that school when those additional staff were removed. Beare (1978) listed several aspects of autonomy for schools in the Australian Capital Territory as part of a catalogue of the benefits of that system. He argued that if a school was to give substance to decisions about curricula it needed authority to select the level and kind of teaching staff it required and to deploy its staff appropriately. In that system even though school communities were involved in determining the staff configurations their role in staff selection was limited and the total number of teaching staff was fixed by the authority. As a general consideration it would be expected that the greater the extent to which factors related to curricula diversity were considered the greater would be the variation between schools in staff numbers which would not be accounted for by differences in enrolment.

From the data which have been presented above it is possible to comment on the extent to which cognizance was taken of school environment and programs in allocating teachers. However in examining these data it needs to be remembered that one is analysing relatively small differences between large numbers so that problems of measurement error are relatively greater. For that reason only the broadest interpretations will be made. Among primary schools there appeared to be little difference between total teacher numbers which was not attributable to differences in enrolment. In most systems all but about 5 per cent of the variance was not attributable to enrolment differences, though in Queensland this figure was rather smaller and in South Australia (where a 'continuous enrolment policy' would result in changes in enrolments across a year)[10] it was a little larger. In secondary schools the percentage of variance not explained by enrolment differences was rather greater and there were also greater differences between systems. Larger differences might be expected for secondary than primary schools because there would be a more rapid change in school enrolments over a year in secondary than primary schools. Additionally there were in many staffing policies guidelines for supporting curriculum offerings in Year 11 and 12 of small schools and of providing for very small schools over Year 7 to 10 (see McKenzie and Keeves, 1982). In the Victorian Technical School system, even though the result may have been confused by the way staff were allocated for secondary and TAFE classes, it would appear that much more account is taken of individual school requirements than elsewhere and this is consistent with the more broadly stated staffing policy for those schools (see McKenzie and Keeves, 1982). Some Victorian technical schools have responsibility for TAFE classes (such as apprenticeship courses) which are staffed on a different basis than secondary level classes. In addition, two other factors would be relevant to the results obtained in these schools. Firstly, it would appear to be necessary to ensure adequate staffing in a range of vocational studies so that there may be a

---

10 Students were able to enrol at school on their fifth birthday regardless of the time of year.

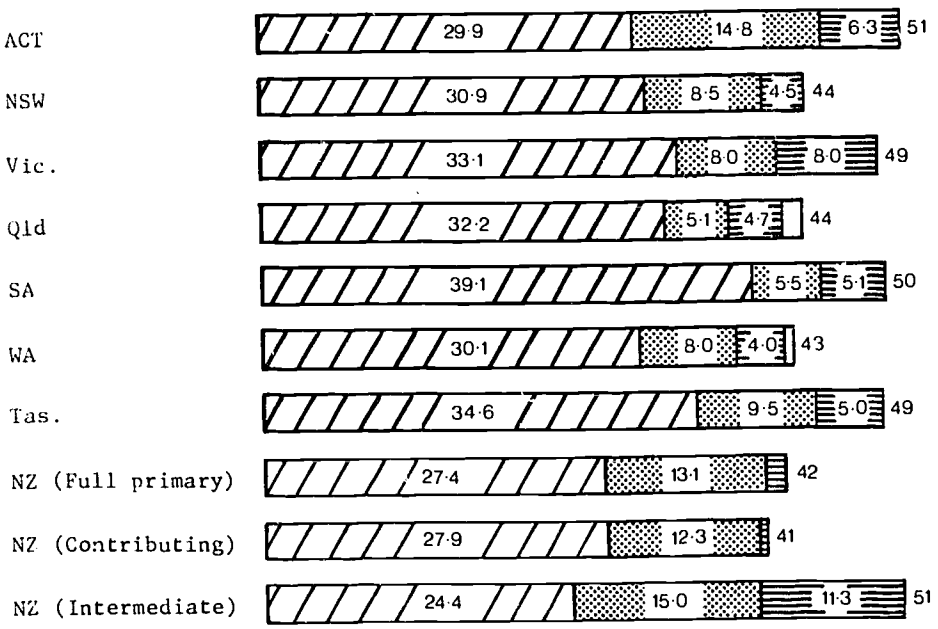
greater weighting to small schools. Secondly, it has been suggested that many technical schools have a higher proportion of 'at risk' students than high schools (Vickers, 1981). Therefore some technical schools may receive favourable staff allocations in response to this need.

Overall it did appear that factors other than gross enrolments were more frequently considered in the staffing of secondary schools than primary schools. On this basis one might venture the view that the resource implications of the ideal of social equality and the nurturing of diversity have been less extensively implemented in primary schools than in secondary schools and even for secondary schools only in a few systems was there much evidence of a 'needs' component in determining total numbers of teaching staff in a school.

Hancock (1980) has cautioned against describing the educational services provided through schooling in expenditure terms because of differences in the prices of resources and uncertainty about what expenditure should legitimately be included. As an alternative he argued for examining a profile of actual services. In the section above an examination has been made of the variations between schools in the total number of teaching staff allocated. The next section includes an examination of the profiles of the complements of teaching staff in schools, followed by an examination of the profiles of support and ancillary staff in schools.

The Configurations of Teaching Staff Complements

There were various ways in which the configuration of a teaching staff complement could be described. In this section the total number of teachers in a school has been sub-divided into assistant class teachers, senior staff, specialist staff and 'replacement, reserve or "excess"' teachers. The categories have some functional significance because in most systems assistant class teachers have as their prime responsibility class teaching and associated preparation and management, senior staff have a formal responsibility for the management of the school or a section of the school, and specialist teachers have wider responsibilities than those of class teachers. The index which has been used in subsequent figures is the number of staff per 1000 students calculated for each school. It is therefore equivalent to the reciprocal of the student-teacher ratio but has the advantage of enabling comparisons between school types to be more readily made and is less easily confused with class size. The examination of teaching staff configurations begins by considering primary and secondary schools in each of the education systems and then extends into an examination of the configurations in schools of different size in each system.



Notes: a A difference between State means for total teachers of approximately 2.3 or greater would be significant at the five per cent level (see Chapter 2).

b Where the number of replacement/reserve/excess teachers was less than 1 per thousand it has not been shown.

Figure 3.2 Teaching Staff Configurations in Government Primary Schools Expressed as Mean Numbers of Staff per 1000 Students (Survey Data, 1979)

Primary Schools

Figure 3.2 shows the configuration of teaching staff complements in primary schools in each of the education systems considered. In terms of the mean number of staff classified as teachers in schools these appeared to be one group of systems (the ACT, Victoria, South Australia and Tasmania) which had significantly more teachers per 1000

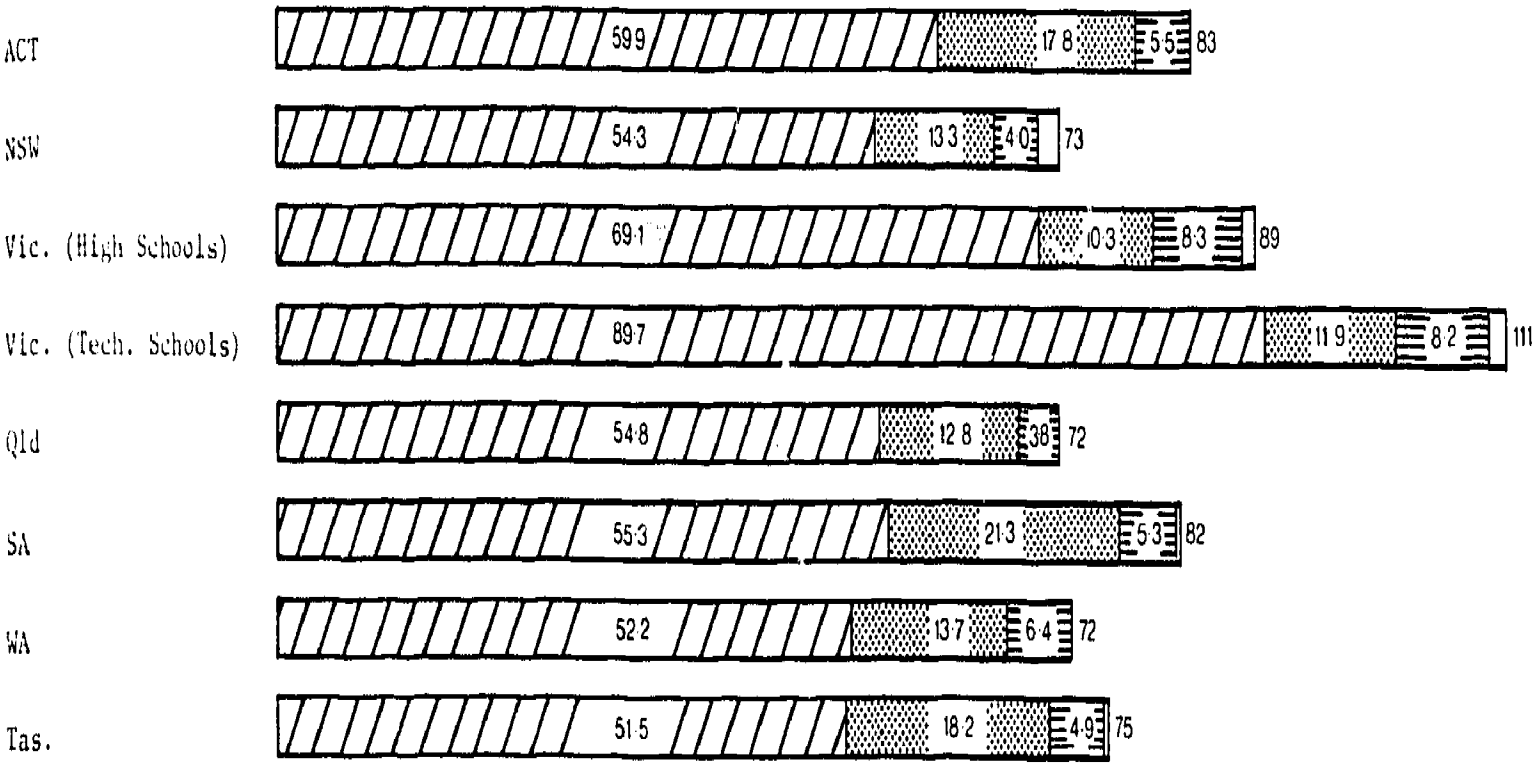
students than the Australian mean and another group (New South Wales, Queensland and Western Australia) which had significantly fewer teachers per 1000 students than the Australian mean. Details of these differences were discussed in Chapter 2. The greatest variation between the systems occurred for the categories designated senior teachers and specialist teachers. In terms of the numbers of senior teachers and above it could be noted that the Australian Capital Territory had more teaching staff in this category and that Queensland and South Australia had rather fewer than did other systems of primary schools.[11] This raises two important issues. The first concerns the extent to which such staff were important for management within schools and the second concerns the need to provide a career structure for teachers so that people of appropriate quality would be attracted to and retained in the profession. Only in the Australian Capital Territory have these two bases for such appointments been distinguished with the establishment of a 'master teacher' designation which enabled people of recognized teaching expertise to be promoted and yet continue to be class teachers. McKenzie and Keeves (1982) have described the promotional positions available in each education system in more detail.

With regard to specialist teachers it can be seen that Victorian primary schools had more specialist teachers than other systems and that Western Australian primary schools had fewer such staff. The balance of specialist teachers and class teachers raises important considerations of how best to use available teaching staff. Among the many options available are the use of all available staff in classrooms to have the minimum class size, the use of some staff in special roles with individual students, groups of students, or helping teachers (e.g. as resource teachers in New South Wales or teacher librarians), or the use of some staff to provide non-contact time for other teachers. It is an issue to which more attention will be given in a discussion of the within school allocation of teaching staff in Chapter 5 and which has been discussed by Sturman (1982) using a number of case studies. The distinction in the designation of staff as specialist teachers forms part of the general question of differentiated staffing (English and Sharpes, 1972). Either by expectation, or often by requirement, the appointment of specialist teaching staff to a school tends to imply their use in specialist roles. In Victoria since these data were collected primary schools have been given authority to deploy all their staff including specialists in the manner which they think is the most appropriate.

In New Zealand schools account needed to be taken of the different types of primary school in the education system of that country. 'Contributing' and 'full' primary schools had similar teaching staff complements. The total number of teachers per 1000

---

11 In these comments the systems noted had a value for the index more than one between system standard deviation from the mean.



Key

Assistant Class Teachers

Senior Teachers and Higher Classifications

Specialist Teachers

Replacement/Reserve/Excess Teachers

Notes: Data for the ACT and Tasmania do not include senior colleges.
Data for Victorian technical schools may be inaccurate because of uncertainties regarding TAFE enrolments. A difference of approximately 3 in the State means for total teachers per 1000 students would be significant at the five per cent level.

Figure 3.3 Teaching Staff Configurations in Government Secondary Schools Expressed as Mean Numbers of Staff per 1000 Students (Survey Data, 1979)

students was only a little less (not significant) than that in Western Australia, Queensland and New South Wales. However, the New Zealand schools of all three types reported a higher proportion of teaching staff in promotion positions than in any Australian system except that of the Australian Capital Territory and far fewer specialist teachers than schools in Australia. Intermediate schools, which provided a transition from primary to secondary education reported more teachers per 1000 students than other New Zealand 'primary' schools. Specifically intermediate schools had many more specialist teachers on staff, slightly more senior teachers and fewer other teachers per 1000 students than did 'full' and 'contributing' primary schools. If regarded as primary schools it could be said that intermediate schools were comparatively abundantly staffed relative to other primary schools in Australia and New Zealand. On the other hand compared to secondary schools in Australia the intermediate schools of New Zealand were rather less well provided with teachers.

Secondary Schools

Figure 3.3 shows the configuration of teaching staff complements in secondary schools. Though the categories and indices used to generate these data were the same as for primary schools it is important to note that for secondary schools the category 'specialist teacher' did not include teachers with particular subject specialities, such people being included as assistant class teachers, but only those with the special roles designated in Figure 3.1.[12] Comment has been made in a previous section that there was more variation unexplained by enrolment differences, within secondary school systems than within primary school systems. In Figure 3.2, compared to Figure 3.3, it can be seen that there was also greater variation in total teachers per 1000 students between systems of secondary schools than between systems of primary schools. The mean teacher-student ratios for Victoria, the Australian Capital Territory (high schools) and South Australia were significantly greater than the mean teacher-student ratios for Austrlian secondary schools. New South Wales, Queensland and South Australian secondary schools had mean teacher-student ratios significantly less than the national average while the mean value for Tasmania did not significantly differ from that for Australia as a whole.

As in the case of primary schools greater variation between systems existed for the numbers of senior teachers and specialist teachers than for numbers of total teachers. South Australian secondary schools had substantially more, and Victorian secondary schools substantially fewer senior teachers than other systems. The low proportion of senior teachers in Victorian schools could be interpreted in terms of the organizational policy regarding promotion in that State. In addition to senior teachers those schools

12 In recording results 'replacement teachers' have been included with 'reserve' and 'excess' teachers and not in the category 'specialist' teacher.

have staff who receive 'special duties allowances'[13] awarded annually by internal school decision for performing such functions as acting as the head of a subject department. In other States, such positions as subject master or subject mistress were permanent appointments, rather than annual school decisions. This difference in structure reflected not only a difference in promotion opportunity but a different conception of where the locus of control for making middle management appointments should rest.

In examining differences between systems in the configuration of secondary school teaching staff complements, several other features of those systems were relevant. For the Australian Capital Territory and Tasmania Years 11 and Years 12 were offered through separate senior colleges. The data in Figure 3.3 do not include those data but as elaborated in a subsequent section the colleges were rather better provided with teachers and especially senior staff than were high schools. In total the provision of staff in high schools and colleges in the Australian Capital Territory would probably be similar to the high school system in Victoria except that the latter would have a smaller proportion of its teachers categorized as senior staff and above.

In secondary schools specialist teachers included personnel concerned with student welfare in a broad sense, as well as those concerned with special aspects of learning such as remedial education and educational services and school libraries. Specialist teachers in primary schools were commonly appointed to provide teaching in special subjects, manage educational resources or provide remedial education. Among secondary school systems there were more specialist teachers for a given number of students in Victoria and fewer in Queensland and New South Wales. One might interpret the provision of more specialist teachers as facilitating greater attention to broader aspects of schooling.

To this stage only differences in the patterns of staffing between systems have been considered. An important issue which is examined in a later section concerns the way in which staff configurations varied with school size within systems.

Some Characteristics of Teaching Staff Complements

In Chapter 2 it was stressed that the samples considered were samples of schools chosen with a probability proportional to size. For this reason caution needs to be exercised when using data from the survey to draw conclusions concerning the structure of the teaching profession. Notwithstanding the cautionary note above it is possible to discuss characteristics of the teaching complement in the sample of schools described. Given that the earlier section of this chapter has suggested that (for a given system of education) the numbers of teachers in schools closely paralleled school enrolments the

---

13 There are also some people occupying an equivalent but more permanent appointment of 'position of responsibility'.

Table 3.5 Percentage of Teachers in Various Categories in Government Primary Schools Who were Female (Survey Data, 1979)

System	Senior teachers	Assistant class	Specialist	Total
ACT[a]	52	83	94	75
NSW	44	79	78	72
Vic.	26	80	82	72
Qld	48	69	58	64
SA	46	72	74	69
WA	30	71	72	62
Tas.[a]	44	90	72	79
NZ (full primary)	23	77	(24)[b]	60
NZ (contributing)	52	85	(25)[b]	75
NZ (intermediate)	33	60	53	50

[a] Does not include senior colleges.
[b] Based on very few cases.

results presented would be expected to provide a reasonably good description of the characteristics of the teaching service in schools in each education system provided the systems were treated separately.

The Sex Composition of Teaching Staff

For some time concern has been expressed that because the teaching service was becoming predominantly female, students had a restricted range of models to look towards in growing to maturity (Senate Standing Committee on Education and the Arts, 1981). This view was most commonly expressed with regard to primary schools but was also discussed in relation to secondary schools. The present survey was not designed to provide information on trends in the sex composition of the teaching profession nor upon the hypothesized effects of an unbalanced representation of sexes on the development of students. It did provide the opportunity to examine separately for primary and secondary schools in each system the proportion of teachers in certain designated categories who were female.

Table 3.5 contains information about the percentage of teachers who were female in the primary schools of each education system according to whether those teachers were senior teachers, assistant class teachers or specialist teachers. In general a little more than 70 per cent of all teachers were female. The only between state difference which was significant at the five per cent level was that between Tasmania (high) and Western Australia (low). For New Zealand, intermediate schools had a smaller percentage of females among the teaching staff than other types of primary school.

Except for the Australian Capital Territory and Tasmania there was little difference between assistant class teachers and specialist teachers in terms of the percentage of those groups who were female. In all States the percentage of senior teachers who were female was rather lower than the percentage of other teachers who

Table 3.6 Percentage of Teachers in Various Categories in Government Secondary Schools Who were Female (Survey Data, 1979)

System	Senior teachers	Assistant class	Specialist	Total
ACT[a]	23	51	78	47
NSW	22	48	58	44
Vic. (High) / Vic. (Tech)	23	53	75	51
Qld	30	48	57	45
SA	25	47	76	43
WA	19	46	72	43
Tas.[a]	25	49	54	43

[a] Does not include senior colleges.

were female with the disparity being especially marked in Victoria. One should not try to interpret these data too hastily without more detailed information about the career patterns of male and female teachers. However, in terms of the teachers with whom primary school students have most regular contact it would appear that the preponderance of females was even greater than when gross statistics were considered. Furthermore the data do raise questions about deploying existing staff complements in schools so that students do not experience most teaching contact with female teachers but see most male teachers in administrative positions. One school discussed by Sturman (1982), Marsh Primary School, had attempted to ensure students at all levels had contact with both male and female teachers.

Information about the percentage of teachers who were female in the secondary schools of each education system has been recorded in Table 3.6. In general a little less than one half of the teachers in secondary schools were female there being less difference between systems than for primary schools. As for primary schools there were smaller percentages of females in promotion categories than in the 'assistant class teacher' category though the difference was rather less than for primary schools. Of the three designated categories the highest percentage of females was among the specialist teachers which included several aspects of the welfare role of schools. Once again the data suggest the need for more information on the career paths of male and female teachers than is currently available. There also remain important issues concerning the composition of the teaching service in different discipline areas. On the basis of the data presented here it would seem that the adage concerning teaching being a predominantly female profession applies to primary schools rather than to secondary schools.

Other Aspects of Teaching Staff

One issue related to the theme of providing more diversity in educational programs, so that those programs reflect the particular needs of a school community, has concerned

Table 3.7 Percentage of Principals of Primary Schools Perceiving Specified Problems in the Allocation of Staff (Survey Data, 1979)

Problem	System									
								NZ		
	ACT	NSW	Vic.	Qld	SA	WA	Tas.	Full	Cont.	Inter
Insufficient teachers	41	14	33	26	29	26	34	12	25	12
Inexperienced teachers	17	27	22	19	5	24	20	25	26	26
Lack of sympathy with school philosophy	13	11	18	11	19	12	6	0	15	23
Too few teachers residing locally	0	22	19	13	23	17	8	23	8	29
Too many teachers with particular specialization	0	3	0	0	0	5	3	0	4	6
Too few teachers with particular specialization	9	18	15	3	24	17	6	5	22	37
Other problems	37	51	51	26	38	47	43	36	62	67

the authority of individual schools to influence the type of staff at the school. One proposition concerning this issue has been that schools should have greater involvement in the appointment of staff. It is a proposition which would have some difficulties in implementation both in terms of employment rights of teachers and in terms of managing an equitable distribution of resources of comparable quality (see McKenzie and Keeves, 1982). The proposition derives in part from a belief that present procedures for appointing staff to schools take insufficient account of the need to match teachers characteristics with the particular social and curriculum circumstances of each school. As part of the survey principals were asked to indicate whether a number of features of the teaching staff at a school were perceived as constituting problems. The potential problems and the responses have been recorded in Tables 3.7 and 3.8.

Table 3.8 Percentage of Principals of Secondary Schools Perceiving Specified Problems in the Allocation of Staff (Survey Data, 1979)

Problem	System						
	ACT[a]	NSW	Vic.	Qld	SA	WA	Tas.[a]
Insufficient teachers	9	12	28	29	25	18	24
Inexperienced teachers	9	28	47	33	19	18	20
Lack of sympathy with school philosophy	18	21	45	21	29	34	25
Too few teachers residing locally	0	18	23	16	33	25	12
Too many teachers with particular specialization	9	39	12	17	10	3	13
Too few teachers with particular specialization	0	29	26	22	22	17	27
Other problems	29	71	55	69	48	67	56

a Does not include senior colleges.

The data which are recorded in these tables suggest that there were a number of problems in addition to the numbers of teaching staff at their schools which concerned a significant number of principals. At the outset it needs to be noted that for primary and secondary schools a substantial proportion of principals expressed the view that their school had an insufficient number of teachers. This view was generally a little more common among primary school principals than among secondary school principals. That the percentages responding in the affirmative did not match precisely the actual levels of staffing in each system should not surprise since one could reasonably infer that these responses were given in relation to the particular circumstances of the school and its educational program. For primary schools 'an insufficient number of teachers' was the most frequently cited problem in all States except New South Wales and New Zealand. For secondary schools other problems were mentioned with equal or greater frequency.

Amongst primary school principals about one in five respondents from all States except South Australia considered that they had too few experienced teachers. This was an intriguing result given that Bassett (1980) did not report any actual difference in the age of teachers in South Australian primary schools from teachers in the primary schools of other systems. At this stage no explanation can be offered as to why some principals in other States saw this as a problem but few principals in South Australia indicated it as a problem. About one in five principals considered that having too few teachers residing locally was a problem but the frequency of this response was lower in those States where the centres of population were smaller or more homogeneous in socio-economic composition. To the extent that this problem may affect school operations it is more a matter of broad social policy than of educational policy. Educational resource policy would only impinge to the extent that where rapid mobility of teachers was encouraged by a promotion system teachers would not be predisposed to establish residence in the community in which they taught. Very few primary school principals considered that they had too many teachers with particular specializations but a significant number in States other than Tasmania, Queensland, and the Australian Capital Territory considered that their school had too few teachers with particular specializations. Where these were specified they most often related to such areas as music, drama and art. A little less than half the principals surveyed indicated the presence of problems other than those mentioned. These were varied and not generally amenable to policy solutions. In this category there was occasional mention of an inability to handle the problem of teachers not able to contribute effectively to the schools educational program.

Amongst secondary school principals there was generally a slightly higher percentage who perceived problems concerning the level of teacher experience, and the extent to which teachers lived locally, than among primary school principals. More importantly from a policy viewpoint there were a significant number (a little more than one in five) who considered that there was a problem in the degree of sympathy with the

school philosophy and the balance of specialization among the school staff. Sturman (1982) has outlined some of the issues arising in a school where conflicts over school philosophy existed. This suggests that the initiatives taken by many education departments to ensure that teachers are well informed about the prevailing philosophy of schools for which they might apply should be extended and that principals and senior staff might be more closely involved in the appointment of staff to schools. The problem of the balance of the specialization among school staff probably has broader antecedents relating to the availability of teachers. In spite of general publicity concerned with an over supply of teachers there is some evidence (Lofts, 1981) of shortages in some subject areas of secondary education. There appears to be a need to examine the requirements of schools for teachers in terms of subject specialties and other particular skills rather than in terms of general statements.

Teaching Staff in Schools with both Primary and Secondary Enrolments

In the preceding sections concerned with the total numbers of teaching staff in primary schools and secondary schools, and the configuration of teaching staff complements, schools which contained both primary and secondary sections were not included. It appeared to be general policy to staff each section of those schools as if it were a 'primary school' or a 'secondary' school and not as a total school. Consequently such schools did not fit the linear functions relating numbers of teachers and student enrolments particularly well, even though each section of the school considered separately might.

In each State the number of teachers per 1000 students for this type of school was greater than for primary schools and less than for secondary schools. Precise data have not been recorded because the size of the difference between the number of teachers in primary school and that in a school with some secondary enrolments would depend among other things on the enrolment profile of the school. From the official records there was some evidence that the secondary sections of schools with both primary and secondary enrolments were provided with more teachers per 1000 students than were other secondary schools. In practice this would be consistent with the more generous provision of staff to small secondary schools which was suggested by the magnitude of the values of 'a' in the plots of numbers of teachers against total enrolments above. Sturman (1982) has noted that, despite this policy, small secondary schools and the small secondary departments of schools combining both education sectors often believe that they have insufficient staff to fulfil all tasks. In these cases it was argued that many management tasks did not diminish with diminishing size and that the school was still obliged to provide a curriculum of similar breadth to that in other secondary schools.

Teaching Staff in Senior Colleges

Since there were so few senior colleges no plots of numbers of teachers against enrolments have been recorded. Only colleges in the Australian Capital Territory and Tasmania were included. The data which were gathered regarding those colleges tended to support the proposition that they were more generously staffed than were secondary schools in the same State. Using the same index as was reported in Figure 3.3 the average number of teachers per 1000 students was 99.7 in the Australian Capital Territory colleges and 88.3 in the Tasmanian colleges compared to 83 and 75 for the high schools of each of those systems. Moreover the colleges were especially well provided with senior staff, the relevant values of that index being 25.3 and 35.6 for the Australian Capital Territory and Tasmania respectively. In the provision of senior staff it appeared that there was an acceptance of the need to provide leadership in a range of subject areas even if the enrolment of the college was relatively small. With regard to assistant class teachers and specialist teachers, colleges in the Australian Capital Territory had an average of 70.4 and 3.9 per thousand and those in Tasmania averaged 47.7 and 4.9.

Though the colleges appeared to be better staffed than secondary schools from the same system it should not be assumed that similar differences in resource allocation did not occur within the secondary schools of other systems. In those States where a separate system of colleges operated any differences in resource allocation between Years 7 to 10 and Years 11 and 12 were simply more visible.

Support Staff

In an earlier part in this chapter the conventional distinction between teaching and support staff was discussed. In examining the provision of support staff a functional categorization has been used rather than one based on whether those staff were considered 'professional' or 'ancillary' staff. The categorization which was used was originally proposed by the Australian Education Council Working Party on Statistics. It considered support staff in terms of their role as:

(i) Curriculum Support;
(ii) Social Support;
(iii) Administrative Support; and
(iv) Operating Support.

While that categorization was not finally adopted by the Australian Education Council it seemed the likely structure at the time the present survey was developed and it still seems a useful framework for examining the provision of support staff in schools since it relates to different aspects of a school's operation. The detail of the staff included in each of these broad categories has been shown in Figure 3.4. As indicated, when

SUPPORT STAFF

6 (i) In the table below indicate for each category the number of **equivalent full-time** support staff at the school on the August school census date. Where personnel are not at your school but visit regularly, write in the average number of hours per week of their visits. Where personnel do not visit the school regularly but are readily available on request, place a tick in the appropriate box. Do not include any staff already counted in the teachers table.

	At the School (Equivalent full-time numbers)	Visits the School regularly (Average hours per week)	Readily available on request
Curriculum Support			
In-service education officer	_____	_____	☐
Curriculum adviser	_____	_____	☐
Subject consultant	_____	_____	☐
Audio-visual technician[a]	_____	_____	☐
Other curriculum support staff (please specify):_____	_____	_____	☐
_____	_____	_____	
Social Support			
School/community liaison officer	_____	_____	☐
Guidance/Counselling officer	_____	_____	☐
Psychologist	_____	_____	☐
Social worker	_____	_____	☐
Youth education officer	_____	_____	☐
Nurse	_____	_____	☐
Other social support staff (please specify): _____	_____	_____	☐
_____	_____	_____	
Adminstrative Support			
Clerk/Typist/Clerical assistant	_____	_____	☐
Bursar/Accountant (or similar)	_____	_____	☐
Caretaker/Groundsman/ Janitor/Cleaner	_____	_____	☐
Other administrative support staff (please specify) _____	_____	_____	☐
_____	_____	_____	

CONTINUED ON NEXT PAGE

	At the School (Equivalent full-time numbers)	Visits the School regularly (Average hours per week)	Readily available on request
Operating Support			
Audio-visual assistant	_____	_____	☐
Librarian	_____	_____	☐
Library assistant	_____	_____	☐
Laboratory technician	_____	_____	☐
Laboratory assistant	_____	_____	☐
Home Economics assistant	_____	_____	☐
Teacher aide[b]	_____	_____	☐
Other operating support staff (please specify) _____	_____	_____	☐
_____	_____	_____	

Notes
(a) This category includes personnel whose main function is to advise teachers on the means of integrating audio-visual resources into school curricula. It excludes personnel whose only function is to assist in the operation of audio-visual equipment.
(b) 'Teacher Aide' refers to those people who have not been otherwise specified and who are employed to work as assistants to, and under the supervision of qualified teachers.

Figure 3.4 The Question from which Numbers of Support Staff were Calculated

'teaching staff' were being considered 'youth education officers' were classified as specialist teachers rather than support staff when the responses were encoded. This illustrates the complementary nature of the roles of support and teaching staff particularly when curriculum and support staff are considered in relation to specialist teachers and is an important reason for proceding beyond an examination of teaching staff numbers to a detailed examination of the profile of personnel services in the school.

Within the category of administrative support staff the provision of caretakers, groundsman, janitors and cleaners has not been included in the analysis. The responses to that item did not appear sufficiently valid to warrant analysis: a pattern which possibly arose because of the many varied arrangements (sometimes involving contract cleaning) made for these aspects of maintenance. In any event in terms of the argument advanced by Hancock (1980) it would still be doubtful whether such staff should be included in the profile of services in schools. Hancock argued that in examining school resources care needed to be exercised in determining those resources which directly related to the educational experience of students.

Numbers of Support Staff in Schools

One feature of the approach adopted to the support staff in schools was that not all were necessarily allocated to the school through, or employed by, the education department. Though most support staff would be allocated by the education department there would be just a few, particularly within some education systems, from other government departments such as Health. It was anticipated that the total number of support staff in schools would be related to total enrolments, in a similar way as for the numbers of teaching staff in schools. However, in the case of support staff other factors appeared to have been given more weight than in allocating teaching staff. There was some variation between education systems in the specificity with which support staff allocation policies depended on enrolments. Provision of additional resources for disadvantaged schools and other special circumstances often involved support staff rather than teaching staff. This was particularly evident where schools were obliged to submit applications for additional grants under such programs as the disadvantaged schools program. Those applications often incorporated requests for additional teacher aides with special skills. One example was the request for funds to employ additional teacher aides with special language skills at Brennan High School which had more than 80 per cent of its students from non-English speaking backgrounds. It has been noted in Chapter 2 that Tasmanian schools had almost complete discretion when spending the school entitlement under the recurrent grants program and that a common way of using that entitlement was to employ teacher aides. For these reasons it would not be expected that the linear function,

$$S = a + b E$$

where S = the total number of support staff (in equivalent full-time terms), and

E = the total school enrolment.

would provide such a good a fit to the data as did the analogous function for teaching staff.

Table 3.9 contains the values of a and b for the regression lines for primary school support staff against enrolment for each education system. From the magnitude of the correlation coefficients it could be seen that even though larger schools generally have more support staff than smaller schools a considerable proportion of variance must be attributed to factors other than enrolment. It could also be seen that there were differences between systems with regard to how closely numbers of support staff correlated with enrolments.

Table 3.10 contains data for secondary schools analogous to that shown for primary schools in Table 3.9. Generally, but not for all systems, it appears that the correlation

Table 3.9 Support Staff as a Function of Enrolments in Primary Schools (Schools with secondary sections excluded) $S = a + bE$

System	a	b	r
ACT	1.7	0.0045	0.46
NSW	0.7	0.0040	0.76
Vic.	0.1	0.0037	0.50
Qld	2.0	0.0032	0.70
SA	1.4	0.0043	0.56
WA	0.8	0.0043	0.50
Tas.	0.8	0.0058	0.61
NZ (full primary)	0.0	0.0068	0.75
NZ (contributing)	-0.1	0.0065	0.74
NZ (intermediate)	2.6	0.0015	0.21

between numbers of support staff and enrolments association was greatest there remained a considerable between school variance unexplained by differences in enrolment. Where there was greatest discretion at school level and where other studies (Perchard, 1979) have shown that discretion was exercised differentiy in different schools the correlation was rather lower than in other systems.

In conclusion it would appear from these data that greater cognizance was taken of school circumstances and needs in allocating support staff than in allocating teacher staff.

The Configuration of Support Staff Complements

As for teaching staff it was important to extend the analysis of total numbers of support staff to incorporate a consideration of the types of was higher for secondary schools than primary schools. Yet, even where this support staff in schools. For this extension of the basic analysis support staff have been grouped into four categories; curriculum support, social support, administrative support and operating support. Details of these categories have been discussed in a section above and in Figure 3.4. In discussing that classification

Table 3.10 Support Staff as a Function of Enrolments in Secondary Schools (Schools with primary sections excluded) $S = a + bE$

System	a	b	r
ACT	5.4	0.0073	0.82
NSW	5.0	0.0070	0.54
Vic. (High) (Tech.)	1.2	0.0075	0.77
Qld	3.8	0.0057	0.68
SA	2.9	0.0099	0.86
WA	2.3	0.0086	0.73
Tas.	6.0	0.0055	0.38

Note: Does not include senior colleges.

it was noted that the category 'caretaker/groundsman/janitor/cleaner' was not included in the analysis because the various arrangements under which such people were employed appeared to have led to inconsistent responses. One problem area which did remain was that of 'general assistant' in New South Wales schools. Such people appeared to perform some duties similar to caretaker in other systems but in addition attended to a range of other duties such as teaching aid construction, and duplicating. Schools appeared to have recorded such staff in the 'other administrative support' category. In South Australia secondary schools appeared to have recorded 'storeman-handyman' in the same category. For this reason under the general classification of administrative support two figures have been recorded. The first includes the category 'other administrative support' and the second includes only the categories of 'clerk/typist/clerical assistant' and 'bursar/accountant'.

The data in Tables 3.11 and 3.12 provide an indication of the level of support staff in schools of each education system. Schools were asked to record, in equivalent full-time units, personnel in the designated categories at the school and average hours per week at the school of people who visited regularly. The latter were converted into equivalent full-time units on the basis of a 35 hour working week. Aggregate equivalent full-time numbers of staff in each of the four categories were calculated and then converted to an equivalent value per 1000 students in the school. These school level indices provided the basis for the means in Tables 3.11 and 3.12.

From these data it is possible to infer that there was very little school based curriculum support staff in either primary schools or secondary schools. The small figures shown in some secondary systems arise mainly from a few schools having an audiovisual technician on staff. Curriculum advisers and subject consultants had less regular contact with schools than would register on this index. The level of social support was also low but varied between education systems and between primary and secondary schools. Generally there was more social support in secondary schools than in primary schools. The differences in the level of support between States in this area need careful interpretation in that similar services could have been provided through some types of specialist teachers in some education systems. However, it is worth noting that some systems do make provisions not widespread elsewhere such as the involvement of social workers in Tasmanian schools. In the New Zealand primary schools the relatively high level of social support is largely attributable to the provision of dental services through schools.

Most support staff were included in the categories of 'administrative support' and operating support'. Most administrative support staff were clerical staff or more senior administrative personnel as discussed above. Only for New South Wales and South Australian secondary schools was there any discernible influence of including other administrative support staff in the aggregate figure. In this category of support staff it

Table 3.11 Support Staff Configurations in Government Primary Schools Expressed as Mean Numbers of Staff per 1000 Students (Survey Data, 1979)

	Type of support staff			
	Curriculum	Social	Administrative[a]	Operating
ACT	0.0	0.8	3.4	4.9
NSW	0.0	0.4	2.4	3.0
Vic.	0.0	0.1	1.5	1.4
Qld	0.0	0.4	1.6 (1.5)	6.2
SA	0.0	0.1	2.2	5.8
WA	0.0	0.4	2.3 (2.0)	3.6
Tas.	0.0	0.5	2.6	5.4
NZ (Full primary)	0.0	2.2	1.3	2.7
NZ (Contributing)	0.0	2.9	1.9	1.3
NZ (Intermediate)	0.0	2.3	2.2	2.6

a Figures in parentheses exclude the sub-category 'other administrative staff'. Where no such figures are provided the exclusion of this sub-category did not affect the result by more than 0.1.

Table 3.12 Support Staff Configurations in Government Secondary Schools Expressed as Mean Numbers of Staff per 1000 Students (Survey Data, 1979)

	Type of support staff			
	Curriculum	Social	Administrative[a]	Operating
ACT (High)	0.0	1.3	5.6	8.2
(Senior Colleges)	0.0	0.9	8.7	9.4
NSW	0.0	0.5	5.2 (4.7)	7.7
Vic. (High)	0.1	0.2	4.0	5.4
(Tech.)	0.3	0.4	6.3 (6.0)	4.4
Qld	0.1	0.2	2.6	7.8
SA	0.1	0.5	5.0 (4.5)	8.1
WA	0.2	1.1	4.6	5.5
Tas. (High)	0.0	1.2	4.7	8.8
(Senior Colleges)	0.1	0.8	8.0	11.1

a Figures in parentheses exclude the sub-category 'other administrative staff'. Where no such figures are provided the exclusion of this sub-category did not affect the result by more than 0.1.

appears that secondary schools were generally rather better provided than primary schools. Within each of these sectors schools in Victoria and Queensland were the least abundantly supported in terms of administrative support staff.

The category designated 'operating support' includes most of the personnel commonly regarded as ancillary staff in a school including teacher aides, laboratory assistants, and library assistants.[14] Among primary schools the data suggested a

14 Some difficulty was experienced with the sub-category 'librarian' as some schools appeared to double count the teacher librarian as a librarian. Where this was apparent from checking against records or within the questionnaire the necessary adjustment was made.

rather lower level of availability of such staff in Victorian schools than for the national average (3.5) and a greater abundance of these staff in Queensland, South Australia, Tasmania and the Australian Capital Territory. Among secondary schools there was uniformity in the level of operating support in most States except for the systems of secondary schools in Victoria and Western Australia where the level of operating support was rather lower than the national average (6.9). In combined primary-secondary schools from Queensland and South Australia there appeared to be a more generous provision of operating support staff than might have been expected. By contrast such schools in Victoria appeared to be relatively poorly provided with support staff.

Also included in Table 3.12 are data concerned with support staff in the senior colleges of the Australian Capital Territory and Tasmania. In terms of both administrative and operating support staff those colleges were better provided than the high schools from the same systems. However, within five and six year secondary schools of other systems support staff may have been preferentially used in Years 11 and 12. If that were the case it would imply similar priorities in schools as were applied across systems.

In summary the data discussed in this section suggest that it is important not just to examine the level of support staff in the schools of each system but to consider the profile of services provided. When cognizance is taken of the greater detail offered by the latter approach slightly different conclusions might be drawn than if global data were used.

The Balance of Teaching and Support Staff

Thus far the discussions of teaching staff in schools and support staff in schools have been treated separately. Despite this it has been mentioned in each discussion that the functions performed by each should be considered to be complementary. In a few cases it was suggested that there might be some overlap in the functions performed by those personnel considered to be teaching staff and those personnel considered to be support staff. For these reasons this section is concerned with the average configuration of teaching and support staff in the schools of each of the education systems included in this study.

The data for primary schools have been recorded in Table 3.13. In gross figures it appears that while Victorian primary schools were relatively well provided with teaching staff they were rather poorly provided with support staff. For most States the ratio of support to teaching staff was between 0.14 and 0.18 but for Victoria the ratio was 0.06. These data therefore suggest different policies between States operated with regard to the balance of teaching and support staff in schools. Without information such as that gathered in the United States by Murnane (1975) it was not possible to assess the relative

Table 3.13 The Balance of Teaching and Support Staff in Primary Schools. Mean Numbers of Staff per 1000 Students from Survey Data 1979[a]

System	Teaching staff				Support staff				
	Senior	Assistant	Specialist	Total	Curric.	Social	Admin.	Operating	Total
ACT	15	30	6	51	0	1	3	5	9
NSW	8	31	4	44	0	0	2	3	6
Vic.	8	33	8	49	0	0	1	1	3
Qld	5	32	5	44	0	0	2	6	8
SA	5	39	5	50	0	0	2	6	8
WA	8	30	4	43	0	0	2	4	6
Tas.	9	35	5	49	0	0	3	5	8
NZ									
(full)	13	27	2	42	0	2	1	3	6
(cont)	12	28	1	41	0	3	2	1	6
(inter)	15	24	11	51	0	2	2	3	7

a Values have been rounded to the nearest whole number so that some rounding errors may appear.

Table 3.14 The Balance of Teaching and Support Staff in Secondary Schools. Mean Numbers of Staff per 1000 Students from Survey Data 1979[a]

System	Teaching staff				Support staff				
	Senior	Assistant	Specialist	Total	Curric.	Social	Admin.	Operating	Total
ACT									
(High)	18	60	5	83	0	1	6	8	15
(Coll)	25	70	4	100	0	1	9	9	19
NSW	13	54	4	73	0	0	5	8	13
Vic.									
(High)	10	69	8	89	0	0	4	5	9
(Tech)	12	90	8	111	0	0	6	4	10
Qld	13	55	4	72	0	0	3	8	11
SA	21	55	5	82	0	0	5	8	13
WA	14	52	6	72	0	1	5	5	11
Tas.									
(High)	18	52	5	75	0	1	5	9	15
(Coll)	36	48	5	88	0	1	8	11	20

a Values have been rounded to the nearest whole number so that some rounding errors may appear.

merits of these policies. In fact one would ideally wish to extend considerably the range of outcomes considered by Murnane to combine it with an analysis of tasks performed in a manner similar to Cane and Hilsum (1971) and Hilsum and Strong (1978) before making any suggestions about the desirable balance of teaching and support staff in schools. Such analyses would be difficult in that major differences in these provisions are between State differences rather than within State differences and those differences which do exist within States are confounded by the influences of other factors related to the schools circumstance and program.

Table 3.15 The Ratio of Staff per 1000 Students in Secondary Schools to Primary Schools: Survey Data 1979

System	Teaching staff	Support staff
ACT[a]	1.63	1.67
NSW	1.66	2.17
Vic.[b]	1.82	3.00
Qld	1.64	1.38
SA	1.64	1.63
WA	1.67	1.83
Tas.[a]	1.53	1.88

a Not including senior colleges.
b High schools only considered.

Table 3.14 contains analogous data regarding secondary schools. A similar pattern is apparent as for primary schools. For most States the ratio of support staff to teaching staff was between .15 (Qld, WA) and .20 (Tas.) but for the two Victorian systems the ratios were .10 and .09. Similar intriguing issues surround this difference as for primary schools with the added complication that the greater specialization in secondary schools may result in more compartmentalization of the duties of teaching and support staff.

The Balance of Primary and Secondary Staffing

Even though preceding sections have stressed the need to look behind the total numbers of teachers and support staff in schools so that staff configurations could be examined in greater detail at various points reference has been made to the level of resources in primary and secondary schools. Since the balance of staffing in primary and secondary schools represented a manifestation of priorities in terms of the requirements of each sector it seems worth making these comparisons explicit. Some relevant data have been recorded in Table 3.15. For most systems the number of teaching staff per 1000 students in a secondary school was between 1.6 and 1.7 times that in a primary school. For Victoria the ratio was a little larger and for Tasmania the ratio was a little smaller. One possible explanation for these two differences could lie in the need to maintain subjects for small enrolment levels in Years 11 and 12 in Victorian secondary schools (where a larger number of students were in small secondary schools than in other States), and the fact that the Tasmanian secondary schools only operated for Years 7 to 10 with Years 11 and 12 being provided in a senior college. The notion that secondary schools needed to be provided with more abundant teaching resources than primary schools appeared to be widely accepted among all systems.

There was more variation between the States in the balance of support staff provided in secondary compared to primary schools. In all systems secondary schools were more abundantly supplied with support staff than were primary schools. This

discrepancy was greatest in Victoria and New South Wales and rather less in Queensland.

It would be simplistic to argue on the basis of these data for any evening up of levels of resources. The appropriate level of resources must depend on some functional analysis on the requirements of schools operating at different levels, the types of program being provided, and factors such as the size of schools in which those programs are offered.

Personnel Resources in Schools of Different Size

It has been noted in previous sections of this chapter that it appeared that some account was taken of different social and curricula aspects of schools in allocating staff. With regard to teachers these considerations appeared to account for a relatively small proportion of the total teaching staff in schools. Even though this proportion was larger for secondary than primary schools it was still small overall. There was a larger proportion of the variance in support staff numbers which was not accounted for by differences in school enrolments than for teaching staff. This suggested that greater cognizance was taken of social and curricular factors in allocating support staff than in allocating teaching staff: an interpretation which is consistent with the involvement of a wider range of agencies in that allocation.

School size appeared to be considered in staff allocations in ways other than that which would ensure a constant ratio of teachers to students. This was evident in the fact that the values of 'a' in the regression analyses previously discussed were not zero. Positive values of 'a' suggest that small schools were generally more favourably staffed than large schools. Such a pattern was one indication of a small influence of the notion of 'needs' in the staffing of schools.

In Table 3.16 the personnel configurations of primary schools have been shown. The index used for each category has been the nunber of staff per 1000 students. The size intervals were selected so relatively small schools (less than 150 students) and relatively large schools (more than 600 students) could be compared with medium sized schools. Only three categories were chosen as this provided the clearest display of general trends. The mean values have been recorded to the nearest whole number.

In all state systems the number of senior teachers and above per 1000 students was higher in relatively small schools than in medium and relatively large schools though the difference was greater in some systems than others. This took no account of the level of the 'promotion position' occupied but simply includes all promotion positions. Nor did it take account of whether that position was a non-teaching position or not. For most systems there was relatively less difference in the abundance of assistant class teachers between the three size categories. In Victoria small schools had proportionately more assistant class teachers than medium and large schools but in Queensland the greater

Table 3.16 Personnel Resources in Primary Schools of Different Size using Staff Numbers in Each Category per 1000 Students (Survey Date, 1979)

System	Size range	No. schools	Senior teachers	Assistant teachers	Specialist teachers	Admin. support	Operating support
ACT	<150	2	31	31	0	12	7
	150-599	21	13	30	6	3	4
	≥600	3	12	31	4	2	2
NSW	<150	3	11	33	2	6	1
	150-599	25	9	31	5	3	3
	≥600	17	7	31	4	2	2
Vic.	<150	5	15	40	2	0	0
	150-599	34	8	33	9	2	1
	≥600	9	7	31	7	2	2
Qld	<150	8	18	25	0	1	14
	150-599	16	3	36	6	2	6
	≥600	16	4	32	5	1	4
SA	<150	4	12	41	1	4	8
	150-599	31	5	39	6	2	6
	≥600	6	4	37	5	1	5
WA	<150	4	15	36	1	6	2
	150-599	29	8	29	4	2	3
	≥600	8	5	32	5	1	3
Tas.	<150	6	11	35	2	4	5
	150-599	28	9	35	6	2	5
	≥600	5	9	35	4	1	4
NZ	<150	9	17	28	0	1	3
(full)	150-599	16	11	27	2	2	2
	≥600	0	-	-	-	-	-
NZ	<150	2	14	24	0	2	1
(cont)	150-599	22	12	28	1	2	1
	≥600	3	11	32	1	2	2
NZ	<150	0	-	-	-	-	-
(inter)	150-599	12	16	23	13	2	3
	≥600	5	12	27	8	2	2

availability of senior teachers in small schools was matched by a concomitantly smaller availability of assistant class teachers. At this stage one could offer the interpretation that while the class teaching function was assumed to diminish as school size diminished some aspects of leadership do not so diminish. Given that some of these promotion positions involved considerable teaching duties it should not be assumed that this provides evidence of 'needs' criteria in staffing small schools.

As a general observation the small schools were less abundantly supplied with specialist teachers so that in the very small schools teachers were expected to exercise more wide ranging professional skill than in medium and large schools. In most small schools there was a greater abundance of support staff than in large schools though this was not so for Victoria or in terms of operating staff in New South Wales. The provision of additional support staff is one way which small schools could be assisted to handle the administrative duties which remain even in a small school, or the special functions

Table 3.17 Personnel Resources in Secondary Schools of Different Size using Staff Numbers in Each Category per 1000 Students (Survey Date, 1979)

System	Size range	No. schools	Senior teachers	Assistant teachers	Specialist teachers	Admin. support	Operating support
ACT[a]	< 450	1	31	55	8	8	12
	450-900	9	16	57	6	6	8
	≥ 900	1	15	53	4	5	6
NSW	< 450	2	20	64	6	3	12
	450-900	24	13	56	4	6	8
	≥ 900	16	13	51	4	4	7
Vic.	< 450	7	15	77	9	5	7
(High)	450-900	19	9	69	9	3	5
	≥ 900	5	8	60	7	4	4
Vic.	< 450	-	-	-	-	-	-
(Tech)	450-900	11	12	93	9	7	4
	≥ 900	2	11	73	6	4	8
Qld	< 450	4	14	65	3	3	11
	450-900	15	13	55	4	3	8
	≥ 900	16	12	53	4	3	6
SA	< 450	4	14	62	7	6	11
	450-900	23	13	55	5	5	8
	≥ 900	16	19	53	5	5	7
WA	<450	2	25	54	10	8	8
	450-900	13	14	54	6	5	6
	≥ 900	20	12	51	5	4	5
Tas.[a]	<450	2	18	52	6	6	9
	450-900	22	18	52	5	5	8
	≥ 900	1	14	52	5	4	10

[a] Not including senior colleges.

provided by other teachers in a large school. Morant Primary School (Sturman, 1982) was one school which considered that the administrative support was insufficient to assist a principal with a full teaching load and that it lacked for certain types of specialist staff.

In these data there is some evidence of a putative move towards taking cognizance of the needs of small schools in the supply of support staff within some systems and in the supply of teaching staff. Whether that is sufficient in terms of the range of functions associated with a school which are not dependent on size would require more detailed analysis. Certainly several of the small schools included in the case studies reported by Sturman (1982) did not consider that it had sufficient staff for the functions required of them.

Table 3.17 contains analogous data regarding the personnel configurations of secondary schools of different size. In this table the size intervals were defined differently so that relatively small schools were those with fewer than 450 students, medium sized schools contained between 450 and 900 students, and large schools were those with more than 900 students. From these data it can be seen that small schools were more abundantly supplied with senior staff (though there are no data here on the

size of teaching loads) except in Tasmania and to a relatively smaller extent in Queensland. In New South Wales, Victoria, Queensland and South Australia small schools also had more assistant class teachers on a proportionate basis than did medium and relatively large secondary schools. By contrast with the pattern for primary schools there was not a general lack of 'specialist teachers' in small secondary schools. Small secondary schools, except those in Tasmania, had a greater provision of operating support staff. In small secondary schools the range of functions which do not diminish in proportion to school size is more apparent. Maintaining a reasonable breadth of curriculum provision is important as are the duties associated with administering subject departments. These data suggested that these factors were taken into account in some ways by the education systems studied but provide no evidence as to the adequacy of these provisions in terms of the functions performed by the school.

Both in those data relating to primary schools and those relating to secondary schools there appeared to be evidence that the functions of schools which did not diminish with size had been considered in both the total number and the configuration of staff provided. There was no evidence of whether such considerations lead to adequate or equitable staffing but there was at least the seeds of a needs based policy in operation in 1979.

Other Resources

Many schools make use of resources other than those allocated to them by education departments and other authorities. In this section the extent to which school principals indicated that these other resources were used is discussed.

Parents in Schools

Possibly as part of the trend to strengthen links between school and community there has been some evidence reported that parents have become more extensively involved in schools over the past decade. The Australian Council of State School Organizations (1979) in its policy for 1979/80 included a section concerned with parent development:

> Council believes that Parental Development should be based on the concept of the central importance to educational achievement, of parents developing an awareness of their right, responsibility and competence to participate in their childs education. (ACSSO, 1979:32)

The council then elaborated this by seeking the support of education authorities and teacher organizations for the participation of parents in in-service education, parent and teacher exchange activities, classroom experience, programs to increase parents understanding of child development, adequate information services and education decision making. In no sense were parents seen as substituting for teachers but rather as

Table 3.18 Percentages of Australian Government Primary Schools Indicating a Specified Involvement of Parents in their Program

System	Role					
	Speakers	Sport	Excursions	Clerical/ Admin.	Listening to Reading	Library
ACT	82	87	100	36	93	78
NSW	68	95	96	37	88	55
Vic.	68	88	100	52	94	68
Qld	80	96	100	32	86	29
SA	82	96	100	42	99	90
WA	79	90	100	27	69	76
Tas.	88	100	100	26	96	67

important contributors to their children's education when working in conjunction with teachers. At Morant Primary School (see Sturman, 1982) the contribution of parents to the operation of a reading scheme was essential to the success of that scheme which required intensive work in small groups for some of the time. Robinson, Glynn, McNaughton and Quinn (1980) have described and evaluated the Mangere Home and School project which involved parents as remedial reading tutors. They concluded that parents did want to help with their children's academic difficulties, and were well able to learn specific reading tutoring procedures. Regarding the child's reading at home and at school there was evidence that gains in one setting did not automatically transfer to another, even though substantial gains were made at home. Robinson et al. suggested that the transfer of skills learned at home depended on the congruence between procedures at school and at home.

As part of the survey principals were asked to indicate whether or not parents were involved in various school functions. No evidence was gathered as to the extensiveness of the involvement in terms of either numbers of parents or the time each spent at the school. The functions mentioned were assisting 'in sport', 'on excursions', 'in clerical administrative roles', 'in the library', 'as speakers', and 'in listening to students reading'. Results of the responses to these questions for Australian schools have been recorded in Tables 3.18 and 3.19. Parental involvement in primary schools was generally greater than in secondary schools. Indeed that reported for primary school was at a very high level, the number of schools reporting some involvement of parents in listening to reading being remarkably high. Of course the involvement reported might well refer to just a few parents but it does suggest than an important basis for parental involvement in schools has been established.

In the questionnaire sent to New Zealand government primary schools the question concerned with the involvement of parents in schools was phrased a little differently in that respondents could indicate one of three responses ('never', 'occasionally', or 'regularly') rather than simply 'yes' or 'no'. For that reason the responses obtained from

Table 3.19 Percentages of Australian Government Secondary Schools Indicating a Specified Involvement of Parents in their Program

System	Role					
	Speakers	Sport	Excursions	Clerical/ Admin.	Listening to reading	Library
ACT[a]	91	90	81	27	30	50
NSW	67	49	54	13	13	20
Vic. (High)	62	46	41	32	58	39
(Tech.)	72	45	82	22	85	20
Qld	72	69	54	28	33	47
SA	74	97	65	31	37	49
WA	88	58	70	3	10	19
Tas.[a]	87	96	64	22	48	50

[a] Not including senior colleges.

New Zealand schools were not directly comparable with those from Australian schools. Responses have been recorded in Table 3.20. The three areas in which there was the most frequent regular involvement of parents were sport excursions and assisting in the library. Parents were reported as being regularly involved in the reading program of just over one quarter of the primary schools surveyed.

Students as Teachers

Some schools had developed programs based on the idea that students can teach other students (Holdsworth, 1975; Mayes, 1978). Such programs were designed to utilize the knowledge and skills of some students to assist others to learn. Many small rural schools have traditionally incorporated such ideas as part of the educational program they offered. Knight (1977) argued that using students as tutors could assist students by enabling them to demonstrate competence and thereby gain confidence. An important part of the rationale for schemes involving students as teachers was the maxim that by actively teaching someone else a students will learn more than by passively learning in isolation.

One major review of research (Devin-Sheehan, Felman and Allen, 1976) concerned with students as tutors commented on the difficulty of basing broad generalizations on the research which had been conducted: such research was usually specific to particular tutoring situations. The reviewers noted that students were used as tutors under a variety of diverse programs and conditions. Generally they concluded from long term field studies that 'several different kinds of tutoring programs could effectively improve academic performance of tutees and, in some cases of the tutors as well' (Devin-Sheehan et al., 1976:363). These writers noted that the practice might be more effective in some areas (reading) than others and that it was beneficial for students with behaviour problems or for low achievers to participate as tutors. From rather limited evidence it appeared that there might be some development of more positive attitudes to school and self among tutors. There was little support for widely held beliefs concerning the

Table 3.20 Percentages of New Zealand Government Primary Schools Indicating a Specified Involvement of Parents in their Program

	Role											
	Speakers		Sport		Excursions		Clerical/admin.		Listening to reading		Library	
Type of school	Occ.[a]	Reg.[b]	Occ.[a]	Reg.[b]	Occ.[a]	Reg.[b]	Occ.[a]	Reg.[b]	Occ.[a]	Reg.[b]	Occ.[a]	Reg.[b]
Full primary	92	8	52	48	8	92	48	17	39	26	50	29
Contributing	86	11	57	43	18	82	50	21	35	31	37	56
Intermediate	95	5	58	37	32	68	59	0	23	23	50	28

a Occasionally.
b Regularly.

Table 3.21 Percentages of Australian Government Primary Schools Reporting Some Use of Students as Tutors

System	'Peer group tutoring'		'Cross-age tutoring'	
	Years K-2	Years 3-6/7	Years K-2	Years 3-6/7
ACT	20	32	20	36
NSW	15	41	10	23
Vic.	16	17	10	18
Qld	6	15	2	3
SA	11	27	3	27
WA	2	9	7	12
Tas.	8	17	6	15

benefits of matching tutor and tutees on the basis of sex or social class. In brief the research reviewed was not clear but there was some evidence to support some of the claims made for using students as tutors.

A few of the schools described by Sturman (1982) had developed various approaches to using students as tutors. At Morant Primary School students from Year 6 assisted in the reading scheme with students from Year 1. Similarly Mansfield Primary School used students from an older class as individual tutors in reading with students from a younger class. Into this scheme was incorporated careful guidance to those acting as tutors and structured sessions in which they could discuss their experience as tutors. At Palmer High School the idea of students as tutors was incorporated in the Learning Assistance Program under which students from Years 11 and 12 volunteered to assist students in Years 8 to 10.

In asking about whether schools made use of students as teachers the conventional terms 'peer group tutoring' and 'cross-age tutoring' were used to refer to practices where students helped others of roughly the same age and where students helped others of a younger age respectively. However there may be some confusion in the use of these terms and results for each should not be considered mutually exclusive. It also needs to be remembered that in the schools mentioned above these practices were a relatively small part of the total school program. 'Peer group' and 'cross-age' tutoring in most schools reporting the practice should be regarded as a small but valuable part of the teaching resources in schools. Results from Australian schools have been recorded in Tables 3.21 and 3.22. It appeared that these schemes occured in a minority of schools and most frequently in primary schools. Within primary schools students as tutors appeared most common in Years 3-6/7 within the Australian Capital Territory, South Australia and New South Wales. In secondary schools no clear pattern between systems was apparent though the use of students as tutors was less common in the Australian Capital Territory and Queensland than elsewhere.

Results for the same question in New Zealand primary schools have been recorded

Table 3.22 Percentages of Australian Government Secondary Schools Reporting Some Use of Students as Tutors

System	'Peer group tutoring'			'Cross-age tutoring'		
	Years 7-8	Years 9-10	Years 11-12	Years 7-8	Years 9-10	Years 11-12
ACT	0	0	-	0	0	n.a.
NSW	2	2	2	9	2	10
Vic. (High)	6	3	6	13	6	6
. (Tech.)	15	8	8	8	8	16
Qld	0	0	2	8	0	9
SA	12	9	10	7	7	16
WA	9	11	12	3	0	0
Tas.	16	11	-	4	8	n.a.

Note: n.a. denotes 'not applicable' in this and subsequent tables.

in Table 3.23. In this education system it would appear that as in Australia a minority of schools make use of students as tutors.

In secondary schools students' own resources are also called upon in self-directed private study sessions. Results concerning whether schools made such provision have been recorded in Table 3.24. Even though the general pattern of most schools providing such sessions in Years 11 and 12 and few schools making private study available to younger students was evident there were a number of schools which reported that self-directed private study was provided for younger groups of students.

Work Experience

Work experience has been included in the category of other resources because it involves the use of resources outside the school for the educational programs offered by the school. Work experience is aimed at providing opportunity for young people to gain experience in work situations as part of their schooling. As Blakers (1978) has observed it has become very popular and is seen by some as a panacea f a range of problems involved in the transition from school to work. Sturman (1979:78) after reviewing a number of research studies concerning the effectiveness of work experience programs suggested that evidence of the impact of the programs was inconclusive but that more organization (selection, preparation, placement and follow up of students) would be

Table 3.23 Percentages of New Zealand Government Primary Schools Reporting Some Use of Students as Tutors

Type of school	'Peer group tutoring'			'Cross-age tutoring'		
	Years K-2	Years 3-5	Years 6-7	Years K-2	Years 3-5	Years 6-7
Full primary	16	20	24	16	12	16
Contributing primary	15	22	n.a.	11	11	n.a.
Intermediate	n.a.	n.a.	26	n.a.	n.a.	0

Note: Year levels are the Australian equivalent designation.

Table 3.24 Percentages of Secondary Schools Reporting the Provision of Self-directed Private Study at School

System	Years 7, 8	Years 9, 10	Years 11, 12
ACT	19	45	n.a.
NSW	14	16	88
Vic. (High)	6	10	90
(Tech.)	0	20	75
Qld	14	19	51
SA	7	6	95
WA	29	34	76
Tas.	28	48	n.a.

required if the desired outcomes were to be ensured on a more general basis. This suggests that work experience programs not only utilize resources outside schools but required the commitment of school resources so that they would be well organized and integrated with the school program.

The percentages of schools reporting that they had work experience programs in 1979 has been recorded in Table 3.25. It can be seen that such programs generally did not operate in Years 7 and 8 but mainly in Years 9 and 10 and in some systems in Years 11 and 12 (one suspects mainly Year 11 rather than Year 12). Apparently work experience programs were extensively provided in all systems except Queensland where fewer than one third of the responding secondary schools reported the existence of these programs. Given that such programs are generally considered desirable and were fairly extensively provided it is important to note that they not only involved community resources but that they seemed to require the commitment of additional school resources to be successful.

Perceived Needs

As part of the survey of schools in 1979 questions were directed not only to the existing resources and their deployment but also to emerging needs. Three types of question

Table 3.25 Percentages of Secondary Schools Reporting Work Experience Programs at Various Year Levels

System	Years 7, 8	Years 9, 10	Years 11, 12
ACT	9	64	n.a.
NSW	4	74	24
Vic.			
(High)	0	81	56
(Tech)	0	92	83
Qld	0	33	27
SA	0	49	93
WA	0	94	70
Tas.	0	92	n.a.

Table 3.26 Principals' Assessment of Increased Demands Arising from Various Activities on the Average Teacher (Government Primary Schools)

Activity	ACT	NSW	Vic.	Qld	SA	WA	Tas.	NZ (Full)	NZ (Cont)	NZ (Inter)
Curric. Development: Median[a]	2.65	2.82	2.75	2.23	2.37	2.39	2.75	1.97	1.97	2.35
% 'great'[b]	61	74	67	36	44	45	68	17	14	42
Administration: Median	1.90	1.90	1.84	1.73	2.07	1.94	2.00	1.77	1.50	1.85
% 'great'	10	9	8	7	22	15	23	4	0	16
In-Service Edn: Median	2.12	2.12	2.05	2.24	1.96	2.59	1.96	1.96	1.94	2.31
% 'great'	28	25	22	38	21	55	25	20	18	42
Student Counselling: Median	1.90	1.84	1.27	1.56	1.74	1.66	1.67	1.87	1.54	2.55
% 'great'	21	10	7	9	25	13	7	17	11	53
Parents Relations: Median	2.25	2.13	2.19	2.05	2.19	2.09	2.25	1.89	1.87	1.96
% 'great'	39	26	35	20	31	26	37	16	14	16
Social Welfare Agencies: Median	1.66	1.35	1.68	1.52	1.66	1.45	1.71	1.84	1.77	1.95
% 'great'	11	6	2	7	4	16	2	8	11	21

a The median recorded has been based on the scale

1 = No increase

2 = Some increase

3 = A great increase.

b Indicates percentage of respondents noting a great increase.

were asked to address the issue of emerging needs in relation to resources. First the question of areas in which there were increased demands on the time of the average teacher was considered. Secondly school principals were asked to indicate the areas in which additional support staff were most needed. Thirdly schools were asked to indicate the areas in which they would spend an enrolment related grant for employing additional personnel. In discussing responses to these questions primary and secondary schools will first be treated separately and then a summary given of the similarities and differences between the two.

Primary Schools

The general activities around which the question concerned with increased demands on the average teachers time was structured has been shown in Table 3.26 together some data from the responses obtained. School principals, not the teachers themselves, were asked to indicate the extent to which there was an increase in the demands on the time of an average teacher as a result of each of the activities listed. A three-point scale was provided corresponding to 'no increase', 'some increase' and 'a great increase'. In Table 3.26 two types of statistic have been recorded: the median response on that scale and the percentage of respondents indicating 'a great increase'. While the median was the most appropriate measure of central tendency when analyzing an ordinal scale the percentage of the respondents in the category 'a great increase' better illustrates the difference in the patterns of response. Even though there were fluctuations in patterns between systems three types of activity were highlighted as having increased the demands on the time of the average primary school teacher. These were the areas of curriculum development, in-service education and relations with parents: three areas in which schools have been expected to be active and which were part of a policy to improve the quality of education in schools. It is not surprising that they had demanded a good deal of the time of teachers. Among New Zealand schools the general pattern was more evident in Intermediate schools than in other types of primary school where there appeared to be less emphasis in curriculum development at school level.

Table 3.27 contains the patterns of response to the question concerned with the need for additional support staff in primary schools. For each of the categories of support staff designated, principals were asked to indicate whether the need for additional support staff was 'essential', 'desirable' or 'not needed'. Again two types of statistic have been recorded: the percentage answering 'essential' and the medium response on a three point scale. No clear uniform pattern emerged. Though there was a general indication of a need for additional support staff to express this in a general statement of the type of staff required would hide the differences between the systems.

The question concerning how a grant of money to employ additional personnel would be spend has been shown in Figure 3.5. Responses to the question could have been

Table 3.27 Principals' Assessment of the Need for Additional Support Staff (Primary Schools)

	Curriculum		Social		Administrative		Operating	
	Median[a]	% essential[b]	Median[a]	% essential[b]	Median[a]	% essential[b]	Median[a]	% essential[b]
ACT	2.31	41	2.63	56	2.24	37	2.45	46
NSW	2.46	48	2.30	41	2.31	40	2.54	52
Vic.	2.23	34	2.30	40	2.51	49	2.37	43
Qld	1.99	21	2.01	23	2.46	49	2.17	37
SA	2.07	28	2.12	30	1.85	26	1.95	24
WA	1.95	17	2.08	32	2.30	44	2.32	41
Tas.	2.06	26	1.80	23	1.97	30	2.19	33
NZ (full)	2.97	17	1.60	9	1.75	25	2.18	36
NZ (cont)	2.43	46	1.84	8	1.61	21	2.25	36
NZ (inter)	1.91	12	2.42	47	1.90	17	1.97	5

[a] Scale 1 = not needed
2 = desirable
3 = essential.

[b] Records percentage of schools indicating additional staff in this category is essential.

34 Consider the following hypothetical situation

The school has been allocated an additional annual grant according to the number of teachers on its staff:

Number of Teachers	Grant $
less than 5	5000
5-19	25000
20-39	60000
40-59	100000
more than 59	120000

Assume that all of the grant must be spent on employing additional personnel of the school's choice and that the *total* annual costs of various types of personnel are are follows:

Senior Teacher	$20,000 pa
Assistant Class Teacher	$15,000 pa
Specialist Teacher	$15,000 pa
Audio-visual/Laboratory Technician	$15,000 pa
Teachers' Aide	$10,000 pa
Clerical Assistant	$10,000 pa

How would the school allocate the grant amongst the various categories of personnel so as to gain the greatest benefits? (*complete the table below.*)
Note: If desired, personnel could be hired on a part-time basis; for example, hiring a teacher aide on a 0.5 basis would cost $5000 of your grant.

The school would consider hiring approximately:

_____ *Senior Teachers* ..... *@ $20,000 pa* = _____
_____ *Assistant-class Teachers* ..... *@ $15,000 pa* = _____
_____ *Specialist Teachers (please specify):* *@ $15,000 pa* = _____
_____
_____
_____ *Technicians* ..... *@ $15,000 pa* = _____
_____ *Teachers' Aides* ..... *@ $10,000 pa* = _____
_____ *Clerical Assistants* ..... *@ $10,000 pa* = _____

Note: The salary levels in the questionnaire to New Zealand schools differed a little.

Figure 3.5 The Question Concerning the Spending of an Additional Grant of Money

recorded either in terms of the percentage of the money to be spent on each category of staff or in terms of the percentage of the numbers of additional staff belonging to each category. In practice the pattern from each method of recording gives similar results but both have been shown in Tables 3.28 and 3.29. Also included in each Table is the standard deviation for each mean percentage.

Two broad conclusions seem possible from Tables 3.28 and 3.29. First, given the freedom to spend a grant of money on additional staff primary schools would most often spend that money on additional specialist teachers and teacher aides, with some being spent to employ additional assistant class teachers and clerical assistants but little being

Table 3.28 Percentage of Hypothetical Allocated Grant to be Spent on Employing Additional Staff in Specified Categories[a] (Primary Schools)

System	Senior teacher	Assistant teacher	Specialist teacher	Technician	Teacher aides	Clerical assistant
ACT	3 (13)	18 (29)	35 (33)	2 (5)	26 (29)	5 (15)
NSW	10 (21)	12 (23)	45 (32)	3 (7)	21 (22)	10 (12)
Vic.	11 (24)	15 (23)	24 (26)	4 (9)	29 (27)	16 (15)
Qld	6 (16)	22 (27)	31 (30)	6 (13)	23 (25)	11 (15)
SA	6 (15)	18 (27)	41 (27)	1 (5)	24 (19)	10 (16)
WA	9 (21)	19 (25)	27 (28)	3 (9)	30 (22)	11 (11)
Tas.	5 (17)	18 (27)	46 (32)	1 (5)	25 (26)	3 (6)
Australia	7 (19)	18 (26)	36 (30)	3 (8)	25 (24)	11 (14)
NZ (full)	3 (16)	19 (37)	35 (37)	4 (13)	29 (29)	14 (25)
NZ (cont)	0 (0)	26 (34)	39 (36)	7 (14)	26 (22)	8 (11)
NZ (inter)	12 (21)	24 (26)	34 (29)	15 (17)	17 (17)	6 (11)

a The figures in parentheses are standard deviations.

Table 3.29 Percentage of Additional Staff to be Employed in Each Category Using Hypothetical Allocated Grant[a] (Primary Schools)

System	Senior teacher	Assistant teacher	Specialist teacher	Technician	Teacher aides	Clerical assistant
ACT	3 (10)	16 (27)	31 (31)	2 (5)	29 (30)	19 (18)
NSW	8 (18)	11 (21)	41 (31)	2 (6)	25 (24)	12 (14)
Vic.	9 (21)	14 (22)	21 (24)	4 (8)	33 (27)	19 (16)
Qld	5 (14)	20 (25)	28 (27)	6 (11)	30 (27)	14 (18)
SA	4 (11)	17 (26)	36 (25)	1 (5)	29 (22)	13 (18)
WA	6 (16)	16 (22)	24 (25)	3 (8)	42 (23)	14 (13)
Tas.	4 (14)	17 (26)	43 (31)	1 (4)	30 (28)	4 (9)
Australia	6 (15)	16 (24)	32 (28)	3 (7)	30 (26)	13 (16)
NZ (full)	3 (13)	13 (26)	32 (35)	4 (12)	33 (31)	16 (26)
NZ (cont)	0 (0)	17 (21)	36 (35)	6 (11)	31 (23)	10 (14)
NZ (inter)	9 (17)	16 (18)	32 (27)	14 (16)	21 (21)	8 (13)

a The figures in parentheses are standard deviations.

spent on senior teachers and technicians. Secondly, given the magnitude of the standard deviations there was considerable variation between the schools in each system in their pattern of preferences for additional staff. This latter result is probably the most important for it suggests that the best policy for additional spending in education might be for schools to determine how to convert that money into personnel.

Secondary Schools

Table 3.30 contains details of the pattern of responses of principals of secondary schools to the question concerning increased demands on the average teachers time. As for

Table 3.30 Principals' Assessment of Increased Demands Arising from Various Activities on the Average Teacher (Secondary Schools)

Activity		ACT[c]	NSW	Vic.(HS)	Vic.(TS)	Qld	SA	WA	Tas.[c]
Curric. Devpt:	Median[a]	2.4	2.2	2.0	2.1	2.1	2.2	1.9	2.0
	% 'great'[b]	45	27	23	23	26	26	19	23
Administration:	Median[a]	2.3	2.0	1.8	1.6	1.8	2.0	1.7	1.8
	% 'great'[b]	36	18	23	8	8	17	8	2
In-Service Edn:	Median[a]	1.8	2.3	2.0	2.1	1.9	1.8	2.2	2.2
	% 'great'[b]	27	41	22	31	10	3	29	26
Student Counselling:									
	Median[a]	2.4	2.1	1.8	1.6	2.0	1.8	1.9	
	% 'great'[b]	40	29	24	15	8	23	16	15
Parents Relations:									
	Median[a]	2.4	1.8	1.8	2.0	1.9	2.0	1.9	1.8
	% 'great'[b]	40	20	26	23	13	13	12	0
Social Welfare Agencies:									
	Median[a]	1.6	1.4	1.4	1.8	1.2	1.5	1.3	1.4
	% 'great'[b]	10	9	17	15	5	11	3	0

[a] The median recorded has been based on the scale
1 = No increase
2 = Some increase
3 = A great increase.

[b] Indicates percentage of respondents noting a great increase.

[c] Not including senior colleges.

primary schools curriculum development was seen most widely as resulting in increased demands with in-service education and relations with parents being frequently mentioned in most but not all States. A frequently mentioned source of increased demand on teachers' time in secondary schools other than those in Queensland was the need for student counselling. In secondary schools it would appear that not only were increased demands seen as arising from attempts to improve the quality of education but from community changes which increased the importance of its welfare role. However, it is important to note that there were variations across systems which could have reflected differing priorities among possible goals.

The responses of principals regarding the need for additional support staff in secondary schools have been summarized in Table 3.31. In all systems a substantial number of principals indicated that additional social support staff were needed. For other categories of support staff the patterns of response differed between systems and presumably reflected differences in the existing provision through education departments and other agencies. Though it is hard to summarize concisely it would appear that in Victorian and Queensland High Schools, many principals considered that additional administrative and operating support staff were essential. In Victorian Technical Schools additional curriculum, social, and operating support staff were all deemed essential by many principals (but social support was seen as essential by almost all), and in the Australian Capital Territory and South Australia additional operating support staff were

Table 3.31 Principals' Assessment of the Need for Additional Support Staff (Secondary Schools)

	Curriculum		Social		Administrative		Operating	
	Median[a]	% essential[b]	Median[a]	% essential[b]	Median[a]	% essential[b]	Median[a]	% essential[b]
ACT[c]	1.9	18	2.4	45	2.0	20	2.2	27
NSW	2.1	28	2.6	52	2.1	31	2.3	40
Vic. (High)	1.8	11	2.3	40	2.6	52	2.6	53
(Tech)	2.2	42	2.9	85	1.9	23	2.5	62
Qld	2.1	26	2.5	48	2.8	71	2.5	49
SA	1.8	9	2.2	31	1.6	11	2.1	28
WA	1.9	9	2.1	28	1.8	9	2.0	5
Tas.[c]	1.8	16	2.1	34	1.4	12	2.2	5

a Scale 1 = not needed
2 = desirable
3 = essential.

b Records percentage of schools indicating additional staff in this category is essential.

c Not including senior colleges.

Table 3.32 Percentage of Hypothetical Allocated Grant to be Spent on Employing Additional Staff in Specified Categories (Secondary Schools)[a]

System	Senior teacher	Assistant teacher	Specialist teacher	Technician	Teacher aides	Clerical assistant
ACT[b]	13 (14)	28 (23)	19 (12)	11 (10)	21 (11)	7 (7)
NSW	24 (16)	21 (22)	27 (21)	8 (10)	13 (11)	8 (9)
Vic. (High)	20 (18)	6 (11)	30 (21)	17 (10)	17 (18)	9 (9)
(Tech)	11 (11)	7 (13)	31 (20)	20 (13)	16 (8)	8 (7)
Qld	17 (22)	13 (18)	18 (18)	13 (10)	21 (14)	17 (11)
SA	14 (16)	34 (25)	23 (26)	6 (9)	16 (11)	4 (7)
WA	11 (19)	24 (28)	18 (20)	16 (16)	15 (17)	10 (11)
Tas.[b]	18 (23)	24 (26)	35 (18)	7 (13)	12 (12)	3 (6)

[a] The figures in parentheses are standard deviations.
[b] Not including senior colleges.

considered essential by a significant proportion of principals. In brief though there was a general demand for additional social support staff the percieved need for staff in other categories varied considerably between systems.

The responses of secondary schools to the question in Figure 3.5, which concerned the spending of an additional grant of money have been summarized in Tables 3.32 and 3.33. From the standard deviations in those tables the conclusion can be drawn that, as for primary schools, there was considerable variation between the schools in each system in the types of additional support staff they would employ with such a grant. In broad terms secondary schools indicated an intention to employ staff in the range of categories specified but with some preference for more assistant teachers, more specialist teachers and additional teacher aides[15]. However such a general statement tends to mask important differences in the preferences between systems and between schools.

In Summary

This chapter has been concerned with four main themes. First it has been concerned with the number and type of teaching staff in government schools. Secondly, it has considered the number and type of support staff available in those schools. Thirdly, attention has been given to the overall configuation of staff, both teaching and support, in schools of different types. Fourthly and finally, it has given some consideration to the emerging needs and priorities in staffing schools as reported by principals.

For both primary and secondary schools within each education system the number of teachers was closely related to the total school enrolment. The extent to which there was any variation in the total numbers of teachers in schools not explicable in terms of

15 But is is important to note that a different interpretation would be made if the proportion of money was examined rather than the number of staff employed.

Table 3.33 Percentage of Additional Staff to be Employed in Each Category Using Hypothetical Allocated Grant[a] (Secondary Schools)

System	Senior teacher	Assistant teacher	Specialist teacher	Technician	Teacher aides	Clerical assistant
ACT[b]	9 (10)	27 (22)	17 (10)	9 (8)	28 (12)	10 (9)
NSW	18 (14)	21 (22)	26 (22)	7 (8)	18 (14)	10 (11)
Vic. (High)	15 (15)	6 (10)	29 (20)	16 (9)	22 (18)	12 (12)
(Tech)	8 (8)	6 (12)	29 (19)	18 (11)	22 (10)	9 (9)
Qld	13 (17)	12 (16)	16 (16)	11 (9)	26 (16)	21 (12)
SA	10 (13)	32 (24)	22 (25)	6 (8)	21 (14)	6 (9)
WA	8 (13)	22 (27)	16 (19)	15 (16)	20 (20)	13 (13)
Tas.[b]	14 (18)	23 (25)	34 (17)	7 (9)	17 (15)	5 (9)

a The figures in parentheses are standard deviations.
b Not including senior colleges.

enrolment differences was small. It appeared that the component of the total complement of teachers at any school which might be determined in relation to idiosyncrastic needs was relatively small. In general schools obtained the bulk of the teaching staff available to them according to formulae with small discretionary allocations being made in addition to the base staffing. There were apparent differences between systems in the extent to which local factors might have been taken into account determining teaching staff entitlements. Secondary schools appeared not only to have been more generously staffed than primary schools but seem to have a larger proportion of the staff allocated according to criteria other than total enrolment. However this proportion was still small and appeared to have been related at least partly to the need to provide a broad curriculum in relatively small schools.

In the allocation of support staff there appeared to have been rather greater cognizance taken of local school requirements. At least, a larger proportion of the variance in the total number of support staff in schools could not be explained by variance in school enrolments than was the case for teaching staff. Such a finding would be consistent with the fact that the authorities under which schools could be allocated support staff or the funds to employ support staff were more varied. It could also have been the case that in allocation of support staff there was an incipient needs policy followed within some education system though the data do not indicate how that might have operated. Most support staff in schools were either administrative support staff or operating support staff. There were very few support staff in the categories designated 'curriculum' or 'social'.

When attention was given to the overall configuration of staff in schools rather more subtle patterns emerged than when teaching and support staff were considered separately. Some education systems which were relatively well provided with teaching staff had rather fewer ancillary staff than other systems. In a couple of systems there was evidence of greater numbers of administrative or operating support staff having

been provided to support small schools. This raised two important resource allocation issues. First it raised the question of the appropriate balance of teacher and support staff in schools. Not that there would be likely to be one answer to such an issue given that such a balance would depend upon a schools priorities and other features such as its enrolment profile. In any event no data were gathered which would enable a judgement to be made about this. At this stage it is only possible to note the existence of different policies in different systems. Secondly, it raised the question of the extent to which the operation of small schools could be assisted by the employment of additional support staff. In one or two systems there was evidence of small schools being granted additional support but in other systems there was no evidence of this. The appointment of additional support staff would seem an especially important option to consider for schools of a size which impose considerable management duties but in which there was under current policy a principal with full teaching duties.

The principals of the schools surveyed reported that there had been increased demands on the average teacher in recent years. For those in primary schools the increased demands were seen to have arisen from three areas through which attempts had been made to enhance the quality of schooling offered to students: curriculum development, in-service education and relations with parents. For secondary schools these three areas were mentioned together with increased demands of student counselling. The response of principals to the need for increased support staff and to how an additional grant of money might be spent suggested that there was not a single uniform priority area across all schools, or even all schools within a system. Rather the responses suggested that schools varied with regard to the categories of staff they would employ using an additional financial grant. Such a result tends to support the notion that individual schools should have greater authority in determining the type of staff appointed to them.

CHAPTER 4

SCHOOL STRUCTURES

In examining the organization of schools relevant to the allocation of resources two types of structure need to be distinguished. First, policy-formulation structures need to be considered for it is through these that priorities are set and resources allocated. Secondly, policy-implementation structures deserve consideration for these provide the framework within which the detail of resource allocation is carried out. To facilitate the examination of policy-implementation structures a further distinction has been made between teaching structures, which broadly relate to the way students are grouped for instruction, and curriculum structures, which relate to the general type of program offered by the school.

Policy-formulation Structures

Many decisions taken in schools either directly involve choices regarding where resources will be allocated or have ramifications for the allocation of resources. Some decisions will be constrained by the requirements of eduction authorities outside the particular school. Not only state education departments would be involved in setting these constraints. Such agencies as those concerned with accreditation and certification (such as the School Certificate Board in New South Wales), those concerned with examinations (such as the Public Examinations Board in South Australia), or those with regional responsibilities (such as a District Education Board in New Zealand) can determine policies which indirectly impinge upon the way in which a school might allocate its resources. Moreover the policies of teachers' organizations with regard to the maximum class size can sometimes reduce the options available to a school when allocating resources. Many of these relationships are discussed by McKenzie and Keeves (1982). This section of the present report is more concerned with decisions taken at school level than the external constraints upon the way schools might deploy the resources available to them.

A Schools Commission report (1978b) has documented the extent to which educational decisions have been made the responsibility of schools rather than education systems. It suggested that there were considerable differences between the Australian States in the extent of school based decision making. The present chapter is concerned with decisions taken at school level and the involvement of various groups in those decisions. From this perspective two types of policy-formulation structure have been distinguished. First, those structures which involve people other than the teachers in the school in making decisions have been designated as 'extraprofessional structures'.

Secondly, those structures which involved mainly the teaching staff of the school in reaching decisions have been referred to as 'professional structures'. Both types of structure could be considered potential influences upon the ways schools allocated their resources.

As part of a study of American high schools Abramowitz and Tenenbaum (1978) suggested that high schools did not possess the type of structure and co-ordination which would be expected in a bureaucracy. Structure was not so extensive, the level of differentiation between staff was relatively small, decision making was participatory or decentralized and the role of the principal was multi-faceted rather than managerial. It was acknowledged that structure was exhibited in high schools but was not so noticeable and controlling as in a bureaucracy. Responding to these findings Stackhouse (1978) suggested that another view of school organization would better fit the available evidence. She suggested a 'loose coupling theory' in which formal structure is present but in which the co-ordination mechanisms not necessarily closely linked to the formal structures provide the cohesion necessary for the operation of the school. According to Stackhouse loosely coupled systems are characterized by a broad rather than a narrow role for the principal, decentralized rather than centralized decision making, infrequent formal evaluation, and a tendency for neither environmental pressures nor program diversity to increase the need for co-ordination. One cannot be certain of how closely such a theory corresponds to schools in Australia but general observation would suggest it is probably more likely to fit the way these schools operate than is a bureaucratic theory of organizations. In terms of the present study it suggests caution in drawing conclusions from an examination of structures without also considering co-ordination mechanisms.

Policy-formulating Structures in Primary Schools

Extraprofessional Structures

For Australian primary schools three types of extraprofessional policy-formulating structures were considered at the school level: school boards or councils, parents associations, and students representative councils. With regard to school boards or councils there were statutory provision for their establishment and responsibilities in the Australian Capital Territory, Victoria and South Australia. Even though the level of responsibility was specified in relevant acts in slightly different ways there was scope for variation between schools in what happened in practice. The results recorded have been based on the principal's perspective of that practice. Some schools in systems which did not require the establishment of school councils had in fact created them at the initiative of the school principal. One such case was described in Chapter 2 and another by Sturman (1982).

The governance of schools in New Zealand was structured a little differently from most Australian state education systems. Even though there were counterparts to school councils (the school committees), parents associations and student representative councils New Zealand schools were influenced by another extraprofessional structure: the district education board. Though these district education boards were not strictly school level structures neither could they be considered part of the central administrative authority. Throughout New Zealand there were ten district education boards, the smallest of which was responsible for 64 schools and the largest involving some 417 schools. The district education boards were responsible for the co-ordination of programs in primary schools, the 'day to day' management of staffing, and building works etc. Staff were appointed to primary schools by district education boards but under conditions centrally determined and in accord with centrally prescribed staffing policies. Most importantly the boards were lay bodies elected by members of school committees. School committees were elected from an electoral roll of all eligible voters living within a prescribed region around the school. Since they appeared to be interesting and important bodies school principals were asked about the role they performed as well as about that performed by the other extraprofessional structures mentioned above.

In the case of each of the structures consideration was given to whether the organization existed and to its level of responsibility. The question from which information was gathered has been shown in Figure 4.1 and the results obtained have been recorded in Table 4.1. For each structure in each system an indication has been made of the percentage of schools reporting the existence that structure and for those schools with the structure present a median response on a four-point scale concerning level of responsibility has been recorded. Within Australia all schools in the Australian Capital Territory, Victoria and South Australia had school boards or councils, but very few schools in Queensland and Tasmania and none in New South Wales and Western Australia had this structure. The results suggested that in the Australian Capital Territory, school boards made decisions about policy on the expenditure of government grants and about the range and balance of the school curriculum in conjunction with the principal, provided advice on the range and type of extracurricular activities and some gave advice concerning the appointment of some teaching staff. This advice concerned specification of the qualities required of staff (especially for promotion positions) but the boards did not participate in the actual selection process. With regard to the range and balance of the school curriculum the majority of schools in those States reported the board as making decisions in conjunction with the principal but some considered their role to be advisory. In Victoria and South Australia the school councils were reported as making decisions in conjunction with the principal regarding expenditure policy (as was the case in the Australian Capital Territory) but exercising only an advisory role in curricula and

DECISION-MAKING PROCESSES

11 To what extent do the

School Council/Board comprising community representatives (or similiar organisation).
Parents Association (or similiar organisation), and the
Students Representative Council (or similiar organisation)
play a role in the following aspects of the school.

(In **each** *box enter the letter which* **best describes** *the type of involvement of each organization in the listed areas.)*

A	organization does not exist
B	does not deal with this activity
C	provides advice and information to the Principal or other teachers
D	in conjunction with other people (e.g. the Principal) is responsible for making decisions
E	is primarily responsible for making decisions

	School Council/Board	Parents Association	Students Representative Council
Range and balance of the school curriculum	☐	☐	☐
Range and type of extra-curricular activities	☐	☐	☐
Policy on the expenditure of some government grants ..	☐	☐	☐
Appointment of some teaching staff.....	☐	☐	☐
Appointment of some non-teaching staff.....	☐	☐	☐

Figure 4.1 The Question Concerning Extraprofessional Policy-formulating Structures

extracurricular activities. Unlike the Australian Capital Territory and South Australia, schools in Victoria reported that their councils had a significant involvement in the appointment of some non-teaching staff. In brief, schools in these three States reported that school boards or councils were involved in some aspects of resource allocation policies in schools.

The principals of primary schools in New Zealand acknowledged the authority of district education boards in the appointment of teaching staff. Boards were indicated as primarily responsible for the appointment of teaching staff. In addition they were reported as making decisions in conjunction with the principal concerning expenditure and the appointment of non-teaching staff but having a limited advisory capacity with regards to curricula and extracurricular activities. It appeared in discussions with the staff of New Zealand schools that some of the influences of the district education boards was exercised through its executive staff: mainly the district inspectors. Yet the prospect of a representative body governing education policy at a regional level was an interesting contrast with Australian practice. It also appeared that the authority of the boards was limited. They made teaching appointments to schools but within centrally determined formulae and so that teachers were employees of the central education department and not of the boards. The role of the board in curricula matters was also

Table 4.1 Extraprofessional Policy-formulation Structures in Primary Schools

		Existence	Level of Responsibility[ab]				
		(%)	Curriculum	Extra Curric.	Expenditure	Teach. Appt.	Other Appt.
ACT	Board	100	2.8	2.5	3.4	1.4	1.2
	Parents Assn.	100	1.5	1.8	1.2	1.0	1.0
	Student Council	46	1.2	1.7	1.1	1.0	1.0
NSW	Board	0	n.a.	n.a.	n.a.	n.a.	n.a.
	Parents Assn.	93	1.1	1.7	1.3	1.0	1.0
	Student Council	46	1.1	1.7	1.1	1.0	1.0
Vic.	Board	100	1.6	1.9	3.0	1.0	2.7
	Parents Assn.	89	1.3	1.5	1.4	1.0	1.1
	Student Council	12	1.0	1.0	1.0	1.0	1.0
Qld	Board	6	1.2	1.0	1.0	1.0	1.3
	Parents Assn.	97	1.1	1.8	1.4	1.0	1.3
	Student Council	14	1.0	1.8	1.0	1.0	1.0
SA	Board	100	1.8	1.9	2.7	1.0	1.4
	Parents Assn.	90	1.6	1.7	1.7	1.0	1.2
	Student Council	17	1.2	1.9	1.1	1.0	1.0
WA	Board	0	n.a.	n.a.	n.a.	n.a.	n.a.
	Parents Assn.	98	1.1	1.4	1.4	1.0	1.1
	Student Council	26	1.2	1.5	1.0	1.0	1.0
Tas.	Board	13	1.5	1.8	1.8	1.0	1.9
	Parents Assn.	91	1.2	1.6	1.5	1.0	1.1
	Student Council	19	1.0	1.9	1.4	1.0	1 0
NZ (Full)	Dist. Education Board	100	1.7	1.4	3.2	3.9	2.7
	School Committee	95	1.0	2.2	2.9	1.2	1.4
	Parents Assn.	82	1.1	2.0	1.0	1.0	1.0
	Student Council	18	1.0	2.5	1.0	1.0	1.0
NZ (Contrib)	Dist. Education Board	100	1.4	1.3	3.3	3.9	2.7
	School Committee	100	1.1	1.8	2.9	1.1	2.5
	Parents Assn.	87	1.1	1.9	1.1	1.0	1.0
	Student Council	9	1.0	2.5	1.0	1.0	1.0
NZ (Inter)	Dist. Education Board	100	1.9	1.8	3.6	4.0	3.0
	School Committee	100	1.0	2.2	3.1	1.2	2.7
	Parents Assn.	67	1.0	1.5	1.0	1.0	1.0
	Student Council	47	1.0	1.5	1.0	1.0	1.0

a Scored on a scale of
1 = does not deal with this activity
2 = provides advice and information to the Principal or other teachers
3 = in conjunction with other people (e.g. the Principal) is responsible for making decisions
4 = is primarily responsible for making decisions.

b Scores recorded are median based on those schools for which that organization exists.

limited in that curricula were prescribed on a national basis with schools exercising some discretion in the interpretation of curricula. Pritchard school as described by Sturman (1982) had been able to exercise some flexibility in interpreting national curriculum statements but had done so without any noticeable influence of the district education board.

School committees in New Zealand schools appeared to make decisions in conjunction with the principal when non-teaching staff were appointed (in those schools which employed non-teaching staff) and on the spending of some grants. They provided advice on extracurricular activities but had minimal influence in curriculum decisions and teaching appointments. In fact the reported role in curriculum of school committees was rather less than that of school councils in the Australian Capital Territory, Victoria and South Australia.

In each of the education systems where statutory school councils or committees existed there was some variation in the extent of involvement of these structures in school policy in general and curriculum policy in particular. This was consistent with observation made during visits to schools that if local community participation in school policy formulation was considered desirable, the statutory provision for such structures was necessary to create the potential for that participation. The extent to which that potential was realized depended upon its active encouragement by the school principal. Sturman (1982) noted several schools in which the principal had fostered and extended the role of the school council beyond that which was technically required.

Most primary schools in both Australia and New Zealand reported the existence of a parents association or similar body. In general the level of authority for policy formulation vested in these bodies was small, though they were reported as a source of advice on expenditure, extracurricular activities, and even curricula in a few Australian primary schools. The role of such bodies in school policy appeared to be informal rather than formal. Though parent associations provided for some local participation in school policy those organizations had no direct influence on the allocation of personnel resources nor open policies which might impinge upon the allocation of resources. Despite the important role they could fulfill in liaison between school and community, any influence on school policy could only occur through informal channels.

Some schools (about one third in Australia and less in New Zealand) reported that a students representative council existed and of those some indicated that it had some involvement in policy formulation on extracurricular activities and even some types of expenditure by providing advice to the principal and other staff. Student councils are not commonly thought of as operating at primary school level and especially not in terms of any involvement in policy. Further research on the detail of this process and its impact of the development of the students involved would prove most interesting. At Mansfield school (see Sturman, 1982) students had been most effectively involved in the

Table 4.2 Professional Policy Formulation Structures in Primary Schools

	ACT	NSW	Vic.	Qld	SA	WA	Tas.	NZ (Full)	NZ (Contrib)	NZ (Inter)
Whole Staff Meeting										
% existence[a]	97	100	98	100	100	100	100	92	100	100
% irregular[b]	0	14	7	21	4	2	4	16	15	0
Meeting frequency[c]	4.4	4.0	4.3	3.7	4.7	3.4	4.4	4.3	4.5	4.4
Curriculum Committee										
% existence[a]	75	83	91	64	62	34	45	60	68	95
% irregular[b]	50	63	23	61	50	39	67	40	44	32
Meeting frequency[c]	4.1	3.9	3.2	3.1	3.2	3.0	3.0	3.0	2.2	3.0
Subject Area Teachers										
% existence[a]	32	53	67	46	40	42	28	54	64	90
% irregular[b]	0	60	40	57	47	41	54	21	36	32
Meeting frequency[c]	3.7	4.1	3.6	2.9	3.6	3.0	4.4	3.8	4.4	2.7
Year Level Teachers										
% existence[a]	82	81	88	80	80	68	69	55	89	95
% irregular[b]	18	25	18	18	19	40	48	14	19	26
Meeting frequency[c]	4.7	3.9	4.4	3.5	4.2	3.3	4.2	4.6	4.7	3.3
Senior Staff										
% existence[a]	93	92	93	74	88	84	81	71	96	100
% irregular[b]	15	26	29	30	64	35	43	8	26	16
Meeting frequency[c]	4.6	4.7	4.7	4.9	5.0	4.8	4.7	4.7	4.3	4.8

a Percentage of schools which indicated that a formal group did exist.

b Percentage of those schools which indicated that a formal group existed but which also indicated that it met 'when needed'.

c Mean value for schools where formal group met on a scale
1 = once per year
2 = once per term
3 = once per month
4 = once per fortnight
5 = once per week.

development of a handwriting scheme and in devising appropriate rules of conduct. Pritchard school had sought to involve its students in planning their own programs and in evaluating their own progress. In both cases the rationale for this process was complex but in part related to the educational value, even for primary school students, of participating in some aspects of policy formulation. Alexander and Farrell (1975) in a study of student participation in decision making identified several aspects of the educative value of this process in teaching students to think, leading them to realize the importance of making value judgements, and enabling them to learn about social processes. The present survey suggested that in Australian and New Zealand government primary schools the involvement of students in making decisions was not extensive.

Professional Structures

Professional policy-formulation structures were those involving teaching staff. Structures which were included in the analysis have been indicated in Table 4.2 with a summary of the responses from schools to questions about their existence and frequency of meetings. From these data it can be seen that the only type of structure which was not generally present was a regular meeting of teachers in a subject area. In New South Wales and Victoria a majority of schools reported the existence of such a group but only in Victoria was there a majority of those in which the meeting frequency was regular. In Western Australia and Tasmania a majority of schools did not report the existence of a school-wide curriculum committee at all. An example of the way in which subject area groups might operate was found in Rudd Primary School (see Sturman, 1982). In that school, school-based curriculum development committees developed, adopted, revised and supported school programs in language, arts and reading, mathematics, science and social science, physical education and health, art and craft and music. Through this method there was an important provision for vertical integration of programs across year levels. Year level meetings normally provided for integration and sharing of ideas at a given year level and a school-wide curriculum committee was intended to overview the whole of the school program.

The data provided no indication of the composition or authority of these designated structures but did provide some indication of meeting frequency. In recording the data, 'meets when needed' has been treated separately from the scale on which mean values for those 'meeting regularly' have been calculated. The percentage of all schools in each system with such groups meeting regularly could thus be estimated. It could be seen that most schools held a regular staff meeting and on average that meeting was held once per fortnight. Regular meetings of teachers at each year level were also a feature of most schools (but less in Western Australia and Tasmania) and in general those were held about once per fortnight. Meetings of subject area teachers were less common and in about half of the schools where they existed, were held only 'when needed'. In general less than

one in three schools held regular meetings of teachers in subject areas and those occurred between once per month and once per fortnight. However the percentage of schools with a regular subject group meeting was significantly greater in Victoria (40 per cent) than in each other state (20 per cent or less) except the Australian Capital Territory (32 per cent). There was some variation between systems in the frequency with which school-wide curriculum committees were reported (most frequently in the Australian Capital Territory, New South Wales and Victoria) and in the extent to which those committees met regularly. They seemed most important in Victorian schools where some 71 per cent of schools held regular meetings of such a group but in most other States only between 20 and 37 per cent of schools had curriculum committee meetings on a regular basis. The differences between Victoria and each other State in this regard were statistically significant. Where curriculum committees functioned regularly they met about once per month though more frequently in Australian Capital Territory and New South Wales schools. Most schools reported that the senior staff met either regularly or when needed and that where regular meetings were held these were generally once per week.

In general it would appear that there were differences between the States in the extent to which, and the pattern of provision, of these structures for involving professional staff in policy formulation. However, the pattern of differences was complex rather than general.

Each of the structures noted above could be considered to fulfil different functions in co-ordinating the programs of primary schools. Most schools recognized the need for regular staff meetings, and for senior staff to meet regularly. However such meetings would often be concerned with broad policy or administrative matters. The structure which most commonly existed to provide co-ordination at a more detailed level was the meeting of year level teachers. The observation would be consistent with a prevailing view of primary school curricula as organized in year levels and implemented wholistically. The existence of structures within schools responsible for other forms of co-ordination was less widely reported. Subject area groups which looked at areas of the curriculum across the school were not widely reported in most systems as meeting on a regular basis. As exemplified in Rudd Primary School such groups could play an important role in developing and evaluating a schools program in for example reading across year levels. Such structures enable particular skills of staff to be more widely shared. In the absence of such structures visits to schools suggested that co-ordination was exercised by the principal and senior staff. School wide curriculum committees were structures responsible for the total curriculum across a school. A number of schools reported the existence of such a structure but, except in Victoria, most suggested that they did not meet regularly. In those schools where a curriculum committee was reported as part of the regular structure it appeared to meet frequently.

An extension of these groups would provide an important vehicle for the formative and continuing evaluation of a school curriculum.

The Locus of Decision Making

The discussion above has been concerned with structures for policy formulation but not with an examination of the points at which decisions are taken in a school. Another question asked respondents to indicate who determines school policy in a number of areas. The question stated:

> What is required here is the school practice within externally determined guidelines and not necessarily the formal responsibility as laid down in regulations (In each box enter the letter which best describes school practice).

For each of a number of policy areas respondents were asked to indicate who determines policy in that area by choosing from the following list:

A the principal alone
B the principal and senior staff
C the principal and whole staff
D the principal and individual teachers
E the head of department alone
F the head of department and his staff
G the head of department and individual teachers
H the individual teacher
I other (please specify beside the item concerned)

Where an item was given a response 'other' the attached description was checked and a decision made as to whether it could be validly assigned an equivalent code. If this was not possible the datum for that item was treated as missing in calculating aggregate statistics. In two policy areas 'appointment of some teaching staff' and 'appointment of some non-teaching staff' the response 'other' was so frequent that these have been considered separately from the remaining items.

One method of detecting patterns in a set of data is factor analysis (see Child, 1970). In the present study that technique seemed an appropriate method to identify any underlying patterns in the responses to the questions about who determined school policy in a number of areas. Though the items concerned specific aspects of school policy it was postulated that similar patterns of response might apply to a cluster of items concerned with the same general type of issue. Factor analysis provides an analysis of the correlation coefficients between items in a form which suggests a smaller set of latent variables or dimensions which could account for the interrelations in the data.

A factor analysis suggested that the listed policy areas might cluster into five groups (there were five factors with an eigen value greater than 1). The results were not

Table 4.3 Factor Analysis of Policy Areas Items from the School Questionnaire - Australian Government Primary Schools (N = 220)

Policy area	Factor loadings 1	2	3	4	5
General school curriculum objectives			85		
The range and balance of the curriculum structure at each Year level	-79				
The content of each subject area	-79				
The methods of instruction	-60				(42)
Policy on the expenditure of some government schools		-59			(-53)
Selection of new books and materials		(-46)		-52	
The form of internal assessment of particular year levels		-59			
Homework policy					83
The allocation of teachers to particular classes within subject levels				83	
The allocation of non-teaching duties to teachers				67	
Range and type of extra-curricular activities		-77			
The allocation of duties to teacher aides		-40			
Eigen values	2.15	1.71	1.21	1.14	1.0
% variance	17.9	14.2	10.1	9.5	8.8

Note: Decimal points have been dropped and factor loadings less than 0.40 have been omitted. Loadings in brackets are the smaller of the loadings where an item loads on more than two factors.

so clear as to warrant the formation of separate scales but they did provide a framework for discussing item responses.[16] Table 4.3 contains results of the factor analysis as a result of which the five clusters designated were:

1 curriculum and teaching;

2 administration;

3 general objectives;

4 teacher allocation, and

5 homework policy.

These clusters were not entirely discrete. For the purpose of discussion and presentation where an item loaded on more than one factor it has been assigned to that which was consistent with our conception of school structures.

In presenting data arising from the responses from this question in Table 4.4 two types of statistic have been recorded: the median and the mode. Some of the distributions were such that a high proportion of cases were grouped in one category

16 In some cases the distribution of responses to items appeared to deviate from normal but Zeller and Levine (1974) suggest the normality assumption of r is robust. Hence the factor analytic procedure is probably still valid.

rather than being spread across a range. Where the mode and the median have a similar value it would indicate either that the responses were lumped together or spread equally on either side of the mode. Where the mode and median differ it would indicate that the distribution was asymetric.

In the broadest policy area concerned with the general school curriculum objectives it was most commonly reported by Australian schools that the 'principal and whole staff' determined policy. This collegiate approach to policy also reflected in some administrative matters though the allocation of duties to teacher aides was most commonly the province of the senior staff. Within this cluster of policy areas the selection of books was often a matter decided at a more decentralized level than the whole staff in the Australian Capital Territory and Victoria. Homework policy was another area which was commonly reported as being determined by the principal and the whole staff but with some decentralization in a minority of schools in most States. In New Zealand primary schools school objectives were more frequently reported as the province of the principal and senior staff than in Australian schools and there was a tendency for matters of administration as well as expenditure to be determined by senior staff rather more than in Australia.

Within the cluster of policy areas concerned with curriculum and teaching in Australian schools it was most common for curriculum balance and subject content to be determined collegially but for instructional methods to be determined by individual teachers. In most States subject content was a little more decentralized than the school level but in Queensland there were apparently a number of schools where this matter was decided by the principal and senior staff. In Queensland and Tasmania it was reported in a number of schools that instructional methods were determined by the principal and individual teachers or the principal and staff. From these data it also appeared that the principals of New Zealand primary schools were more closely involved in decisions about instructional methods than their Australian counterparts. In addition the determination of the range and balance of the curriculum was more often made by the prinicpal and senior staff as distinct from the principal and whole staff in Australian primary schools.

The two aspects of teacher allocation listed were both seen as the province of the principal and senior staff with little difference between the systems studied.

In brief, the role of the principal appeared important in all areas of decision making except that in most Australian primary schools each individual teacher decided upon instructional methods. Across schools in all systems the principal, either alone or in conjunction with senior staff made decisions about the allocation of teaching and non-teaching duties. A problem of interpretation arises from the term 'the principal and whole staff' for one cannot be sure what that response implies about the influence of the principal other than that it would be usually less pervasive than 'the principal alone' and probably more participatory than 'the principal and senior staff'.

Table 4.4 Levels at Which Decisions Were Made in Government Primary Schools (Survey Samples, 1979)

	ACT	NSW	Vic.	Qld	SA	WA	Tas.	NZ (full)	NZ (contrib)	NZ (inter)
Curriculum and Teaching										
Curriculum Range/Balance	3.3 (3)	3.8 (3)	3.5 (3)	3.8 (3)	3.4 (3)	3.6 (4)	3.6 (3)	1.8 (2)	1.3 (1)	1.5 (2)
Subject Content	3.9 (3)	4.1 (3)	2.2 (3)	3.9 (3)	3.9 (3)	4.6 (3)	4.6 (3)	3.0 (3)	3.1 (3)	3.7 (6)
Instructional Methods	5.4 (3)	5.2 (8)	5.4 (8)	5.0 (4)	5.1 (8)	5.1 (8)	5.1 (3)	3.4 (3)	3.8 (3)	3.4 (3)
Administration										
Policy on Expenditure	2.5 (3)	2.6 (3)	2.1 (3)	2.7 (3)	2.5 (3)	2.4 (2)	2.7 (3)	2.4 (2)	2.1 (2)	1.9 (2)
Selection of Books	4.6 (3)	3.6 (3)	4.8 (6)	3.5 (3)	3.9 (3)	3.0 (3)	3.8 (3)	3.1 (3)	3.4 (3)	3.5 (4)
Internal Assessment	3.0 (3)	3.3 (3)	3.8 (3)	3.9 (3)	3.7 (3)	3.2 (3)	3.5 (3)	2.8 (3)	2.4 (2)	2.1 (2)
Extra Curricula Activities	3.3 (3)	3.4 (3)	3.4 (3)	3.6 (3)	3.9 (3)	3.6 (3)	3.3 (3)	3.0 (3)	2.9 (3)	2.7 (3)
Teacher Aides	1.9 (2)	1.9 (2)	2.8 (2)	2.8 (2)	2.2 (2)	3.5 (3)	3.4 (2)	1.6 (1)	1.4 (1)	1.2 (1)
General Objectives										
General Curriculum Objectives	3.0 (3)	3.0 (3)	2.7 (3)	2.9 (3)	2.9 (3)	2.9 (3)	2.9 (3)	1.7 (2)	1.6 (2)	1.6 (2)
Staff Allocation										
Allocation of Teachers	2.3 (2)	2.3 (2)	1.9 (2)	1.7 (1)	2.3 (2)	2.2 (2)	1.9 (2)	1.7 (2)	1.8 (2)	1.2 (1)
Allocation Non-Teaching Duties	2.4 (2)	2.3 (2)	2.1 (2)	2.1 (2)	2.6 (2)	2.3 (2)	2.3 (2)	2.2 (2)	2.3 (2)	1.7 (2)
Homework Policy										
Homework Policy	3.8 (3)	3.2 (3)	4.6 (3)	3.2 (3)	4.5 (3)	4.3 (3)	4.1 (3)	2.2 (1)	2.7 (3)	2.5 (3)

Note: Median values have been recorded but the mode has been shown in parentheses. The code used was as follows:
1 = the principal alone,
2 = the principal and senior staff,
3 = the principal and whole staff,
4 = the principal and individual tables,
5 = the head of department alone,
6 = the head of department and his staff,
7 = the head of department and individual teachers, and
8 = the individual teacher.

As Peters (1976) has argued all school principals need to resolve issues of participation and authority in relation to the governance of a school. They are expected to recognize the professionalism of the staff and yet, in most systems are the person accountable for what happens in a school. In primary schools the conflict is especially noticable for two reasons. First as Coulson (1976) notes the tradition of principals in primary schools has been based upon 'personnel control and moral authority' being vested in that office. Secondly, as argued by Jackson (1968) the basic unit of the primary school has traditionally been the class. Even though within each classroom each teacher exercised considerable discretion in teaching a group of students, there was less interest in school policy as a whole. Lortie (1969) suggested that each teacher had a zone of autonomy in the classroom but accepted the principal's authority in more general matters. While those two characteristics may have been traditional, Coulson (1976) suggested that the organizational pattern they implied was no longer the most appropriate because the expected role and curriculum of primary schools had broadened, patterns of class organization had altered, and the expectations of teachers were changing. As primary schools were expected to fulfil more complex roles in the affective and cognitive development of children so the whole school curriculum assumed more importance in relation to the class program. In Australian schools the use of teachers in specialist roles, the use of more fluid teaching groups, and the adoption of some forms of team teaching, would appear to have reduced the isolation of each classroom teacher. Furthermore the development of 'extended professionality' (which is concerned with broader aspects of the teaching process and places value on collaboration) as opposed to 'restricted professionality' (which focusses on the commonsense practice in a classroom) (Hoyle, 1969) has resulted in more teachers expecting to be involved in issues of school policy. These developments do not suggest any abolition of the authority of the principal but rather, in the terms of Peters (1970), that such authority should be decentralized and rationalized.

Since formal authority for schools in most school systems is vested in the principal, the role of that person in school governance is crucial whether it be direct or by facilitating the development of more decentralized structures such as those described in the preceeding sections.

Policy-formulating Structures in Secondary Schools

Extraprofessional Structures

In Table 4.5 information concerning the extraprofessional policy-formulation structures in secondary schools has been recorded. As for primary schools, school boards or councils were mainly reported in those States where statutory provision had been made. This was in the Australian Capital Territory, Victoria and South Australia. In other

Table 4.5 Extraprofessional Policy-formulation Structures in Government Secondary Schools (Survey Sample, 1979)

		Existence	Level of responsibility[ab]				
		(%)	Curriculum	Extra curric.	Expend.	Teach. appt.	Other appt.
ACT	Board	100	3.3	2.3	3.5	1.0	1.0
	Parents Assn.	100	1.5	1.2	1.2	1.0	1.0
	Student Council	91	1.5	2.1	1.1	1.0	1.0
NSW	Board	5	2.0	2.0	3.0	1.0	1.0
	Parents Assn.	100	1.3	1.7	1.1	1.0	1.0
	Student Council	83	1.1	1.8	1.0	1.0	1.0
Vic.	(High)						
	Board	100	1.8	1.9	3.0	1.0	3.1
	Parents Assn.	84	1.3	1.7	1.1	1.0	1.0
	Student Council	80	1.1	1.8	1.0	1.0	1.0
Vic.	(Tech)						
	Board	100	1.6	1.9	2.9	2.5	3.0
	Parents Assn.	92	1.6	2.1	1.3	1.1	1.0
	Student Council	85	1.2	2.0	1.1	1.0	1.0
Qld	Board	3	1.0	1.0	1.0	1.0	1.0
	Parents Assn.	99	1.2	1.7	1.1	1.0	1.9
	Student Council	88	1.1	1.9	1.1	1.0	1.0
SA	Board	100	1.9	1.9	2.9	1.0	1.1
	Parents Assn.	85	1.4	1.6	1.3	1.0	1.0
	Student Council	83	1.2	2.0	1.0	1.0	1.0
WA	Board	14	1.6	2.0	2.0	1.0	1.0
	Parents Assn.	82	1.1	1.3	1.3	1.0	1.0
	Student Council	87	1.1	1.9	1.1	1.0	1.0
Tas.	Board	5	1.0	2.4	2.4	1.0	2.4
	Parents Assn.	100	1.3	1.8	1.3	1.0	1.0
	Student Council	91	1.3	1.9	1.1	1.0	1.0

a Scored on a scale of
1 = does not deal with this activity
2 = provides advice and information to the Principal or other teachers
3 = in conjunction with other people (e.g. the Principal) is responsible for making decisions
4 = is primarily responsible for making decisions.

b Scores recorded are median values based on those schools for which that organization exists.

States there were just a few examples reported of bodies designated with this title. Those schools reported their boards/councils as providing advice and information to the principal and other staff in curriculum, extracurricular activities and expenditure. The level of responsibility for boards/councils in States where all schools were required to have such structures was reported to be a little more extensive than that. In all three States the board/council was most often reported as making decisions in conjunction with the principal with regard to expenditure and providing advice with regard to extracurricular activities. In two of the three States such bodies provided an advisory function regarding curriculum policy but in the Australian Capital Territory the school board was generally reported as making decisions in conjunction with the principal. In

Victorian high and technical schools the board and the principal jointly participated in the appointment of some non-teaching staff. Victorian technical schools, but not those of any other system, reported that their school council was involved in the appointment of some teaching staff at a level which was placed between that of advice and that of participation. In fact this only applied to the appointment of the principal and vice-principals. This reflected the procedure for the appointment of senior staff which had been initiated in that system and in which a local school community played an active role. The procedure as it had operated in one school has been described by Sturman (1982), and in another school by Fitzgerald and Pettit (1978).

On the basis of these data it would appear that in those schools where school boards or councils existed they were an important part of the policy-formulation process. Even though the level of responsibility varied between systems, and in practice there was also some variation between schools within systems and across different policy areas, they appeared to be important bodies which had the potential to influence school policies. However, outside of schools in the Australian Capital Territory the reported influence of such structures on curriculum decisions appeared to have been advisory only.

In those States in which a majority of schools reported the existence of school boards or councils there was no detectable difference in the level of responsibility reported for secondary and primary schools. The data do not make possible any interpretation concerning the ways in which these structures operated in detail. Fitzgerald and Pettit (1978) have documented for one State the composition of a number of secondary school councils. They reported that though parents formed a clear majority of the members of almost all primary school councils, they comprised only about one half of the membership of secondary school council, the remainder being nominated members, municipal representatives or teachers. They noted that professional and managerial occupations were strongly represented among the membership of secondary school councils. Observations such as those by Fitzgerald and Pettit raise important questions of how to establish councils which both possess necessary skills and are representative of the community. Fitzgerald Musgrave and Pettit (1976) identify the related issue of how maximum participation in such bodies might be achieved. They argue that increased legislative powers are not sufficient but that further encouragment to participate is required. In a compenion report to the present volume Sturman (1982) outlines the ways in which several schools had fostered community participation in their councils.

Nearly all the secondary schools studied reported the existence of parents associations. In no system did schools report the role of these bodies in any of the matters listed as any stronger than advisory to the principal and other teachers. They played no role in the appointment of teaching staff and only in Queensland schools did they provide advice on the appointment of some non-teaching staff. The median values reflect that in only a minority of schools was there any reported involvement in

Table 4.6 Professional Policy-formulation Structures in Government Secondary Schools

		ACT	NSW	Vic. High	Vic. Tech.	Qld	SA	WA	Tas.
Whole Staff Meeting:	% existence[a]	100	100	97	100	100	100	100	100
	% irregular[b]	0	14	3	8	13	0	9	19
	Meeting frequency[c]	3.5	3.3	4.0	3.8	3.8	3.9	2.7	4.0
Curriculum Committee:	% existence[a]	91	45	97	91	71	88	22	62
	% irregular[b]	30	55	38	22	47	42	50	55
	Meeting frequency[c]	4.0	2.7	3.5	3.9	3.0	4.0	3.6	3.3
Subject Area Teachers:	% existence[a]	110	97	100	85	96	99	100	98
	% irregular[b]	9	3	7	0	26	2	1	9
	Meeting frequency[c]	4.3	4.2	3.2	3.9	3.4	3.7	4.8	3.5
Year Level Teachers:	% existence[a]	64	75	97	100	65	93	68	88
	% irregular[b]	57	56	20	23	50	53	43	31
	Meeting frequency[c]	4.0	2.7	3.0	3.4	2.8	2.9	1.7	2.9
Senior Staff:	% existence[a]	100	100	93	100	89	100	97	97
	% irregular[b]	0	2	25	8	15	14	1	20
	Meeting frequency[c]	4.4	4.4	4.7	4.5	4.3	3.9	4.8	4.5

a Percentage of responding schools which indicated that a formal group did exist.

b Percentage of those schools which indicated that a formal group existed but which also indicated that it met 'when needed'.

c Mean value for schools where formal group met on a scale.
1 = once per year
2 = once per term
3 = once per month
4 = once per fortnight
5 = once per week.

curriculum matters or expenditure policy though in a slightly larger proportion of schools advice was provided on extracurricular activities. In general parents associations as structures did not appear to directly influence school policy in the areas considered.

The majority of secondary schools reported that they had a students representative council or similar body. As expected there was no involvement reported in the appointment of teaching or non-teaching staff and virtually none in policy regarding expenditure. Such bodies were reported as providing advice on the range and type of extracurricular activities but only occasionally was it indicated that they were involved in determining the range and balance of the school curriculum. Student councils were apparently more widely accepted structures in secondary than primary schools but the influence they exerted over resource related issues was relatively small. In more general terms, it should not be expected that these bodies would provide the only means through which student bodies could be involved in processes which helped them learn about the process of making decisions. For example, planning of work programs in particular subjects might provide an alternative means of achieving this.

Professional Structures

Information derived from responses by schools concerning the existence and frequency of meeting of the listed professional policy making structures has been recorded in Table 4.6. The three structures which existed in most schools and met regularly were 'whole staff meetings', 'subject area teachers' and 'senior staff'. It would appear that staff meetings were generally held about once per fortnight, though in Western Australian and New South Wales schools such meetings occurred only about once per month. Subject area teachers met about once per fortnight in most schools but on a weekly basis in Western Australia and less frequently in Victoria, Queensland and Tasmania. Senior staff held meetings with a frequency which varied between once per fortnight and once per week. A majority of schools in States other than New South Wales and Western Australia reported the existence of a school-wide curriculum committee but in a number of schools (though not a majority) this committee met when needed. Taking the figures for the existence of such a structure in conjunction with the proportion of schools in which such a body was reported as meeting regularly, it would appear that school-wide curriculum committees were more important structures in the Australian Capital Territory, and in Victorian secondary schools than in other systems. The percentage of schools with a regular curriculum committee in these systems was significantly greater than the percentage of such systems in Australia as a whole (37 per cent). In Western Australia the percentage (11 per cent) was significantly less. Where regular meetings were indicated the frequency of meeting ranged between once per month and once per fortnight. Meetings of teachers in a given year level were not reported in all schools though most reported some structure of this type. In a majority of schools in States

other than Victoria and Tasmania most of these meetings were held when needed. Some 78 per cent of schools in Victoria had regular meetings of teachers at a given year level. The corresponding figure for Australia as a whole was 48 per cent. Where year level teachers met regularly the frequency was indicated as about once per month but was as high as once per fortnight in the Australian Capital Territory and as low as once per term in Western Australia.

Data concerning the existence of and the frequency of meeting of given structures do not provide important information about the composition of, or the authority vested in, these structures. That would be another study. From these data it would appear on first inspection that in the schools of some systems (such as Victorian high schools) structures have been created to provide horizontal co-ordination across year levels and overall co-ordination of curricula whereas the schools of other systems (such as Western Australia) have placed more emphasis on structures which co-ordinate within subject areas. Whichever emphasis is appropriate depends upon the other structures which exist within the school and the congruence of those structures with the values and philosophy of the school.

Two main observations could be made with respect to the results presented above. The first concerns the different pattern between primary and secondary schools. In primary schools the main co-ordinating structures concerned year levels with relatively less emphasis on structures which co-ordinated across year levels in subject areas or across the curriculum as a whole. School visits suggested that where those structures did not exist or met infrequently these forms of co-ordination were exercised by the principal. In secondary schools, apart from staff meetings and senior staff meetings, the most predominant co-ordinating structure was the subject department. Just as it was argued above that the structures in primary schools had derived from the traditions of that sector of education but were changing in response to new demands, so the prominence of the subject department could be seen to be derived from the academic origins of secondary schools.[17] Yet the roles of secondary schools have also broadened. Broader aspects of cognitive development are now emphasized and most schools accept that they should contribute to a student's general welfare as well as his academic growth. In some systems structures involving year level teachers have evolved to provide for continuing examination the whole curriculum experienced by students in any year. Moreover, school-wide curriculum committees have evolved to examine the nature of the schools program in total. Given that secondary schools were generally larger and the programs they offered were more complex than primary schools the structures for policy formulation were probably more important. Large size and complex

---

17 For an extended discussion of the emergence of government secondary education in Australia see Bessant (1972).

Table 4.7 Factor Analysis of Policy Areas Items from the School Questionnaire - Government Secondary Schools

Policy area	Factor loadings 1	2	3	4
General school curriculum objectives			78	
The range and balance of the curriculum structure at each Year level			53	
The content of each subject area	-78			
The methods of instruction	-76			
Policy on the expenditure of some government grants			-59	
Selection of new books and materials	(-42)			-53
The form of internal assessment of particular year levels				-77
Homework policy				56
The allocation of teachers to particular classes within subject levels	-56			
The allocation of non-teaching duties to teachers		-69		
Range and type of extra-curricular activities		-80		
The allocation of duties to teacher aides				-49
Eigen values	2.37	1.38	1.32	1.20
% variance	19.8	11.5	11.0	10.0

Note: Decimal points have been dropped and factor loadings less than 0.40 have been omitted.

structure would prevent a total reliance on informal co-ordination being vested in a principal. In a subsequent section the influence of the training of secondary teachers on expectations of school governance will be considered.

The second main observation regarding data concerning professional structures in schools concerns the differences between States. There were differences in the proportion of schools reporting 'year level meetings' and 'school-wide curriculum committees' and in the frequency with which those bodies met. It appeared that they were most important in Victoria. Curriculum committees were least important in Western Australia and year level meetings were least important in the Australian Capital Territory. Such differences may simply have reflected different emphasis on various goals of schooling or they may have reflected differences in the rate at which new structures had been evolved to fulfill new roles.

The Locus of Decision Making

As was reported in the discussion of policy formulation in primary schools an attempt was made to obtain from respondents information about who determined policy in certain areas. Details of the question and its coding were discussed in that section.

In the case of secondary schools a factor analysis suggested a different clustering of policy areas from that obtained from primary school data. As shown in Table 4.7

Table 4.8 Levels at Which Decisions Were Made in Government Secondary Schools (Survey Sample, 1979)

	ACT	NSW	Vic. High	Vic. Tech	Qld	SA	WA	Tas.
Teaching								
Subject Content	6.0 (6)	5.9 (6)	6.0 (6)	6.0 (6)	5.7 (6)	6.0 (6)	5.8 (6)	5.9 (6)
Instructional Methods	6.5 (7)	6.0 (6)	7.8 (8)	6.5 (6)	6.4 (8)	6.4 (6)	6.8 (6)	6.2 (6)
Allocation of Teachers	5.4 (5)	5.0 (5)	2.9 (2)	5.2 (6)	2.0 (2)	2.4 (6)	2.3 (2)	4.9 (5)
Non-Teaching								
Allocation of Non-Teaching Duties	2.0 (2)	1.8 (2)	1.9 (2)	1.9 (2)	1.8 (2)	2.1 (2)	1.6 (2)	1.9 (2)
Extra-Curricula Activities	2.8 (3)	3.0 (3)	2.9 (3)	2.9 (3)	3.0 (3)	3.0 (3)	2.8 (3)	.0 (3)
Broad Policy								
General Curriculum Objectives	3.2 (3)	2.7 (3)	2.9 (3)	2.5 (3)	2.3 (2)	2.7 (3)	2.5 (2)	(3)
Curriculum Range/Balance	2.6 (2)	2.2 (2)	2.7 (3)	2.9 (3)	2.4 (2)	2.4 (2)	2.3 (2)	2.6 (3)
Policy on Expenditure	2.4 (2)	1.8 (2)	2.3 (2)	1.9 (2)	2.2 (2)	2.5 (2)	2.2 (2)	2.2 (2)
Administration								
Selection of Books	6.4 (6)	5.6 (6)	6.0 (6)	6.0 (6)	6.0 (6)	6.0 (6)	5.8 (6)	6.0 (6)
Internal Assessment	5.5 (6)	2.9 (2)	3.1 (3)	3.6 (3)	4.3 (6)	3.2 (3)	4.8 (6)	5.9 (6)
Homework Policy	3.4 (3)	3.0 (3)	3.4 (3)	2.9 (2/6)	2.9 (3)	2.8 (3)	3.0 (3)	2.9 (3)
Teacher-Aides	1.9 (2)	1.7 (2)	2.4 (2)	4.9 (5)	2.1 (2)	2.0 (2)	5.0 (5)	2.2 (2)

Note: Median values have been recorded but the mode has been shown in parentheses. The code used was as follows:

1 = the principal alone,
2 = the principal and senior staff,
3 = the principal and whole staff,
4 = the principal and individual tables,
5 = the head of department alone,
6 = the head of department and his staff,
7 = the head of department and individual teachers, and
8 = the individual teacher.

these were four factors with eigen values greater than one. The pattern of factor loadings was rather more clear than had been obtained from the primary schools analysis though it still seemed preferable to report results from each item than to form composite scales. The four factors seemed to be best characterized as concerning:

1 teaching issues;
2 extracurricular program;
3 general curriculum policy; and
4 administrative matters.

Only one item loaded significantly on more than one factor: that concerning the selection of books and equipment. It was both a subject area issue and an administrative matter.

Data relevant to these items have been recorded in Table 4.8. The same types of statistic as were used in the discussion of primary schools have been shown. Three items were concerned with teaching issues: subject content, instructional methods, and the allocation of teachers. Subject content was uniformly a matter determined by the head of department and his staff. Generally instructional methods were determined at this level though in the case of Victoria this matter tended to be the prerogative of the individual teacher. An interesting division occurred between four systems in which decisions concerning the allocation of teachers to classes were taken most commonly by the head of department and four others where this matter was commonly decided by the principal and senior staff. Across all systems non-teaching matters were decided either by the principal and senior staff (the allocation of non-teaching duties) or the principal and staff (extracurricular activities).

Among the broad policy issues matters relating to expenditure were most commonly decided by the principal and senior staff in all systems. General objectives and curriculum range and balance were most often decided collectively by the principal and the whole staff but with a greater tendency for these to be the province of the principal and senior staff in the schools of Queensland and Western Australia.

Among the administrative matters listed the selection of books and equipment was reported as being most commonly decided by the head of department and his staff. Similarly homework policy was commonly decided by the principal and whole staff across all systems. In the two remaining administrative matters there were differences between States. Schools in some systems reported that the form of internal assessment was mainly decided by the 'principal and whole staff' while in other systems policy on this issue was reported as being resolved by the 'head of department and his staff'. The allocation of duties to teacher aides was ascribed by the schools of some systems to the principal and senior staff but in others to the heads of department.

In summary, there appeared to be three broad conclusions concerning the reported

locus of decision making in secondary schools. First, both the way in which issues clustered together and the level of responsibility for particular items differed between primary and secondary schools. As part of the discussion of the different emphasis on professional structures attention was drawn to the larger size, and the more complex, or at least more compartmentalized, curricula of secondary schools compared to primary schools. These were offered as potential explanations of differences in emphasis on various structures in secondary and primary schools. It was noted that the traditions of the two sectors had had ramifications for the different organization. In different patterns of results concerning the locus of various types of issues these factors also seemed relevant. Differences in the clusters that emerged together in factor analyses were consistent with the notion that the organization of each type of school was different. Moreover in secondary schools which were large and complex compared to primary schools it would not be expected that a principal could be so closely involved in decisions at a number of levels. In secondary schools considerably more policy issues were reported as being decided at a level which did not involve the principal (often within a subject department).

A further explanation for the different patterns in the locus of responsibility within primary and secondary schools could have been that the bases of authority for the teachers in the two types of school differed. Traditionally secondary school teachers have studied extensively in a particular discipline before training to be teachers. In part they drew their authority from their expertise in their special discipline. principals, as secondary school teachers, would be aware of this limit to their authority in subject fields in which they could claim no formal expertise. Thus they would be reluctant to become directly involved in specialized policy matters. By contrast primary school teachers have studied a basically common course of study prior to commencing teaching. Their authority is less specialized and more based upon their skills as a classroom teacher over the whole curriculum. Consequently a principal of a primary school would feel less of a barrier to his becoming involved in detailed policy matters. This does not suggest that the role of the principal of secondary school is less important than that of a primary school principal but rather that the influence of a secondary school principal would usually have to be exercised through other means.

Secondly, the schools within a given system gave sufficiently similar responses to each other to suggest that some general practices prevailed in each system despite the presence of schools which appeared to deviate from the most common practice. It is important to recognize that the way decisions were taken in schools would also be influenced by factors outside schools. The requirements of education departments regarding the functions of principals and heads of departments, and the types of time allowances specified for different positions would both influence the locus of responsibility within schools. So also would the way in which curriculum materials were

provided for schools and a range of other sources of information and advice provided to schools from state education authorities. Thirdly, there were some complex differences between systems in a few items which appeared to reflect the relative strength of the subject department vis a vis other policy-formulation structures. This in turn probably reflects the ways in which curricula are structured around discipline or integrated frameworks. One should not be drawn to hasty conclusions about what is an appropriate degree of devolution of authority within a school given that the issue will in part depend on the broad conception of curriculum which is adopted. Sturman (1982) has explored the issue of the congruence and conflict between certain organizational features of schools and the general curriculum objectives which they might pursue.

Teaching Structures

Other than in a one room one teacher rural school, it is necessary for there to be some organizational structures within which the schools various teaching functions can be organized. Even a single teacher rural school probably does not function as an undifferentiated group but subdivides into distinct groups of pupils for particular functions. Teaching in the sense used here refers not only to instruction in cognitive areas but also incorporates a consideration of the social and affective development of students. The teaching structures adopted in schools would reflect the sorts of broad educational goals of a school in relation to the constraints of resources available and local circumstance. In many cases the structures adopted would be such as to make the best of the available options rather than being the ideal structure. This section is concerned with these issues in so far as they relate to the ways in which students are grouped in schools and the ways in which teachers are allocated to those groups of students.

The section begins by examining the prevalence of 'sub-schools' or 'mini-schools' in the sample surveyed. It then considers certain patterns in the grouping of students; in particular single age and multiple age groupings, the use of ability as a criterion for grouping students and the extent to which groups are fixed or fluid. Finally it considers the structures through which the talents of teachers are made available to the groups of students (by team teaching, by specialist teaching, etc.).

Sub-schools or Mini-schools

Chapter 2 contained a discussion of some issues relevant to the effects of school size on educational processes. Sub-schools provided one means of an initial grouping of students and teachers so that smaller administrative units can be formed. Among the arguments advanced for such a practice is that it enables teachers to know better the students in the particular sub-school and that facilitates more effective communication and planning

between teachers. In this argument the underlying consideration of pastoral care was probably more important than that of academic achievement though there is usually a suggestion that the two issues interact. These considerations appear to have been most significant in some of the secondary schools described by Sturman (1982). This type of argument is not the only basis on which sub-schools are supported. In some instances the pre-eminent concern appears to have been to provide for diversity in the programs available in the school so that a series of different sub-schools offer different programs based on different philosophies of education. Under such a structure different student aptitudes can be accommodated within a neighbourhood school. One school included in a recent study by Piper (1980) had formed four sub-schools based on the premise of offering alternative approaches to schooling. Another rationale for sub-schools concerns the particular educational needs of students in certain age ranges and leads to the suggestion that a sub-school is oriented to a particular age range. Perhaps the most common example of this approach to sub-schools is the separation of an infant section and a primary section in a primary school based on the premise that the type of program in an infant section (say Year K) might not necessarily be the most appropriate for older students in the primary section of the school. More recently and less frequently some secondary schools have adopted sub-schools for the first year of secondary school, for the middle years and for the post-compulsory years. At Lawson High School (see Sturman, 1982) this structure enabled a great deal of attention to be given to students in transition from primary school and considerable flexibility in designing programs for individual students in the middle years.

In summary it is important to recognize that sub-schools may be created for a number of different reasons or for combinations of these reasons in differing proportions. Consequently the general term can cover a range of different modes of operation. Broadly it is possible to distinguish two types of sub-school: vertical sub-schools which include students from most year levels in a school and horizontal sub-schools which separate particular clusters of year levels. However, even these two types of sub-school can each include a wide range of different patterns of operation.

Overall some 29 per cent of primary schools and 21 per cent of secondary schools in the survey reported the existence of some type of 'semi-autonomous sub-school'. However many of these would not have been sub-schools by conventional agreement. Most primary school principals who reported the existence of sub-schools were referring to the fact that to some extent the infant section operated separately from the primary section. While such might not be considered a sub-school in the newest sense of that term it certainly meets most of criteria for a semi-autonomous unit. Many of the secondary school principals who reported the existence of semi-autonomous sub-schools were including in that definition relatively small units established to provide alternative studies concerned with the transition from school to work.

Grouping of Students

There was a number of ways in which students could be grouped within a school for teaching purposes based on different combinations of choice along several dimensions. The first dimension along which a choice could be made concerned the nominal year levels of the students. Basically the choice was between grouping students of the one year level together or grouping students of different year levels in any given teaching group. In the terms used by Yates (1971) the former is often described as 'horizontal grouping' and the latter as 'vertical grouping'. More recently the term 'composite class' has been used interchangeably with 'vertical grouping'. Choice on this dimension could be limited by circumstance and at the extreme a school with fewer than seven teachers but spanning seven year levels must have some form of vertical grouping. In a less extreme form choice on this dimension could be circumscribed by a school having an uneven distribution of enrolments across year levels and a limited number of teachers made available in relation to the total enrolment. Historically many secondary schools have made use of vertical grouping through a 'house' system for pastoral care and sports management while relying on horizontal grouping for other school teaching functions. An important element in the arguments advanced in support of vertical grouping is that by providing a range of ages in each group students learn both socially and intellectually from each other in the manner attributed to small rural schools. It is also claimed that such structures impel more individual attention to students who can less easily be treated as part of one group at a nominated level. Proponents of horizontal grouping maintain that the needs of pupils of different ages are distinct and require appropriate educational programs and that, especially in subject areas which are sequential, a wide age range in one class increases the problems of managing learning in classrooms. Of course it is possible for a school to use vertical grouping for some activities and horizontal grouping for other activities, or to use vertical grouping within broad horizontal bands or other combinations of the two approaches.

The second dimension along which a choice about grouping policies could be made related to the abilities of students. At its simplest level this related to a choice between forming classes which were heterogeneous with respect to ability or classes which were homogeneous with respect to ability. Proponents of ability grouping argue that such a policy enables more appropriate programs to be devised for students of higher ability and those of lower ability. As an extension of this argument it is sometimes claimed that standards of achievement are higher when a policy of grouping according to ability is followed than when heterogeneous groups are formed. Opponents of ability grouping argue that there is little evidence that achievement is lower in mixed ability groups, that students differ from each other in a number of important respects aside from academic ability, that ability is multi-faceted rather than a general characteristic, and that it is desirable for social learning that classes should include a full range of aptitudes. It is

also argued that in practice separating lower ability students from their peers has a deleterious impact on their aspiration. In spite of a large number of research studies having been conducted in this area policy is still debated with vigour and policy guidelines are not clear. Partly this appears to be because the reasons for adopting one policy in preference to another are not governed by just a single criterion. As Shipman (1979:138) argues 'different criteria for success of a policy would apply if the policy was intended to maximize attainment than if it was intended to promote social mixing or equality of opportunity'. Even within the criterion of academic achievement there is not a uniform pattern among research results so that different groups can refer to different research studies to support a particular argument. It is not appropriate here to review this research evidence in detail but rather to point to the problem of expecting definite guidance from the literature in terms of a school policy.

Under the general title of ability grouping are several policies usually described as streaming, setting or banding. 'Streaming' refers to students being in groups determined on the basis of their ability for all or most of their lessons. 'Setting' takes into account the differences in students aptitudes in different subject areas and defines groups on the basis of those specific aptitudes for those subject areas. Hence, in principle, students might be in different groups for different subjects under such a system. As used in this report 'banding' refers to a compromise between having mixed ability groups and grouping according to ability for every class. Such a system defines a few broad ability bands and forms mixed ability groups within each of those bands. In essence each of these practices results in classes which are more homogeneous with respect to ability than if ability was not taken into account.

The discussion above has alluded to a third dimension of choice with respect to the formation of class groups. Those groups could be either 'fixed' or 'fluid'. A 'fixed' group would be one whose composition remained constant over the whole of a teaching cycle for all of the class activities. Fluid groupings would operate where classes of different composition were formed for different activities or subjects. Some secondary schools favour fixed groupings for younger students so that aspects of personal development can be nurtured but use more fluid groupings for older students where academic development receives a higher priority.

These three dimensions could in principle be considered as being independent of each other. Consequently there would appear to be a wide range of possible policies from which a school might choose. These three dimensions have been represented in Figure 4.2. Even this diagram does not represent the full range of choice available to schools. Some schools, especially primary schools, group students either within year levels or across year levels on social grounds. This practice, sometimes called 'compatibility grouping', aims to achieve an appropriate mix of personal characteristics in a class such that students would be able to learn from each other as well as from a

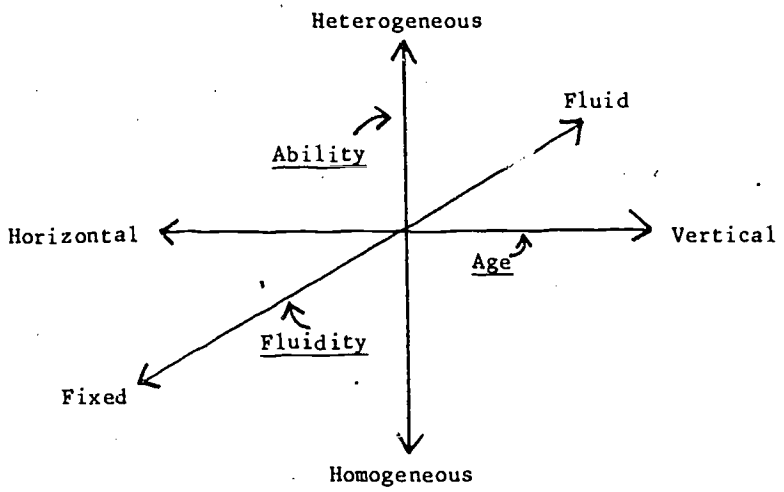


Figure 4.2 Dimensions of School Organization of Classes

teacher. In a sense this practice involves replacing the ability axis in Figure 4.2 with an axis concerned with personality characteristics, one of which might be ability. At Mansfield Primary School (see Sturman, 1982) these factors were predominant in structuring classes. However, because the personality characteristics which are considered are so varied it does not seem possible to adequately include this dimension in a diagram such as that in Figure 4.2.

Student Grouping in Primary Schools

Two of the three dimensions mentioned above provide the basis for the analysis of groupings in primary schools presented below. First the structure in relation to year levels is considered and secondly the use of ability grouping is discussed. No information was gathered regarding the fluidity of groups though after visiting a number of primary schools it seemed that there was rather more fluidity in teaching groups than was commonly believed.

The data contained in Table 4.9 suggested that the traditional form of primary school organization of classes containing students from one year level was still the dominant mode. Vertical grouping, or composite classes, appeared to have been seldom a policy adopted across a whole school, but in many systems (notably the Victorian and Tasmanian systems and the Full Primary schools of New Zealand) a majority of schools reported that some composite groups were used even when schools with fewer than seven teachers were excluded from the analysis. The observation that a number of schools reported some use of vertical grouping was interesting. It has been suggested in a preceding discussion that this may have been due to reasons concerned with the schools program or because of the constraints imposed by the teaching resources available.

Table 4.9 Percentage of Primary Schools indicating Various forms of Vertical Grouping (Survey Sample, 1979)

System	Sample primary schools Code[a]					Primary schools with more than seven teachers Code[a]				
	1	2	3	4	5	1	2	3	4	5
ACT	43	18	21	7	11	46	19	23	8	4
NSW	58	22	12	7	1	59	21	11	8	0
Vic.	24	34	20	12	10	26	36	20	11	7
Qld	56	16	17	2	9	62	20	14	3	0
SA	33	24	19	15	10	34	26	23	12	5
WA	26	31	11	26	6	30	33	9	28	0
Tas.	10	45	26	8	11	10	52	24	9	5
NZ (full)	8	28	20	0	44	12	44	31	0	12
NZ (cont)	44	15	22	4	15	48	16	24	4	8
NZ (inter)	79	0	5	5	10	79	0	5	5	10

[a] Code: 1 = Students grouped in single year groups (Horizontal grouping).
2 = In some age groups all students are in year levels but in other age ranges both horizontal and vertical groups are used.
3 = Students in some age groups are in year levels but other ages vertical groups are used.
4 = Some students over all ages are grouped in year levels but other students over all ages are in vertical groups.
5 = All classes contain a wide range of ages (Vertical groups).

Some of the differences between systems could reflect differences in the distribution of school size. In systems with a greater proportion of large schools (e.g. Queensland) it might be expected that the need for composite classes in response to resource constraints would arise less frequently. Within these data there was evidence of a tendency for the use of composite classes to be less frequently reported from systems in which there was a greater proportion of large schools. (It is important to note that this analysis has been based on a probability sample of schools.) However, it did appear that there were also differences reported from schools in different systems which were not explicable in terms of the distribution of school size.

The data in Table 4.9 also suggested that where vertical grouping was reported it usually did not apply to all classes in a school. It therefore was of interest to determine at what age levels vertical groups were most frequently used.

Table 4.10 contains data relevant to a consideration of the age levels in which vertical grouping was most often used in Australian primary schools. In the responses to this question there appeared to be some uncertainty as to the meaning of the items. As a result the information was checked against that provided on Education Department records, but it is possible that some ambiguous data remained. For this reason the data in Table 4.10 should be used to provide a very broad indication of this aspect of grouping practices in primary schools. Schools recorded as giving a positive response to alternative '4' or '5' could be taken as an indication of the extent of some formal vertical

Table 4.10 Extent of Vertical Grouping at Various Age Levels in Australian Government Schools (Percentages in each Category have been Recorded)

System	Years K-2 Code[a]					Years 3-6/7 Code[a]				
	1	2	3	4	5	1	2	3	4	5
ACT	46	14	11	14	14	29	29	11	18	14
NSW	67	9	0	19	5	42	21	0	35	2
Vic.	21	23	3	40	13	7	35	5	37	15
Qld	67	5	0	16	12	37	23	2	29	9
SA	11	14	0	38	36	21	23	0	41	14
WA	46	8	4	37	4	24	12	7	53	4
Tas.	13	3	12	46	26	24	5	9	49	13

[a] Code: 1 = No composite groupings.
2 = For some students for some of their classes.
3 = For all students for some of their classes.
4 = For some students for all of their classes.
5 = For all students for all of their classes.

grouping in that section of the school and those recorded under category '1' could be taken as an indication that no vertical grouping was used. Positive responses to categories '2' or '3' are more difficult to interpret in that 'some of their classes' could refer to a very small proportion of the total week for special activities. However. some schools mentioned the activities for which students were vertically grouped. One school mentioned 'spelling, reading, mathematics and physical education'. A school discussed by Sturman (1982) - Frankiin - had vertical groups in its reading program in 1979. Hence it should not be assumed that such responses necessarily applied only to 'fringe areas'. Even if only categories '4' and '5' were considered to reflect the operation of composite classes in any thorough going sense it would appear that composite classes occurred in many primary schools. The data also suggested that there was a tendency for composite classes to be slightly more common in the upper years of primary schooling than in Years

Table 4.11 Extent of Vertical Grouping at Various Age Levels in New Zealand Government Primary Schools (Percentages in each Category have been Recorded)

School type	Years K-2 Code[a]					Years 3-5 Code[a]					Years 6, 7 Code[a]				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Full Primary	20	40	0	36	40	8	0	4	36	52	12	4	4	28	52
Contributing	52	11	7	7	22	44	15	11	11	18	n.a.				
Intermediate	n.a.					n.a.					75	0	5	5	16

[a] Code: 1 = No composite groupings.
2 = For some students for some of their classes.
3 = For all students for some of their classes.
4 = For some students for all of their classes.
5 = For all students for all of their classes.

Note: Year levels are the Australian equivalent designation.

K-2, though in South Australia and Tasmania composite groups would appear to have been more frequently used in the younger than the older age range.

For New Zealand primary schools different groupings of year levels were used in the analogous question about vertical grouping so as to correspond to differences in the organization of primary schooling. Those data have been recorded in Table 4.11. Consistent with the data in Table 4.9 it would appear that vertical grouping was common in full primary schools, was uncommon in intermediate schools, and was used to some extent at least in about half of the contributing primary schools. In full and contributing primary schools vertical grouping was just a little more prevalent in Years 3 to 5 than in Years K to 2. That practice was consistent with the views expressed at Marsh Primary School (Sturman, 1982) that vertical grouping was more suited to the needs of the older students in a primary school.

As an extension of these analyses the structure of composite classes in Victorian and Queensland primary schools was investigated using information supplied by schools to education departments in 1979. It will be recalled that Victorian primary schools generally contained a large proportion of vertically grouped classes and Queensland primary schools a small proportion of such classes compared to other systems of schools. This difference between Queensland and Victoria was statistically significant. Details have been provided in Table 4.12 and 4.13. In both systems the majority of composite classes were simple composites containing students from two year levels only. Within Victoria simple composite classes occurred more frequently in the younger year levels and the Years 5 and 6 but less frequently in Years 3 and 4. Years 6 and 7 was the section of schools in which simple composite classes were most frequently reported in Queensland. Most simple composite classes in both these systems had numbers from each of the year levels equally balanced rather than just a small number of students from one year level in a class comprised mainly of students from a second year level. Complex composite classes were defined as those containing students from three or more year levels. These not only occurred in very small schools but some schools of moderate enrolments. Several schools in Victoria reported composite classes spanning Years 4 to 6 which did not appear to reflect resource constraints but rather a conscious choice of vertical grouping for other reasons. In three cases there were five or six vertically grouped classes of students from Years 4 to 6. A few schools with more than ten teachers had all or most of the students in vertical groups. A few schools also formed complex composites spanning Years K-2. By contrast, in Queensland almost all the schools with complex composite classes were small schools containing fewer than six teachers.

The data in Tables 4.12 and 4.13 also extend our knowledge of the use of vertical grouping in these two systems. Among those Victorian schools reporting composite

classes it appeared that about one-third of all classes were vertically grouped whether or not small schools were excluded. In Queensland schools reporting vertical grouping about one third of the classes were composite but if small schools were excluded only one class in 12 was a composite. Over all classes in Victorian primary schools about 23 per cent were composite but in Queensland only about 8 per cent of classes were composite.

One further comment is warranted concerning a particular practice in two small schools. Those schools had a principal who was expected to sustain a full teaching load and yet attend to school management. In these schools the compromise was to involve the principal in a team teaching role with a composite class so that he could more readily attend to any urgent school matters which arose.

It has been mentioned above that vertical groups could be formed as a school policy related to an educational philosophy or as a pragmatic response to resource constraints. From comments made in the space allocated for schools to outline reasons for the formation of composite classes resource constraints were the most frequently cited motivating factor. Two typical comments were:

- One basic reason - too many children for the school's ratio of one child for every 30-34 children - a numbers game.
- Composite grades operate at K/1, 1/2 and 3/4 levels because of enrolment patterns.

Yet there were schools which offered alternative bases for adopting such structures, for example:

1 the need for children to develop social skills,

2 an opportunity to break up into smaller groups and so offer new opportunities to 'problem children', and

3 inbuilt cross tutoring.

One school offered an interesting illustration of interaction of resource constraints and educational rationale as the basis for its decision to have vertical groups.

- Numbers did not allow 'straight grades' in the total school.
- Teachers were interested in taking composite classes.
- Discipline in Year 6 improved in composite class structure. Pupil behavior improved in all composite classes over previous years.
- Administration: it was easier to maintain equity in class sizes.

The adoption of vertical grouping by a school was a resource allocation issue in at least two respects. First, it could represent a response to resource constraints where the number of teachers allocated to a school has been based on aggregate enrolments but where the enrolment distribution does not permit all classes to be of one year level. This becomes particularly important if the principle that there should be equity in class size is widely accepted. The policy implication then concerns the extent to which enrolment

Table 4.12 Some Aspects of the Structure of Composite Classes in Victorian Primary Schools

Simple composites[a]						Complex composites[b] (frequencies in each cell have been recorded)					
Structure in year levels	No. classes[d]	No. schools[e]	Composition[c] A	B	C	Lower year level	Upper year level 2	3	4	5	6
K-1	34	23	8	22	4	K	5	1	0	0	0
1-2	22	22	8	9	5	1		2	0	3[f]	1
2-3	26	19	6	15	5	2			3	0	1
3-4	16	15	2	10	4	3				3	2
4-5	18	15	3	9	6	4					23
5-6	25	22	2	17	6						

For schools reporting composite classes:

(i) Average percentage of classes which are composite = 34

(ii) Average percentage of classes which are composite (excluding schools with fewer than 7 teachers) = 30

a Defined as classes containing students from two year levels only.

b Defined as classes with students from three or more year levels. The data in the table indicate the number of classes recorded in the sample with the Year level structure specified by the designated row and column of the matrix. For example there were 5 classes containing students from Years K to 2 and 23 classes containing students from Years 4 to 6.

c A: denotes classes where the ratio of younger to older students is more than 2:1
B: denotes classes where the ratio or younger to older students is between 2:1 and 1:2
C: denotes classes where the ratio of younger to older students is less than 1:2

d The numbers of classes listed are the numbers of simple composite classes recorded for a disproportionate sample of 55 schools. In those schools there were approximately 553 single year classes (75%), 141 simple composite classes (19%) and 44 complex classes (6%). When allowance was made for the over sample of small schools the population estimate would become 76 per cent single year classes, 18 per cent simple composite classes and 5 per cent complex composite classes. The number of classes was evenly distributed across year levels so that the raw frequencies provide an indication of the way the composite classes were distributed.

e As indicated above 55 schools were included in the analysis.

f Includes one class taught by team teaching with two teachers.

Table 4.13 Some Aspects of the Structure of Composite Classes in Queensland Primary Schools

Simple composites[a]						Complex composites[b] (frequencies in each cell have been recorded)					
Structure in year levels	No. classes[d]	No. schools[e]	Composition[c] A	B	C	Lower year level	Upper year level 3	4	5	6	7
1-2	7	7	0	6	1	1	3				2
2-3	6	6	2	4	0	2					
3-4	9	9	1	7	1	3			1		
4-5	8	8	2	6	0	4				2[f]	4[f]
5-6	6	6	1	5	0	5					1
6-7	15	15	2	11	2						

For schools reporting composite classes:

(i) Average percentage of classes which are composite = 8

(ii) Average percentage of classes which are composite (excluding schools with fewer than 7 teachers) = 31

a Defined as classes containing students from two year levels only.

b Defined as classes with students from three or more year levels. The data in the table indicate the number of classes recorded in the sample with Year level structure specified by the designated row and column of the matrix. For example there were 3 classes containing students from Years 1 to 3 and 2 classes with students from Years 1 to 7.

c A: denotes classes where the ratio of younger to older students is more than 2:1
B: denotes classes where the ratio or younger to older students is between 2:1 and 1:2
C: denotes classes where the ratio of younger to older students is less than 1:2.

d The numbers of classes listed are the numbers of simple composite classes for a sample of 51 schools. In those schools there were approximately 866 single year level classes (92%), 51 simple composite classes (5%), and 23 complex compoiste classes (3%). The number of classes were evenly distributed across year levels.

e As indicated above 51 schools were included.

f Includes at least one class taught by team teaching with two teachers.

Table 4.14 Percentages of Australian Government Primary Schools Reporting Various Extents of Ability Grouping in Different Age Levels

System	Years K-2 Code[a]				Years 3-6/7 Code[a]			
	1	2	3	4	1	2	3	4
ACT	4	59	30	7	0	72	25	4
NSW	12	46	20	22	11	54	21	14
Vic.	19	62	16	3	18	64	15	3
Qld	25	70	3	3	23	70	2	4
SA	13	82	4	0	9	77	12	1
WA	15	61	19	4	15	61	20	4
Tas.	16	72	12	0	15	55	19	0

[a] Code: 1 = not applicable - only one class at each year level,
2 = all classes are structured so that they contain students with a wide range of abilities,
3 = some classes contain students with a wide range of abilities, others contain students of similar ability, and
4 = all classes are structured so that students of similar ability are grouped together in any one class.

distribution, as well as aggregate enrolments, should be considered when staff are allocated to schools so that schools of reasonable size have a choice between horizontal and vertical grouping. Secondly, vertical grouping could represent the articulation of an educational philosophy in organizational terms. Implicit in this approach is the belief that the available resources of a school can more effectively be used within vertical groups than horizontal groups in pursuit of the school's educational goals. This is a resource utilization issue at school level. Sometimes the organization of classes reflects a combination of these two factors. One further comment should be made at the conclusion of this discussion of vertical grouping. At the beginning of the study it was believed that teaching groups in primary schools would be fixed rather than fluid. Even though no direct quantitative data could be offered at this stage it seemed that there were a significant number of schools which used horizontal grouping for some activities and vertical grouping for other activities. Apparently there was more fluidity in grouping than was first postulated.

The data in Tables 4.14 and 4.15 confirmed the general belief that in the majority of primary schools students were not grouped according to ability even where there was more than one class at a given level. Yet there were a few schools, notably in New South Wales which reported that 'classes were structured so that students of similar ability were grouped together in any one class'. There were a few more schools in some systems reporting that some classes contained students of similar ability and some which were heterogeneous with respect to ability. Generally the majority practice at both the younger and older year levels was for heterogeneous ability

Table 4.15 Percentages of New Zealand Government Primary Schools Reporting Various Extents of Ability Grouping at Various Age Levels

School Type	Years K-2 Code[a]				Years 3-5 Code[a]				Years 6, 7 Code[a]			
	1	2	3	4	1	2	3	4	1	2	3	4
Full Primary	30	48	17	4	17	54	25	4	17	54	29	0
Contributing	15	54	27	4	11	56	33	0	n.a.			
Intermediate	n.a.				n.a.				0	79	21	0

[a] Code: 1 = not applicable - only one class at each year level,
2 = all classes are structured so that they contain students with a wide range of abilities,
3 = some classes contain students with a wide range of abilities, others contain students of similar ability, and
4 = all classes are structured so that students of similar ability are grouped together in any one class.

Note: Year levels are the Australian equivalent designation.

groups. Of those schools which reported ability grouping some two-thirds indicated that the sizes of classes varied according to ability. In the majority of these cases the lower ability students were in smaller classes.

Grouping of Students in Secondary Schools

In examining the patterns of grouping students in secondary school the same dimensions as were discussed in relation to primary schools have been used as a framework. The discussion should be prefaced by the remark that it would be expected that groupings of students in secondary schools might be more fluid than in primary schools, though there is little direct evidence to support this assumption.

Based on the evidence in Table 4.16 it would appear that the use of vertical groups of students is less extensive in secondary schools than was the case in primary schools. The traditional form of organization of secondary schools based on year levels was the predominant mode reported. A few schools reported vertical grouping being used in conjunction with a modular curriculum structure. One school's response indicated that in some age ranges all students were grouped in year levels but in other age ranges both horizontal and vertical groupings were used. In that school, Year 7 was a horizontal group but in Years 8, 9, and 10 most classes were composite with a few, especially in mathematics, containing only one year level. At Year 7 a common course was offered but in Years 8, 9, and 10 students followed individually structured programs based on semester course units. The principal identified the major factors influencing the adoption of this policy as follows:

- to create a structure to allow the widest possible subject choice;
- to allow students to proceed at their most appropriate rate in each subject.

Table 4.16 Vertical Grouping in Government Secondary Schools (Percentages in Each Category have been Recorded)

System	Category[a]				
	1	2	3	4	5
ACT	73	9	0	18	0
NSW	88	12	0	0	0
Vic.	75	16	7	2	0
Qld	94	3	0	3	0
SA	98	0	0	2	0
WA	100	0	0	0	0
Tas.	84	16	0	0	0

[a] Code: 1 = No composite groupings.
2 = For some students for some of their classes.
3 = For all students for some of their classes.
4 = For some students for all of their classes.
5 = For all students for all of their classes.

A similar pattern arising from similar considerations was reported at Lawson High School as described in detail by Sturman (1982). The practice raises important resource issues as it provided scope for structuring courses around the needs of individual students, and widening student choice within existing resource levels. However, as Sturman notes it did require the support of a careful system of pastoral care and guidance.

The data in Table 4.17 suggest that vertical grouping may be applied more frequently in Years 9 and 10 than in either Years 7 and 8 or Years 11 and 12 in the systems where it is applied at all. Additional considerations are relevant at this point. First, field observations suggested that where vertical grouping was used in secondary schools it most commonly embraced Years 8, 9, and 10 so that the particular year groupings in Table 4.17 would mask this point. In passing it can be noted that this practice was more frequently reported in the Australian Capital Territory and Victoria than elsewhere. Secondly, no data have been recorded in that table for Years 11 and 12 in the Australian Capital Territory and Tasmania as those years are provided through a system of senior colleges rather than in high schools. However from the responses of senior colleges to a similar questionnaire it could be noted that in the Australian Capital Territory colleges, where courses were structured around term length units, vertical grouping was common. Similarly in Tasmania where a flexible system of levels operated the distinction between Year 11 and Year 12 became less relevant. Such systems are not unlike that described above which embraced Years 8 to 10. The approach offered the advantages of wide choice, flexible structuring and effective resource use at Years 11 and 12. Sturman (1982) has discussed some of the ramifications of these arrangements for Years 11 and 12. In other States those few schools with vertical groups at Years 11 and 12 were either very small or operated an alternative program to the regular classes.

Table 4.17 Extent of Vertical Grouping at Various Age Levels in Government Secondary Schools (Percentages in each Category have been Recorded)

System	Years 7, 8 Category[a]					Years 9, 10 Category[a]					Years 11, 12 Category[a]				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
ACT	73	18	9	0	0	54	36	9	0	0			n.a.		
NSW	84	9	5	2	0	86	12	12	0	0	93	5	2	0	0
Vic.	79	7	12	2	0	71	13	11	0	4	83	12	5	0	0
Qld	97	0	3	0	0	97	0	3	0	0	88	9	3	0	0
SA	95	2	0	2	0	93	2	0	5	0	86	14	0	0	0
WA	97	0	2	0	0	97	0	3	0	0	97	3	0	0	0
Tas.	92	8	0	0	0	80	12	8	0	0			n.a.		

[a] Code: 1 = No composite groupings.
2 = For some students for some of their classes.
3 = For all students for some of their classes.
4 = For some students for all of their classes.
5 = For all students for all of their classes.

Though vertical grouping was less common in secondary schools than primary schools grouping according to ability was apparently more common than in primary schools. Relevant data derived from principals' responses have been recorded in Table 4.18. At Years 11 and 12 the interpretation of such data is uncertain since many classes would have been formed as a result of students' patterns of subject choice and ability clusters would result as an unintended outcome of that process, rather than as a deliberate policy. For the compulsory school years grouping according to ability appeared more common in New South Wales than elsewhere. Generally, ability grouping appeared to be more common in Years 9 and 10 than in Years 7 and 8. In Years 9 and 10 the most common practice was to have ability groups in some classes but not others. There are two interpretations possible for such a response; one is that it reflected a policy of 'banding' as previously discussed and the other is that different policies were adopted in different subject areas. No further data were collected regarding this issue though Sturman (1982) discusses several schools where ability groups were used in mathematics and science but not in English or social science.

From the perspective of resource allocation within a school most of those schools which acknowledged some form of ability grouping indicated that class size varied across ability levels and that generally lower ability students were in smaller classes. Underlying this issue from the perspective of school policy choices is whether attention given differentially to such students is best directed through separate groups or by providing more individual attention within mixed ability groups.

Table 4.18 Percentages of Government Secondary Schools Reporting Various Levels of Ability Grouping in 1979

System	Years 7, 8 Category[a]				Years 9, 10 Category[a]				Years 11, 12 Category[a]			
	1	2	3	4	1	2	3	4	1	2	3	4
ACT	0	18	82	0	0	9	91	0	n.a.			
NSW	0	18	37	45	0	0	62	38	7	0	68	24
Vic.	0	58	39	2	0	42	54	5	5	44	44	7
Qld	0	51	46	3	0	11	86	3	3	33	64	0
SA	0	46	53	0	0	9	88	2	2	19	64	14
WA	0	27	70	3	0	3	86	11	6	33	54	6
Tas.	0	56	40	4	0	4	96	0	n.a.			

[a] Code: 1 = not applicable - only one class at each year level,
2 = all classes are structured so that they contain students with a wide range of abilities,
3 = some classes contain students with a wide range of abilities, others contain students of similar ability, and
4 = all classes are structured so that students of similar ability are grouped together in any one class.

Teachers and Class Groups

As suggested in Chapter 2 a strong tradition in Australian education has been that in primary schools teachers are expected to be generalists with expertise in all areas of the curriculum. An equally strong and related tradition in primary schooling has been the practice of assigning one teacherto one class of students for virtually the whole of the available time in a teaching week. The confluence of these two traditions results in the predominant mode of resource allocation being based on a pattern of one teacher to each class. Such a practice can be strongly supported on the basis of an appeal to the integrated nature of primary education, resulting in an orientation to the development of 'the whole child' and on a need for strong personal relationships between teacher and child to be developed.

Though the above has been and continues to be the dominant mode of resource allocation some important variations do exist. One variation was team teaching: a generic term which encompasses a variety of practices. Lovell (1966:1) defined team teaching as 'two or more teachers having responsibility, working together, for all the teaching of a given group of pupils in some specified area of the curriculum'. Such a definition would include allocating resources so that more than one teacher was in a room with a given group of students at one time. The most common situation where this arrangement could be found would be in the 'open plan' primary schools though it should be noted that not only open space areas were used in this way. Rudd Primary School (Sturman, 1982) had one year level based on this form of team teaching and would have had more if its buildings had been suitable. By contrast, Franklin Primary School (Sturman, 1982) had several open plan areas which it preferred to adapt for single class

Table 4.19 Index[ab] of Use of Multiple Teacher Assignment to Teaching Groups in Australian Government Primary Schools (Percentage in each Category Recorded)

System	Years K-2							Years 3-6/7						
	0	1	2	3	4	5	6	0	1	2	3	4	5	6
ACT	89	0	0	7	4	0	0	75	4	0	14	4	0	4
NSW	95	0	0	5	0	0	0	86	2	5	7	0	0	0
Vic.	84	0	6	8	0	0	2	89	1	5	3	0	0	2
Qld	77	6	8	9	0	0	0	64	9	17	10	0	0	0
SA	69	5	17	9	0	0	0	66	7	10	17	0	0	0
WA	81	7	7	2	0	0	2	77	9	4	4	5	0	0
Tas.	76	4	0	14	4	0	4	82	5	8	0	0	0	5

a Score calculated as Z = Y + 2*X
Where (i) Y is the score for the item:
'The student is taught by team teaching for the majority of lessons.'
(ii) X is the score for the item:
'The student is taught by team teaching (i.e. by more than one teacher in the room at a time) for all lessons'.
The answers were scored on the scale:
Ø = practice does not operate
1 = for some students only
2 = for most students
3 = for all students

b The possible scale is from 0 to 9 but no scores higher than 6 were recorded.

teaching. In Tables 4.19 and 4.20 data have been recorded which indicate the extent of multiple teacher assignment to teaching groups in primary schools in 1979. It would appear that multiple teacher assignment in the sense defined occurred in relatively few schools and where it did occur it applied to some students only. Very rarely was this form of team teaching reported for most students.

The relevance of such an issue to resource deployment within a school relates to perceived effectiveness in the use of the talents of the available teachers. Such a practice, it has been argued, enables the complementary skills of teachers to be linked and provides more than one possible adult model with whom students can identify. In combining teachers with complementary strengths it has been argued that such an arrangement provides for the possibility of a more coherent program than would specialized teaching. It also has been argued that it is more effective if teachers work in conjunction with each other than if they are always isolated in their own classroom. In this respect team teaching can provide a valuable form of staff development as was reported at Pritchard School (Sturman, 1982). These types of arguments need to be balanced against the arguments advanced above in support of one teacher one class and the practical considerations of grouping together teachers who can work compatibly. In one particular circumstance this form of team teaching may have some special resource implications. A principal in a small primary school who has a full teaching load can face

Table 4.20 Index[ab] of Use of Multiple Teacher Assignment to Teaching Groups in New Zealand Government Primary Schools (Percentages in each Category have been Recorded)

System	Years K-2					Years 3-5				Years 6, 7						
	0	1	2	3	4	0	1	2	3	0	1	2	3	4	5	6
Full Primary	92	0	4	0	4	96	0	0	4	92	0	0	4	0	0	4
Contributing	96	0	4	0	0	93	0	4	4	n.a.						
Intermediate	n.a.					n.a.				74	0	16	10	0	0	0

a Score calculated as Z = Y + 2*X
Where (i) Y is the score for the item:
'The student is taught by team teaching for the majority of lessons.'
(ii) X is the score for the item:
'The student is taught by team teaching (i.e. by more than one teacher in the room at a time) for all lessons.'
The answers were scored on the scale:
Ø = practice does not operate
1 = for some students only
2 = for most students
3 = for all students

b The possible scale is from 0 to 9 but no scores higher than 6 were recorded.

Note: Year levels are the Australian equivalent designation.

difficulties in dealing with the school management tasks which may arise during teaching time (for example see Morant Primary School described in Sturman (1982). In several small Queensland schools such a principal was involved in team teaching a composite class so that greater flexibility could be allowed.

Another form of team teaching which might be included in Lovell's definition would be where extensive joint planning of programs took place with small groups of teachers and where classes were occasionally exchanged within those groups. It seems best to describe this practice as 'co-operative teaching'. The survey did not gather data which directly concerned this form of teacher allocation.

The discussion above has concerned two variations to the general practice of organizing primary schools around the pattern of one teacher with one class for the whole week. A third variation is to have teachers who specialize in particular areas come to take a class for particular purposes. One form of this practice which occurred was by the use of specialist teachers in areas such as physical education, art, and music. Generally this is a limited form of provision in that it effects only a small proportion of each student's teaching week. A more extensive form occurs when within a team of teachers each takes responsibility for given sections of the curriculum in a year level or group of year levels. This has been documented in some circumstances as the 'Australian street plan' in which not only do teachers specialize but students move in class groups to specialist rooms. It differs only from the traditional secondary school organization in that the curriculum is subdivided into about three areas rather than many. Such a

Table 4.21 Index[a] of Use of Specialized Teaching in Australian Government Primary Schools (Percentages in each Category have been Recorded)

System	Years K-2				Years 3-6/7			
	0	1	2	3	0	1	2	3
ACT	96	0	0	4	93	4	0	4
NSW	88	7	2	2	70	21	0	9
Vic.	91	7	0	2	96	0	2	2
Qld	90	10	0	0	68	7	9	16
SA	78	13	4	4	88	10	2	0
WA	90	8	2	0	89	9	2	0
Tas.	94	2	0	4	90	2	2	6

[a] Score on the item:
'The student is taught by a number of different teachers for lessons in different subjects.'
The answers have been scored on the following scale:
0 = practice does not operate
1 = for some students only
2 = for most students
3 = For all students

scheme has been primarily supported as a means of efficiently using both personnel and material resources. Less formal provisions for specialist teaching occur within co-operative or team teaching groups. At Rudd Primary School (see Sturman, 1982) within the pair of teachers at each level there were more flexible arrangements for specialization and for utilizing special skills of staff not so frequently in contact with the classes concerned. From the data in Tables 4.21 and 4.22 it would appear that these forms of specialized teaching were not prevalent in primary schools but that there were a few schools which believed this to be an effective method of organizing available resources. One major review of team teaching and achievement (Armstrong, 1977) suggested that research has been unable to provide guidance about the effectiveness of various forms of team teaching. Consequently practice must be guided by the beliefs of its practitioners.

The tradition of secondary schooling contrasts with that of primary schools in that it has been based on specialist instruction by staff with expertise in a particular subject area. Consequently, it would be most common for students to be taught by a number of different teachers for lessons in different subjects. Some variations to this have emerged in schools which have attempted to limit the number of different teachers with whom any student has contact in the first year of secondary school, and in schools in which 'integrated' or 'thematic' as opposed to subject specific programs have been developed. In recent times some alternative programs in schools have been developed around one general teacher rather than several specialists, extending the type of

Table 4.22 Index[a] of Use of Specialized Teaching in New Zealand Government Primary Schools (Percentages in Each Category have been Recorded)

System	Years K-2 Category[a]				Years 3-5 Category[a]				Years 6, 7 Category[a]			
	0	1	2	3	0	1	2	3	0	1	2	3
Full Primary	96	4	0	0	100	0	0	0	96	4	0	0
Contributing	92	4	4	0	93	7	0	0		n.a.		
Intermediate		n.a.				n.a.			63	37	0	0

a Score on the item:
'The student is taught by a number of different teachers for lessons in different subjects.'
The answers have been scored on the following scale:
0 = practice does not operate
1 = for some students only
2 = for most students
3 = For all students

Note: Year levels are the Australian equivalent designation.

Table 4.23 Index[a] of Use of Specialized Teaching in Secondary Schools (Percentages of Schools in each Category have been Recorded)

System	Years 7, 8				Years 9, 10				Years 11, 12			
	0	1	2	3	0	1	2	3	0	1	2	3
ACT	18	0	9	73	9	9	9	73		n.a.		
NSW	0	0	18	82	0	0	7	93	0	0	2	98
Vic.	7	2	11	80	0	0	9	91	0	0	7	93
Qld	17	6	6	72	0	3	6	92	0	0	8	92
SA	4	5	26	65	2	2	26	70	0	0	21	79
WA	6	0	20	74	3	0	20	77	0	0	15	85
Tas.	12	8	24	56	4	0	20	76		n.a.		

a Score on the item:
'The student is taught by a number of different teachers for lessons in different subjects.'
The answers have been scored on the following scale:
0 = practice does not operate
1 = for some students only
2 = for most students
3 = For all students

provision that sometimes has been made for students with special learning problems. The data in Table 4.23 implied that most secondary schools are structured around specialist teachers for all or most of their students though a few schools suggested that different patterns operated in Years 7 and 8.

In summary it would appear that the traditional mode of organization of primary schools based on one teacher - one class predominated but that a number of schools had made some modifications to that basic pattern in order that the resources available

could be used most effectively. There was a good deal of flexibility in the way teachers were allocated to classes in some primary schools. Secondary schools were more uniformly characterized by the traditional pattern of that form of schooling with respect to teacher allocation: groups of students being taught by different teachers in different subjects. However even in secondary schools it was evident that some schools had adopted a home group mode in the early years of secondary school.

Curriculum Structures

The type of curriculum structure adopted by a school is inexorably linked to its method of organizing its teaching groups with both being dependent on the school's objectives and the constraints set by the level and type of resources available. In the sense used here the term curriculum structure refers to the broad framework of the school's curriculum, and not the detail of the range of type of studies offered within that structure, and certainly not the detail of what happens within subject areas.

Primary school principals responding to the survey were asked to indicate which of the following statements best described the schools program at the year level specified.

A common program of studies taken by all students.

A program based on a common compulsory core and additional activities developed by each class teacher.

Programs developed independently by each class teacher.

A program based on a compulsory core and some electives from which students may choose.

Individual programs are designed to suit the needs of individual students.

Responses to this question have been classified in Table 4.24. The most common descriptor chosen at all year levels was that of a common core plus teacher activities. The next most frequently recorded response was that common program was followed. This was reported with moderate frequency in Victoria, Queensland and New Zealand. Some schools (most frequently in Western Australia and South Australia) indicated that the program was determined by each teacher independently. A small number of schools (mostly in the Australian Capital Territory and Tasmania) suggested that individual programs were designed for individual students.

Secondary schools were also asked to indicate which of a set of descriptive statements best characterized the type of program which they offered at each year level. The descriptors were the following:

One type of course based on a series of separate subjects.

A program of integrated studies which is taken by all students.

Various types of courses (e.g. academic, vocational, commercial) to which students are allocated.

Table 4.24 Percentages of Government Primary Schools Reporting Various Types of Curriculum Structure in 1979

System	Code[a] 1	2	3	4	5	Code[a] 1	2	3	4	5	Code[a] 1	2	3	4	5
	Years K-2[b]					Year 3[b]					Year 4[b]				
ACT	11	61	8	4	15	11	61	4	4	19	11	61	8	4	15
NSW	11	73	9	0	7	8	71	15	0	5	5	74	15	0	5
Vic.	26	66	6	0	2	26	68	6	0	0	24	70	6	0	0
Qld	28	65	7	0	0	26	64	7	2	0	26	64	7	2	0
SA	12	50	18	4	16	15	61	9	2	2	10	66	16	5	2
WA	20	53	27	0	0	13	59	28	0	0	12	59	26	2	0
Tas.	15	60	10	0	15	15	67	6	3	10	5	57	3	3	10
NZ (full)	22	47	20	0	11	23	59	18	0	0	3	59	18	0	0
NZ (contrib)	33	56	0	0	12	24	76	0	0	0	1	68	0	10	0
NZ (inter)	n.a.					n.a.					n.a.				
	Year 5[b]					Year 6[b]					Year 7[b]				
ACT	11	61	4	4	19	11	61	8	4	15	n.a.				
NSW	5	74	8	0	12	6	76	11	0	7	n.a.				
Vic.	24	70	6	0	0	24	70	6	0	0	n.a.				
Qld	26	64	7	2	0	26	64	7	2	0	26	64	7	2	0
SA	10	61	18	8	2	10	61	10	8	2	10	61	16	11	0
WA	12	59	26	2	0	9	62	26	2	0	9	63	26	2	0
Tas.	12	72	3	3	10	12	72	3	3	10	n.a.				
NZ (full)	23	59	18	0	0	23	59	18	0	0	23	59	18	0	0
NZ (contrib)	21	68	0	10	0	n.a.					n.a.				
NZ (inter)	n.a.					76	12	6	6	0	78	11	6	6	0

[a] Code: 1 = A common program of studies taken by all students.
2 = A program based on a common compulsory core and additional activities developed by each class teacher.
3 = Programs developed independently by each class teacher.
4 = A program based on a compulsory core and some electives from which students may choose.
5 = Individual programs are designed suit the needs of individual students.

[b] New Zealand Year levels included under the equivalent Australian designation.

Various types of courses (e.g. academic, vocational, commercial) from which students can choose.

A program based on a compulsory core and a series of electives from which students may choose.

A program based entirely on a series of electives or units from which students may choose.

As shown in Table 4.25 most secondary school principals chose to describe the Year 7 program in their schools as one course based on separate subjects. About 10 per cent in each State (other than Victoria) described the Year 7 program as a course of integrated

Table 4.25 Percentages of Government Secondary Schools Reporting Various Type of Curriculum Structure in 1979

System	Code[a] 1	2	3	4	5	6	Code[a] 1	2	3	4	5	6	Code[a] 1	2	3	4	5	6
	Year 7						Year 8						Year 9					
ACT	54	9	9	0	27	0	0	0	0	0	91	9	0	0	0	0	91	9
NSW	75	10	2	0	12	0	26	2	0	2	69	0	0	0	0	2	98	0
Vic.	80	3	0	0	17	0	73	3	0	0	17	7	10	0	0	0	79	10
Qld			.				67	11	3	6	15	0	3	0	3	28	56	11
SA			n	.			61	9	0	0	30	0	28	7	2	2	60	0
WA			n.	.			31	8	0	0	61	0	3	0	0	0	97	0
Tas.	68	12	4	0	16	0	52	8	0	0	40	0	0	0	0	0	100	0
	Year 10						Year 11						Year 12					
ACT	0	0	0	0	90	10	n.a.						n.a.					
NSW	0	0	0	2	98	0	2	0	0	0	51	46	0	0	0	2	51	46
Vic.	3	0	0	3	83	10	7	0	0	17	28	48	2	0	0	17	28	46
Qld	3	0	5	31	50	10	3	0	3	12	18	64	3	0	3	12	18	63
SA	2	0	0	21	77	0	2	0	2	55	23	16	7	0	0	48	2	43
WA	3	0	0	0	97	0	6	0	6	56	6	26	12	0	6	44	6	32
Tas.	0	0	0	0	100	0	n.a.						n.a.					

[a] Code: 1 = One type of course based on a series of separate subjects.
2 = A program of integrated studies which is taken by all students.
3 = Various types of courses (e.g. academic, vocational, commercial) to which students are allocated.
4 = Various types of courses (e.g. academic, vocational, commercial) from with students can choose.
5 = A program based on a compulsory core and a series of electives from which students may choose.
6 = A program based entirely on a series of electives or units from which students may choose.

studies and a l e more than 10 per cent considered that the 'co lus electives' response best described their program (though in the Australian Capital Territory the core plus electives was chosen by nearly one-quarter of the schools). For Year 8 the core plus electives descriptor was that most frequently chosen by schools in the Australian Capital Territory, New South Wales and Western Australia. Schools in Victoria, Queensland, South Australia and Tasmania most frequently chose the 'one course/separate subjects' descriptor for their Year 8 program (though in South Australia and Tasmania the core plus electives statement was chosen by about one third of schools). Apart from the Australian Capital Territory, New South Wales and Victoria, about 10 per cent of schools in each State described the program at Year 8 as based on integrated studies, and in the Australian Capital Territory and Victoria about 10 per cent of schools described their programs as elective or free choice units. For Years 9 and 10

the most popular choice of description for all States was the 'core plus electives' alternative. However Year 9 programs in about one-quarter of the South Australian schools were described as one course based on separate subjects. One-quarter of Queensland schools reported that a series of separate courses was offered in Years 9 and 10. A few schools (10 per cent in the Australian Capital Territory, Victoria and Queensland) described their program in Year 10 as based on electives or free choice units. In Years 11 and 12 the descriptors chosen by school principals were either:

(a) students choose various courses, or
(b) core (usually meaning English) plus electives, or
(c) electives or free choice units.

However, there were differences between systems in the extent to which the curriculum was seen as structured around courses and a series as electives and whether or not the electives included a core.

School Structures in Context: A Summary

This chapter has been concerned with two broad types of school structure which were designated as 'policy-formulation structures' and 'policy-implementation structures'. Each was then further sub-divided. Policy-formulation structures could be classed as either 'extraprofessional' or professional' depending on whether or not they involved participants other than teachers. Included in this general category were structures which had statutory authority and those whose influence could only be through persuasion. In principle, extraprofessional policy structures could be located at a school or a regional level. Policy-implementation structures were further sub-divided into 'teaching structures', which referred to the methods of grouping students and teachers, and 'curriculum structures' referring to the broad framework around which the schools program was organized. Policy-formulation structures were important in the development of school goals and the translation of those goals into detailed policy. Policy-implementation structures represented the articulation of school goals in concrete terms, after the mediating influence of various constraints had intervened.

Policy-formulation structures were often important vehicles through which statements concerning goals were determined and through which the differing perspectives of various groups could be reconciled. In this role they served to establish a consensus with which all parties could comfortably work. It would seem reasonable that the less effectively the consensus was established then the greater the difficulties in implementing policy based on those goals (see Sturman, 1982). A second way in which policy-formulation structures related to goals concerned the translation of those goals into practical policies. At this level also it would seem necessary to secure the

commitment of relevant participants and to ensure that the form of the structures adopted is congruent with policy goals. For example if a school's goals strongly emphasized the social development of students it could find those goals hard to implement if the only policy structures with any power were based on subject departments. It is important to appreciate that decisions about the way goals were translated into policy would inevitably involve the setting of priorities about the allocation of resources, even if that was only acknowledged implicitly. A third and final way in which policy-formulation structures were relevant to a school's goals concerned the process for review of those goals. A coherent set of structures for policy formulation which involved all relevant participants at an appropriate level would facilitate the formative and continuing review of goals. In this sense the process of review may focus at particular times but the gathering of evaluative evidence would be an ongoing process within the various structures.

Only in New Zealand was there evidence of an extraprofessional policy-formulating structure at regional level: the district education board. More recently regional education councils have been recommended in Victoria (1980) and South Australia (1981). The potential roles of these organizations in strengthening the process of decentralization to regions has been discussed by McKenzie and Keeves (1982). At school level statutory councils, boards or committees existed for both primary and secondary schools in the Australian Capital Territory, Victoria and South Australia and the primary schools of New Zealand.[18] Generally within any State the reported level of responsibility in secondary schools for most of the policy areas listed was similar to that in primary schools. Mostly, these bodies were reported as exercising authority in conjunction with the principal on matters of expenditure, providing advice on curricula and extracurricular matters, and having little influence over the appointment of staff. Notable exceptions were:

1 in the Australian Capital Territory where the board was reported as exercising authority in conjunction with the principal in curriculum matters,

2 in Victorian schools where the council in conjunction with the principal made decisions about the appointment of some non-teaching staff, and

3 in Victorian technical schools where the council was involved in the appointment of principals and deputy-principals.

In systems other than those mentioned above a few schools had established non-statutory school councils. Most schools acknowledged that some advice was received on curricular and extracurricular issues through parent associations or similar bodies.

In examining professional policy-formulation structures the effects of the different

---

18 Secondary schools in New Zealand had Boards of Governors with [illegible] authority but these schools were not included in the present survey.

traditions of primary and secondary education were evident. For primary schools the role of the principal was crucial in the co-ordination of the activities of the school though in most systems the individual classroom teacher had exercised discretion within the classroom. It was noted that formal structures for policy formulation existed in most schools in staff meetings and year level meetings. However, in a number of schools notably in the Australian Capital Territory rather wider structures were reported in the form of subject area groupings to examine the school program in various curriculum areas, and school-wide curriculum committees. It was argued that these structures were necessary responses to the widening role of primary schools and the reduced isolation of each classroom unit.

For secondary schools the role of the principal was less direct because of the greater emphasis on discipline based expertise. In secondary schools it was reported that the subject department had generally been a very important policy-formulating structure but that in response to changing expectations other structures were also established. School wide curriculum committees were reported in a number of schools as meeting regularly as were groups of teachers teaching at each year level. These two structures provided for co-ordination of activities across subject areas in various ways and thereby provided important vehicles for the internal review of school programs.

The establishment of policy-formulation structures which are able to articulate appropriate goals for schools and which are able to function in congruence with those goals would seem to be an important part of ensuring that schools are effective. Those structures need resources in terms of time and services in order to function properly. They should not be seen as peripheral to other school activities but central to them.

Teaching structures were defined as embracing the ways in which students were grouped into classes and the basis on which teachers were allocated to those classes. One would expect to find the rationale for teaching structures arising from the school's goals but taking into account the resource constraints confronting the school. Three dimensions were considered as underlying the organization of classes in schools: whether the classes were horizontal or vertical with respect to age, whether classes were homogeneous or heterogeneous with respect to ability, and whether the teaching groups were fixed for a week or relatively fluid. In primary schools the majority of classes contained students of one year level and where vertical grouping was used it was most often in response to resource constraints. However, in some States there was a number of schools which had formed vertical class groups because they regarded that type of structure as enabling them to more effectively utilize their resources in pursuit of their goals. Relatively few primary schools reported that ability was used as a factor in forming teaching groups though in New South Wales about one school in five indicated that this was done. Of some interest was indirect evidence within the data of fluidity in teaching groups in primary schools so that students in some schools moved to different

groupings for some lessons. Most schools reported that one teacher was responsible for each class for the majority of its lessons, which was a traditional pattern, but larger schools suggested that specialist staff also formed an important part of their arrangements. In brief the evidence suggested some changes in the traditional pattern of primary school organization but with one teacher remaining the central focus for each class.

In secondary schools the use of vertical groups was less common than in primary schools. Where it was reported it was suggested as having been implemented for such educational reasons as the desire to increase the capacity to devise individual programs for students based on term or semester length units. Vertical grouping was more common in the high schools of the Australian Capital Territory and Victoria though in one sense it was also a feature of the senior colleges in the Australian Capital Territory and Tasmania. Grouping students according to their perceived ability was more frequently reported in secondary than in primary schools and was most common in Years 9 and 10 and in New South Wales and Western Australia. Most commonly secondary schools reported assigning different teachers for different subjects but in Year 7 a few schools indicated variations from this. In those schools it was suggested that classes were organized so that one teacher taught a relatively fixed group of students for most of their lessons. That practice suggests that in Year 7 a few secondary schools were adopting one of the organizational features traditionally associated with primary schools.

Curriculum structures as the broad framework within which particular elements are embedded represent in principle an important part of the way a school's goals are articulated in concrete terms. As for teaching structures however the actual practice might not always arise from such a logical progression but be constrained by the resources available to the school. Primary schools reported that at most year levels the curriculum structure was 'a common compulsory core and additional activities developed by each class teacher'. Most of those schools reporting any different structure indicated that the best description of their curriculum structure was 'a common program of studies taken by all students' with rather few suggesting that class teachers acted independently, that students chose between electives or that individual programs were designed for individual students. For secondary schools the reported curriculum structures varied over year levels. In the first year of secondary education the most commonly chosen descriptor was 'one type of course based on a series of separate subjects'. The most common reported pattern in Years 9 and 10 was that of core and a series of electives with the proportion of schools suggesting programs based entirely on electives having increased by Years 11 and 12. The detail of the extent of students choice has been discussed further in Chapter 5.

In this chapter it has been argued that school structures were important mediating influences in shaping the way in which the resources available to the school would be allocated to various functions and groups of students. It has therefore been concerned with a detailed examination of those school structures. The next chapter concentrates on the patterns of resource allocation within schools in terms of various school functions and the size of classes at different year levels.

CHAPTER 5

RESOURCE ALLOCATION IN SCHOOLS

Chapter 3 was concerned with the personnel resources available in schools. It considered both teaching staff and support staff in schools of different types. Chapter 4 examined the types of structure in schools. Two main types of school structure were distinguished. Those through which decisions about the operation of a school were made were classified as policy-formulation structures. It was argued that some choices made through these bodies directly involved resource allocation priorities and many more impinged upon the allocation of resources, for example by establishing the nature of the school curriculum at various levels in the school. Frameworks within which the school's program operated were described as policy-implementation structures. These set the framework in which resources were allocated to particular school functions, particular classes or particular areas of the curriculum. Within the general category involving policy implementation a distinction was made between teaching structures, being largely concerned with the organization of classes; and curriculum structures, being largely concerned with the types of educational program offered by schools. The present chapter is concerned with the detail of the resource allocation priorities reported by schools. In addressing resource allocation an attempt has been made to bring together some of the issues raised in the previous chapters.

Some General Issues

The allocation of the resources available within a school is not simply a matter of placing a teacher in charge of each class. Among other things it involves deploying staff in curriculum areas and to year levels where their skills and interests will be of greatest benefit to students. Allocating resources extends beyond even the sensitive deployment of teachers to classes. It involves a consideration of the functions which the schools' personnel need to perform so that the institution can function effectively. In broad terms these functions could be grouped in three categories. First would be 'class teaching' which would be represented by the time during which teachers were in class with groups of students. Second would be 'class-related management' which would include a variety of preparation and correction activities conducted so as to directly facilitate class teaching. The third and final category could be designated as school management and would include various executive and administrative tasks as well as the provision of guidance and counselling to students, and contributing to school wide curriculum development. That time which has sometimes been described as 'non-contact' time (Hill, 1977) could be better characterized as time allocated to class-related management and to school management.

The term school management used for the third of the categories above, deserves some elaboration for it could easily be given too narrow an interpretation. It was not intended to be restricted to the administration of the school. It was intended to embrace those functions of schooling which extended beyond the provision of instruction in classes. As such it would include such matters as the responsibility for student welfare, the provision of advice regarding careers, the maintenance of relations with parents, the management of a library or resource centre in which students learned independently, the support of enrichment activities at the school, and the provision of special assistance to students with particular learning problems. The list above would not be exhaustive. It has been included to illustrate some aspects of the range of functions of schools outside classroom teaching to which resources need to be allocated. In addition to these functions there is a range of administrative tasks which form an important part of any effective organizational framework and to which resources need to be allocated. Such administrative tasks often involve staff other than those who are most senior. These administrative tasks form part, but not all, of the category designated above as school management functions.

An important issue in policies of resource allocation within schools therefore would be the relative allocation of resources to each of these three types of function. One school might have chosen to use as many of its staff as possible teaching in classrooms so that classes were the smallest possible. Another might have accepted somewhat larger classes so that some of its staff could assist students in other ways, or so that class teaching was more effective by teachers being better prepared. These represent but two options among a very wide range of choice. In practice the choice would be a restricted one. It would be restricted by requirements regarding class size and teaching loads set by either education authorities or teachers' organizations. It would be restricted also by the type of expertise possessed by the school staff in that schools would not always exert much influence over the resources made available to them. Material resources might also restrict the choice of schools in deploying personnel resources and for secondary schools the requirements of examining and accrediting agencies would impinge upon the school policy.

The choice available, restricted though it may have been, would have involved not only a choice concerning the proportion of available staff hours to be allocated to each function but a consideration of the profile of resources to be provided for each. For example school management might have been seen as the prerogative of senior staff and a few specialist staff or alternatively it might have been seen as involving a wider range of staff for some of their time so that senior staff were more involved in class teaching. In addition to the external constraints mentioned above as influencing this choice schools would be strongly influenced by convention when exercising options regarding this aspect of deployment of resources.

Within the category designated 'class teaching' schools needed to make decisions as to what amount of teaching time to allocate to each year level. As one option a school could choose to have smaller classes in the early years of primary schooling than in the later years. As another option a school could choose to have the smallest classes in its final year of primary schooling or yet again to so arrange the distribution of resources that all classes were of approximately equal size. Such questions would be more apparent in secondary schools where the range of subjects to be offered would be an additional consideration. In particular to provide a satisfactory range of subjects at Year 12 could require a school to organize some smaller classes at that year level with a consequent increase in class size at the lower years of secondary schooling. Davies (1969) has referred to the effect of this as 'borrowing' resources from one year level in order to sustain another. Beyond considering how much of its resources to allocate to each year level a school would also consider to which year level it might allocate its most senior staff.

Within any one year level resources could be borrowed from one area to service another. In a primary school this could mean creating one rather small class for students deemed to require additional assistance at the expense of creating larger classes for other students. In a secondary school this could involve having some larger classes in subjects taken by all students so that a wider range of options could be provided.

The discussion above has attempted to suggest some of the factors which schools might have taken into account when deciding how the resources available to them were to be allocated. It has been presented as an outline of the possibilities which might exist in principle but recognizing that the scope of any choice might be limited by the absolute level of resources available, the types of expertize possessed by the staff and by external constraints such as the requirements of education authorities and teachers' organizations. Within those constraints it has been suggested that schools choose, even if only by following a traditional pattern, how to allocate resources to various functions of the school, to different year levels and to different curriculum areas. One advantage of elaborating these issues is to make explicit the factors pertaining to patterns of choice in resource allocation and to provide a framework within which the assumptions underlying traditional forms of organization might be made visible.

Some Issues of Methodology

One of the important issues arising from a consideration of resource allocation in schools concerns the size of classes. In terms of the impact of resources on student learning, measures of class size often have been used as an index of the resources available to students at the point where teaching occurs. It was argued in Chapter 1 that there were methodological problems associated with the use of aggregate school

measures of resource availability in studies of school effects on student outcomes. Many of those comments would apply also to correlational studies which used 'average class size' as an independent variable related to student achievement yet the issue of class size remains an important one expecially since the publication of meta-analyses of experimental studies suggested that student learning was enhanced in small classes (Glass and Smith, 1978; Smith and Glass, 1979). As discussed in Chapter 1 the results of those meta-analyses appeared to imply that attention should be given to patterns of resource allocation in schools as well as to the total resources available.

Class size could be considered as providing an indication of the resources made available at the point where teaching occurs for a group of students. Three considerations are relevant to its use for this purpose. First the size of classes in a school would not be a direct measure of the resources in a school but would depend upon both the total resources available and the proportion of those resources allocated to class teaching. Secondly the total resources allocated to class teaching might not be distributed equally to groups of students or to different areas of the curriculum. The 'average' class size, however defined, might not be a good measure of the resources, relevant to the outcome being considered, which were available to a particular group of students. Thirdly, because 'class size' is the reciprocal of resources available to a group of students its use may result in different mathematical relationships being reported than if a more direct measure such as teacher hours per student was used.[19] In the discussion which follows issues concerning the use of various measures of class size related to these general points will be discussed further. That discussion will focus in particular on the various ways in which class size could be conceptualized.

The simple notion of class size derives from a mode of school organization which assumes that students are grouped in fixed groups for all lessons by one teacher. In such cases the 'roll' class would be the same as the class group for teaching purposes and the average class size at a year level would be the mean of the sizes of each class at that year level. The first problem which could arise in applying this approach to class size in a real school would concern vertical groups. In Chapter 4 it was noted that vertical grouping was reasonably common in the primary schools of some States but relatively uncommon in secondary schools. If average class sizes were to be calculated for each year level in primary schools then some method of incorporating composite classes or vertical groups would need to be devised. The second problem which might arise involves team teaching. In some primary schools a group of students might be taught by more than one teacher in the room at the same time. In some cases para-professional staff might be in a room with a teacher and a group of students. One approach would be to

---

19 Marjoribanks (1974) has argued that the inverse of family size was more appropriate measure than family size for studying the extent of parental attention available to children.

argue that 'effective class size' could be considered as the number of students divided by the number of adults involved in a particular learning segment. Glass and Smith (1978) used this notion of effective class size in their meta-analysis of the influence of class size on student achievement as did Smith and Glass (1979) in an analogous meta-analysis of research related to the influence of class size on teacher satisfaction and pupil effect. Another possibility would be to use an Index of Pupil Adult Contact, which would be the reciprocal of the effective class size and would represent the 'share' of a teacher provided per student.

The third problem which could arise in applying a simple notion of class size concerns the situation where instructional groups were 'fluid'. Such a situation would commonly arise in secondary schools where students were in different class groups for different subjects. Those groups could be of varying size and operate for varying periods of time.

Time-weighted Average Class Size

One way of addressing this problem would be to cite the size of classes held in a particular subject studied by all students at a year level. In many reports the size of English classes has been used for this purpose. Another approach would be to use a 'time-weighted average class size' as a measure of the class size in a school at a given year level. Such an index would not be a simple average of all classes in all subjects at a given year level. Basically the time-weighted average class size is an average in which the classes are weighted according to duration. Hence a large class held for a long term has a stronger influence on the average than a small class held for a short time.

Indices similar to the time-weighted class size have been used in other studies such as several reviewed by Lafleur, Sumner and Witton (1975). For example the Scott Committee (New South Wales, 1969) defined class size (C) in terms of the number of teachers (T) the average number of time units of instruction given by any teacher (M), the number of units of instruction received by each student (K), and the total number of students involved (E) as follows:

$$C = \frac{E \times K}{M \times T}$$

In essence the term (MxT) is the number of teacher time units provided and the term (ExK) is the number of student time units received. It is thus equivalent to the pupil-teacher contact ratio defined by McIntosh (1971). More recently the use of a 'time-weighted pupil-teacher ratio' by Kriven (1979) was based on the concept of ratio of student time units to teacher time units. As shown in Appendix V the time-weighted average class size is analogous to these measures. Moreover, in Appendix V it was shown that the time-weighted class size for an aggregate unit of analysis could be calculated

from aggregated information. The formula for calculating the time-weighted average class size at a given year level in the present study was:

$$Z_y = S_y * T/H_y$$

where Z_y = the time-weighted average class size for the year level,

S_y = the student enrolment in the year level,

T = the programmed hours in a teaching week, and

H_y = the programmed 'teacher hours' each week for that year level.

Further, even though the concept has been applied in this study to year levels it could be applied also to a subject area, a school, or a group of schools.

Vertical Grouping

The average time-weighted class size calculation overcomes the problems mentioned in relation to fluid groupings of students and of team teaching situations but of itself it does not overcome the difficulties of vertical groups. Two alternative approaches to vertical groups are to treat them separately from single year level groups or to incorporate them within the figures for year levels. Since most vertical groups spanned only two year levels it seemed better to incorporate them in figures for each level. The most appropriate way to do this seemed to be to:

(a) assign teacher hours in composite classes to constituent year levels in proportion to the numbers of students from each year level, and

(b) regard the students in composite classes as belonging to their nominal year levels.

Frames of Reference

The equations defined above provide a means of calculating what a school offers at a year level, or in a subject area, for its students. It represents an aggregate measure and as outlined above could be calculated from aggregate data. It is important to remember that the average class size experienced by any student might not be the same as the aggregate value for the average class size. This would arise not just because resources were distributed unequally among individual students but also if the average calculated from the perspective of students was compared with the aggregate value of the average class size. Consequently it would be possible to calculate either a simple average or time-weighted average class size from either the perspective of the aggregate allocation to a year level or from the perspective of that which a student experienced.

The effect of adopting these differing perspectives can be illustrated in the following two hypothetical examples. The first example is far removed from a real situation and involves a year level of 36 students taking lessons for 20 hours each week. For 15 of those hours the students are taught as one group of 36 and for the other five

hours they are in three groups of 12. A simple average of the class sizes would be 18. A time-weighted average class size would be 20.6 reflecting the greater proportion of allocated teacher hours spent in the larger group. From the perspective of an individual student the result would again differ. For a student the simple average class size would be 24 (one class of 36 and one of 12) and the time-weighted average class size would be 30 (the student having spent three-quarters of his time in a class of 36 and one-quarter in a class of 12).

The second example is a little closer to a real situation. Consider a year level in a school in which there were 216 students. Suppose also that there were six classes of 36 students which remained intact for 20 hours of the 26 hour teaching week. In that time the students studied English, mathematics, science, social science, art and music. The remaining six hours involved students choosing from a range of electives. Each student studied three electives from six which were available. For each elective, which was allocated two hours of teaching time there were six classes of 18 students. Under these circumstances the simple average class size from the aggregate perspective would be 20.6. A time-weighted averaged class size from the same perspective would be 29.3 reflecting the greater teaching time involved in curriculum areas where classes were larger. The figures above are from the aggregate perspective of the year level in the school. From the perspective of a student somewhat different results would be obtained. The simple average size of a class in which an individual student was placed would be 22.5 and on a time-weighted basis the average class size experienced by a student would be 31.8.

The two examples above are much simplified from real circumstances in which class sizes in both core and elective areas would vary. Yet even in these simple examples it can be seen that the value of average class size could vary according to:

(a) whether a simple mean or a time-weighted mean was used, and

(b) whether the frame of reference for the calculation was the aggregate year level or the student in that year level.

What is an Appropriate Measure?

There would appear to be no universally appropriate method of reporting class size when groups are fluid as in most secondary schools. The present study has been concerned largely with comparing the allocation of resources between year levels and groups of schools. From the viewpoint of comparing the allocation of resources between year levels and between groups of schools the present report has used the time-weighted average class size calculated from the perspective of the aggregate year level. The time-weighted average class size is inversely proportional to the number of teacher hours per student at a given year level and therefore provides a good representation of the class teaching resources allocated to a particular year level.

If all classes were fixed for the whole weeks instruction the simple average class size would be the same as the time-weighted class size. Similarly if all classes were of equal duration the simple average class size and the time-weighted average class size would be the same. When classes were not of equal duration then the two measures could be different. In practice the simple average class size is not a particularly useful concept when groups are fluid because there are not clear guidelines as to what constitutes a class if that class is intact for a number of subjects. In the second example above the 'simple' average class size could be either 18, if it were assumed that there were six classes in the core area, or 27 if the classes in each subject were treated separately so that it was assumed that there were 36 classes in the core area. Because there is uncertainty concerning the simple average when classes are fixed for several subjects but fluid for others it would not appear to be appropriate in these circumstances. If classes were fixed for the whole program, the simple average class size and the time-weighted average class size would be indentical.

Difference between measures of average class size which arise from differences in the frame of reference stem from the fact that not all classes would be available to all students. In the second of the examples given above teaching time in the elective area was such that students could only use half of those available teacher hours. Hence from the students frame of reference according to this argument one could estimate the time-weighted average class size as:

$$Z_S = (36 \times 20 + 18 \times 6)/26 = 31.8$$

where, Z_S = the time-weighted average class size from the student perspective.

since each student was in a class of 36 for 20 hours and a class of 18 for six hours.

Approached from the viewpoint of distributing available teacher hours the same result could be reached. There would be 120 teacher hours to be distributed over 216 students for 20 hours of core. There would also be 72 teacher hours to be distributed in the elective area. However, only half of those hours were effectively available to students since students could only choose three out of six electives. In addition for the elective area of the curriculum the 36 teacher hours available would be distributed among only half of the students (since only half choose any of three electives) for those six hours. Hence the teacher hours effectively available to students would be 120 + 36 = 156. The effective number of students among whom those hours would be distributed would be:

$$(216 \times 20 + 216 \times 0.5 \times 6)/26 = 191$$

Hence it would follow that the time-weighted average class size from the student perspective would be:

$$Z_S = 191 \times 26/156 = 31.8$$

In Appendix VI the general case has been explored in greater detail and the implications of those conclusions would appear to be that in those circumstances where electives occupy a disproportionate share of teaching resources (for example by holding smaller classes in the elective area than in the core) the time-weighted average class size experienced by students (on average) would be greater than the time-weighted average of class sizes provided by the school.

The argument above has been couched in terms of a core plus electives curriculum structure since that was noted in Chapter 4 to be one of the most common curriculum frameworks adopted by secondary schools in Australia. It could however also have been be applied more generally to cases similar to that in the first example provided in the section above. The more general case would concern any part of a schools program in which students worked in smaller groups than the remainder of the program. Consider for example, a primary school in which classes were re-organized for a reading program for part of each week and in which the reading classes were smaller than regular classes. In that school the average class size from the perspective of the student would be greater than the average class size from the perspective of the school or the year level. If the resources available to a year level are considered fixed then the greater the extent to which resources are unevenly distributed across activities the greater would be the discrepancy between the student perspective of class size and the school perspective of class size.

The observation above has implications for research methodology concerning the impact of class size. It would seem that if a measure of class size were to be used in an analysis relating school effects to student learning that measure should be from the student frame of reference if the measure of student learning was derived from student test performance. The issue would probably not arise in experimental studies, or where each class in a given subject area was the unit of analysis, but it would be important in studies based on aggregate measures.[20] In such studies it would be necessary to consider carefully the possible frames of reference within which average class size measures could be computed.

The argument above also draws attention to a resource limitation on the range of options in a school program. That limitation would appear to be that a school could offer classes in options up to the point where the proportion of teaching hours allocated to the options was the same as the proportion of the school week allocated to options. Under these conditions there would be no effect on the distribution of class size between the 'core' and 'options'. A greater proportion of hours could be allocated to options than that

20 Though the uneven distribution of resources within classrooms could still serve to produce a downward bias in observed relationships.

indicated above only by 'borrowing' resources from the 'core' program. Under those circumstances the size of classes in the core would be larger than those in the options. While the time-weighted average class size with the school as a frame of reference would not be affected that with the student as a frame of reference would be altered. Schools therefore face a choice regarding the range of options to be offered. If more options were to be offered than the limit suggested above it would be at the cost of larger classes in the non-optional area. To overcome these difficulties some schools have operated a system of term or semester based curricula organization so that students could alter their subject choice from one term or semester to another. Such arrangements were most frequently reported in the Australian Capital Territory high schools (60 per cent of schools), Victorian high schools (24 per cent of schools), and Queensland high schools (34 per cent of schools). Many of those schools reported that the options were of one term or one semester duration with the core being based on year length subjects, but a number indicated that the whole curriculum was based on term or semester length units around which each student program was planned. Within either system any given unit or subject could be repeated from one curriculum period to the next. Sturman (1982) has discussed the benefits of such a system, together with other aspects of school organization which are relevant to its operation, in the context of the program at Lawson High School. Under such a system the idea of a 'core' and 'elective' area became redundant except that some units were compulsory, some units specified pre-requisite studies, and a specified proportion of studies was to be taken in Mathematics and English.

The Information Base

In the discussion above the information required to calculate the time-weighted average class size was specified. As part of the question devised to obtain these data a distinction was made between 'teacher hours' provided by senior teachers and above and those provided by other teachers. The intention was to be able to ascertain the sections of the schools in which the most experienced teachers were deployed. In practice the question, (see Appendix A, Question B.12) was not well answered probably because the concept was unfamiliar and the instructions were not sufficiently extensive. As a consequence it was necessary to use the statistical data provided by the sample schools to the education authorities in each system.

Secondary Schools

For secondary schools it was possible to obtain all the necessary information from the relevant official statistical returns for all but two systems of schools. In Victorian technical schools and Tasmanian high schools the necessary information could not be obtained from official records. For those schools a careful check of survey data was

made against other data in the questionnaires so that the consistency of each schools responses was ascertained. By this method a few aberrant cases were deleted and the remainder used to calculate the time-weighted average class size values. Overall for secondary schools the concept behind the question remained intact even though the source of the data used was different from that originally intended.

Primary Schools

For primary schools it was not possible to obtain all the necessary information from official records. Consequently in primary schools a more conventional class size figure was calculated. For each year level an average class size for the school was computed. Given the nature of the sample, as described in Chapter 2, the most appropriate method of computing a mean across a system was to first calculate a value for each school. Composite classes were not treated separately but allocated to the year level in proportion to the extent which they drew students from that year level. The procedure which enabled this was based on dividing total number of students at a year level by the number of equivalent full classes at that year level:

$$Z_j = S_j / n_j \qquad (1)$$

where, Z_j = the average class size for students at year level j,

S_j = the number of students at year level j, and

n_j = the number of equivalent full classes at year level j.

In situations where all classes containing any students from a given year level had no students from any other year level the application of this formula was relatively simple. Where composite classes or vertical groups existed the procedure had to be modified:

$$n_j = m_j + \sum_{i=1}^{i=k} \frac{e_{ji}}{e_i} \qquad (2)$$

where, m_j = the number of single year level classes at year j,

e_{ji} = the number of students from year level j in composite class i,

e_i = the total number of students in composite class i, and

k = the number of composite classes containing students from year level j.

Combining these two expressions (1) and (2) results in the following general expression (3):

$$Z_j = S_j \Big/ \left(m_j + \sum_{i=1}^{i=k} \frac{e_{ji}}{e_i} \right) \qquad (3)$$

As an example the case could be considered where there were 85 students at Year 5. Sixty-two of those students were in two non-composite classes containing only Year 5 students, 15 were in a composite Year 5 and 6 class with a total roll of 28, and 8 were in a composite Year 4, 5 and 6 class with a total roll of 26. The number of equivalent full classes at Year 5 would be:

$$n_5 = 2 + \frac{15}{28} + \frac{8}{26} = 2.84$$

Consequently the average class size for Year 5 students would be:

$$Z_5 = 85/2.84 = 29.9$$

Resource Allocation in Primary Schools

The examination of resource allocation in primary schools which will be presented in this section addresses several aspects of that issue. First, the average class size at each year level in each education system as calculated by the method outlined above from official records is discussed. Secondly, the proportion of teaching staff hours at the school allocated to duties other than the responsibility for teaching a class is considered. Thirdly, the role of teacher aides in primary schools, as reported by principals, is discussed. Finally an attempt has been made to integrate various aspects of resource allocation as they relate to primary schools.

The Size of Classes

Table 5.1 records the average size of classes at each year level in Australian primary schools as calculated from official records by methods described in the section above[21]. It is worth reiterating that these were the formal roll classes in 1979 corrected for vertical groupings and formally recorded team teaching. The figures therefore assume relatively fixed teaching groups in primary schools. However, it has been noted in Chapter 4 that the fluidity of groupings in primary schools was greater than has often been supposed. Thus the data might not reflect the size of actual teaching groups. From these data it would appear that there was a tendency to have slightly smaller classes in Years K to 2 than in Years 3 to 7 in most of the Australian education systems. This presumably reflected an intention to hold smaller classes at that level in the belief that educational benefits at those younger ages would endure over subsequent years. South Australian and Tasmanian primary schools had the smallest average class sizes and Western Australian primary schools contained classes of the largest average size. What was of further interest in the differences in average class size between the education systems listed was the observation that the pattern of average class size did not match precisely the pattern of resources available in schools as had been indicated in Chapter 2. This suggested difference in patterns of resource allocation in schools between class teaching and school management or specialist functions. Such differences would be in accord with the differences in the numbers of

21 Given a probability sample of schools the most appropriate way of estimating population values of class size was to first calculate an average value for each year level at each school, and then to average those values over the schools in the sample. That procedure was followed.

Table 5.1 Average Class Size for Each Year Level in Australian Primary Schools in 1979 (Probability Sample of Schools: Official Records)

System	Year level								
	K	1	2	3	4	5	6	7	All levels
ACT	27.3	26.9	27.6	26.9	28.2	27.9	28.5	n.a.	27.6
NSW	28.4	28.7	29.1	29.4	29.4	29.1	29.5	n.a.	29.1
Vic.	26.4	28.5	28.9	29.8	29.9	29.5	29.8	n.a.	28.9
Qld	n.a.[a]	26.3	27.7	28.3	29.4	29.5	29.4	28.9	28.5
SA	20.0[b]	21.8	24.4	26.8	27.0	27.2	26.9	27.0	25.2
WA	n.a.[a]	27.1	29.3	30.9	31.2	31.7	31.3	31.4	30.4
Tas.	22.3	25.5	26.1	26.7	26.6	27.7	26.9	n.a.	26.0
Australia[c]	26.3	27.3	28.3	29.1	29.3	29.3	29.4	29.1	28.5

a Arrangements for education at this year level was made on a variety of part-time attendance patterns. The best estimates which could be made of effective class sizes were 21.0 in Queensland and 22.8 in Western Australia.

b As a result of a policy of continuous enrolment this figure could change substantially over the course of a year.

c A difference between a State mean and the national mean for any year level of approximately 0.8 would correspond to the five per cent significance level.

specialist staff in schools. It is an issue to which further attention has been given below.

Results concerning the average class size at each year level for New Zealand primary schools have been recorded in Table 5.2. The pattern of there being smaller classes in lower year levels was apparent in these schools as had been the case in Australia. In New Zealand this could have been due to the policy of continuous enrolment of students at any time after their fifth birthday[22]. In general the average size of classes in full primary schools (see Chapter 2) was smaller than the average size of classes in contributing or intermediate schools. Two further comments on the size of classes in New Zealand schools is warranted. First, despite many initial presumptions the average size of classes in New Zealand primary schools was not noticebly greater than that of classes in Australian primary schools. Secondly, the average size of classes recorded for intermediate schools was larger than might have been expected on the basis of the ratios of teachers to students in those schools. This reflected a problem associated with the use of roll class sizes. Intermediate schools in New Zealand were staffed by both primary school teachers and secondary school teachers. There were more primary school teachers in those schools than secondary school teachers. The former taught students for most areas of the curriculum and the latter provided

22 More strictly speaking the entitlement of a parent to enrol a student at any time after the student attains five years of age rather than waiting for a fixed enrolment time.

Table 5.2 Average Class Size for Each Year Level in New Zealand Government Primary Schools in 1979 (Probability Sample of Schools: Official Records)

School type	Year level[a]								
	Pri. 1-2 (K)	Pri. 3-4 (1)	Std 1 (2)	Std 2 (3)	Std 3 (4)	Std 4 (5)	Form 1 (6)	Form 2 (7)	All levels
Full Primary	19.7	23.7	25.8	28.6	28.1	27.9	28.4	28.9	26.4
Contributing	20.1	25.6	28.9	29.0	30.2	30.4	n.a.	n.a.	27.4
Intermediate	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	31.4	31.8	31.6
New Zealand	20.0	25.1	28.1	28.9	29.6	29.7	30.7	31.0	27.9

a Rough Australian equivalent year level shown in parentheses.

specialist teaching in trade areas. Such a bifurcation in duties could have various effects on the size of actual teaching groups. At Pritchard School (see Sturman, 1982) the majority of teaching was conducted in multiple teacher groups so that when some students attended classes in specialist areas the effective class size for those who remained was reduced. In other intermediate schools where general subjects were studied on the basis of one teacher one class the time that students spent in specialist areas might have been used as non-contact time for the general teacher. The case of New Zealand intermediate schools illustrates well some ways in which the size of 'roll' classes might not accurately reflect the size of teaching groups.

Presenting these data in the form of average class size gives no direct indication of the proportion of schools in which the average class size at a year level exceeded a particular value. In Tables 5.3 and 5.4 the percentages of schools with average class sizes in excess of 30 has been recorded. Consistent with the details of the sample and the method of calculating these data, the data recorded here suggest that in all school systems except South Australia and Tasmania a substantial percentage of primary school students were in classes of greater than 30 students in 1979.

Table 5.3 Percentages of Australian Primary Schools with Average Class Size in Excess of 30

System	Year level							
	K	1	2	3	4	5	6	7
ACT	30	37	22	18	48	41	41	n.a.
NSW	30	45	38	48	44	42	57	n.a.
Vic.	25	46	45	62	69	50	58	n.a.
Qld	n.a.	16	26	33	54	52	60	46
SA	14	6	7	12	14	19	15	14
WA	n.a.	22	61	77	77	78	78	71
Tas.	2	5	7	22	11	22	16	n.a.

Table 5.4 Percentages of New Zealand Primary Schools with Average Class Size in Excess of 30

	Year Level[a]							
	Pri. 1-2 (K)	Pri. 3-4 (1)	Std 1 (2)	Std 2 (3)	Std 3 (4)	Std 4 (5)	Form 1 (6)	Form 2 (7)
Full primary	0	7	24	66	45	41	44	65
Contributing	0	23	42	42	54	65	n.a.	n.a.
Intermediate	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	83	64

[a] Australian equivalent designations shown in parentheses.

Allocation to Roles

Earlier in this chapter a simple classification of personnel functions was presented. Basically it was argued that these functions could be classified as class teaching, class-related management and school management. In the latter category was included not simply school administration but a range of specialist functions designed to assist students learning outside of a regular classroom situation. When the data contained in official records was analysed it was possible to code separately those teachers who had a full class responsibility, those who had no class responsibility and those who had responsibilities for a 'special' class. It should not be assumed that those who had no class responsibility did not teach. Often those staff were specialist teachers with such roles as teaching special subjects, withdrawing groups of students, or taking a class while another teacher was involved in preparing material or attending to some other aspect of class-related management. Hence these data enabled a mapping of the way in which groups of schools allocated the available time of teachers between class teaching and the broader functions of class-related and school management.

Relevant data have been recorded in Tables 5.5 and 5.6. In Australian primary schools about four fifths of the total teacher time available was allocated directly to class teaching though in Victoria the proportion so allocated was lower (but not significantly lower) than in other States. Since these data were collected an important change of policy regarding Victorian primary schools occurred. At the time of the survey specialist staff in those schools were expected to perform specialist roles. Since then schools have been granted the authority to deploy specialist staff in the roles they think best serves the school. If a significant number of schools have decided to use specialist teachers for general teaching the average class size would be expected to be smaller than that shown for 1979. As noted in Chapter 2 the primary schools of Victoria were allocated a rather greater proportion of specialist teachers than were schools in other States. In New Zealand primary schools there was a considerably smaller proportion of teacher time devoted to class-related and school management. Only in

Table 5.5 Estimated Percentage of Available Teacher Time Allocated to Regular Class Teaching in Australian Government Primary Schools in 1979

System	Percentage of time to class teaching[a]	Percentage of time to class-related management[b]
ACT	78	22
NSW	81	19
Vic.	70	30
Qld	79	21
SA	75	25
WA	79	21
Tas.	79	21

a Includes formally constituted 'special classes' but not withdrawal groups for special purposes.

b Includes individual tuition and special small remedial groups.

intermediate schools was there substantial allocation of teacher time to these functions and in those schools most of that time was involved in the specialist teaching provided by secondary teachers in those schools.

One note of caution is necessary regarding the data in Tables 5.5 and 5.6. Those data should not be used in making comparisons with secondary schools in average teaching loads since they take no account of the different lengths of time for which primary and secondary schools operate.

The Role of Teacher Aides

The detail which could be provided about the role of teacher-aides in primary schools was not extensive. Relevant data from the survey has been shown in Tables 5.7 and 5.8. Those data suggest that where schools had teacher aides on the staff they were used in general rather than specific roles. For all education systems except one the most common response to the question asking which of a series of statements best described the work of teacher aides at the school was 'assisting teachers across most year levels in most subjects'. The exception was in Western Australian primary schools where rather more specific roles appeared to have been ascribed to teacher aides. In that system

Table 5.6 Allocation of Time to Various Functions in New Zealand Government Primary Schools

System	Percentage of time class teaching	Percentage of time to class-related, school management and specialist classes
Full Primary	94	6
Contributing	92	8
Intermediate	67	33[a]

a These data include both time allocated to other duties and specialist teaching in manual studies.

Table 5.7 Percentages of Australian Primary Schools Indicating Various Descriptions of the Role of Teacher Aides (Survey of Sample Schools - 1979)

System	Code[a] 1	2	3	4	5	6	7
ACT	15	44	7	7	18	7	0
NSW	12	54	5	18	12	0	0
Vic.	62	21	14	0	2	0	0
Qld	0	54	14	18	11	2	0
SA	0	80	12	5	2	0	0
WA	12	7	0	34	29	9	9
Tas.	5	68	15	7	0	2	3

a Code: 1 = Not applicable - no teacher aides,
2 = Assisting teachers across most year levels in most subjects,
3 = Assisting teachers across most year levels in some subjects only,
4 = Assisting teachers in some year levels in most subjects,
5 = Assisting teachers in some year levels in some subjects only,
6 = Assisting teachers in one year level in most subjects, and
7 = Assisting teachers in one year level in some subjects only.

Table 5.8 Percentages of New Zealand Primary Schools Indicating Various Descriptions of the Role of Teacher Aides (Survey of Sample Schools - 1979)

System	Code[a] 1	2	3	4	5	6	7
Full Primary	12	42	17	4	17	4	4
Contributing	11	56	18	4	11	0	0
Intermediate	5	58	26	10	0	0	0

a Code: 1 = Not applicable - no teacher aides,
2 = Assisting teachers across most year levels in most subjects,
3 = Assisting teachers across most year levels in some subjects only,
4 = Assisting teachers in some year levels most subjects,
5 = Assisting teachers in some year levels in some subjects only,
6 = Assisting teachers in one year level in most subjects, and
7 = Assisting teachers in one year level in some subjects only.

principals appeared to suggest that teacher aides were more often assigned to particular year levels than to the school as a whole. Issues of deployment of ancillary staff in primary schools seem important enough to warrant further investigation.

Resource Allocation in Secondary Schools

In an early section of this chapter a number of issues associated with any examination of resource allocation in secondary schools was discussed. As part of that discussion attention was drawn to the allocation of resources to functions other than class teaching,

Table 5.9 Average Teaching Loads in Hours per Week of Various Categories of Staff in Government Secondary Schools as Reported by Principals in 1979 (Survey Sample of Schools 1979)

System	Principal	Deputy-Principal	Senior[bc] teacher	Assistant[bc] class teacher
ACT[a]	0.0	8.2	12.0 (11.6)	18.1 (15.6)
NSW	0.1	4.9	14.8 (14.3)	19.7 (18.3)
Vic. (High)	0.5	3.1	13.1 (12.4)	17.7 (16.6)
Vic. (Tech)	0.1	0.2	14.5 (n.a.)	19.5 (n.a.)
Qld	0.9	3.8	13.1 (11.2)	20.0 (15.7)
SA	2.5	6.5	16.6 (15.5)	20.5 (20.0)
WA	0.8	2.5	16.6 (16.1)	20.5 (19.5)
Tas.[a]	3.7	10.3	16.2 (n.a.)	20.5 (n.a.)

a Not including senior colleges.

b The figure in parenthesis is the average class teaching load including only direct class teaching (ie excluding sports and recreation, time for acting as a subject master, or year level co-ordinator etc.) averaged over all teachers in the category and calculated from official staffing returns. Such data were not available in Tasmania or from Victorian technical schools.

c Though the critical values for a difference in mean to be significant at the five per cent level depend on the particular comparison being made a good approximation is that a difference of 0.5 in mean teaching loads for the categories assistant class teacher and senior teacher would be statistically signiciant.

and the complexities involved in using a measure of average class size when groups were fluid. In this section some of the ideas elaborated there have been applied to government secondary schools in Australia. First, the allocation of resources to the various functions of secondary schools has been considered. Secondly the time-weighted average class size at each year level offered in secondary schools has been presented and discussed. Finally, the range of curriculum alternatives offered in each year level in each system has been examined. As argued at an earlier point in the present chapter curriculum diversity would not affect the time-weighted average class size if the school or the year level were the frame of reference. However under some circumstances broadening of student curriculum choice might only be achieved by increasing the time-weighted average class size from the perspective of the student.

Allocation of Personnel to Roles

The crude distinction in school functions between class teaching, class-related management, and school-related management has been elaborated and applied in the case of primary schools. This distinction has been applied also to secondary schools. For secondary schools the teaching loads reported by principals for each of the categories principal, deputy principal, senior teacher and assistant class teacher were used to record the data in Table 5.9. Two important aspects of these data are worth noting. The first is that they include 'sports and recreation' supervision and thereby are congruent

with what are normally included in estimates of teaching load. The second is that the category assistant class teacher does not include specialist teachers who would have small formal class teaching loads. From these data it appeared that the formal teaching loads for teachers in the high schools of the Australian Capital Territory and Victoria were a little lower than those of teachers in the secondary schools of other systems included in the study. The teaching loads of staff in the senior colleges in the Australian Capital Territory were almost the same as those in Australian Capital Territory high schools. For principals, deputy principals, senior teachers and assistant class teachers the teaching loads were 0.2, 8.0, 12.6 and 19.0 hours per week respectively. In Tasmanian colleges the teaching loads were 1.4, 5.7, 13.7 and 15.6 hours per week for each of the four categories of staff. College staff in Tasmania appeared to have smaller teaching loads than did staff in high schools of that State.

It has been noted above that the data in Table 5.9 included supervision of sports and recreation. In addition these data appeared to have included the time allowances given where an assistant class teacher was in charge of a subject department, was responsible for co-ordinating a year level or sub-school, or was assigned other special duties. Hence, though these data would be congruent with that which would be normally included in teaching loads they do not always provide a good indication of the division between the functions described at the beginning of this chapter. For this reason Table 5.9 also contains in parentheses the average number of hours actually recorded on official records as being allocated to class teaching for all teaching staff in a given category. The observation that the two sets of data differ would appear to indicate the importance of defining 'teaching load' precisely according to the purpose for which the data are to be used.

For an analysis of the distribution of teaching resources according to function most recorded forms of teacher workload are inappropriate because they include various types of allowance for special duties and exclude certain categories of teaching staff. To avoid confusion with the normally recorded teacher workload figures the present discussion is more concerned with the proportion of teacher hours allocated to class teaching and the proportion allocated to class-related and school management. In estimating available teacher hours all teachers were included even if they were designated as specialist staff, non-teaching principals or similar categories. The number of hours allocated to actual class teaching was calculated from departmental records (except for Victorian technical schools and Tasmanian high schools where survey data was used). On this basis the proportion of all possible teacher hours allocated to class teaching was estimated. These estimates have been recorded in Table 5.10. The data suggested that there were only small differences between systems. The data also suggested that there were some differences between schools within systems. For example in South Australia where the mean percentage of time allocated to class

Table 5.10 Estimated Mean Percentage of Available Teacher Hours Allocated to Class Teaching in Government Secondary Schools in 1979: (Based on Official Records: Probability Sample of Schools)

System	Percentage of teacher hours to class teaching[a]	Percentage of teacher hours to other functions
ACT[b]	52 (3)	48
NSW	60 (4)	40
Vic. (High)	54 (7)	46
Vic. (Tech)[c]	59 (10)	41
Qld	62 (8)	38
SA	62 (7)	38
WA	64 (6)	36
Tas.[bc]	64 (10)	36

a The figures in parentheses are standard deviations.
b Not including senior colleges.
c Official records not available: estimated from survey data using best possible estimates of role of specialist staff.

teaching was 62 per cent, one school in six used less than 55 per cent of teacher time in this way and one school in six used more than 69 per cent of teacher time in this way. There would appear to be no simple answer to an appropriate relative allocation. How much of the available resources should be allocated to management in this broad sense would depend upon; the availability of other personnel in schools not classified as teachers[23], the goals of the school and the educational needs of its students, and the preferred methods of teaching. As examples schools with many students from non-English speaking families might need to allocate more resources from class teaching to special programs of assistance in language learning, or some schools might place greater emphasis on the individual use of a library or resource centre than others. In general rather more of the total time available in secondary schools was allocated to class-related and school management than in primary schools.

Lindner (1981) has argued that a necessary relationship exists between the pupil teacher ratio, the time-weighted average class size and the average fractional non-contact time for teachers. He summarized this as:

$$C = \frac{R}{(1-\overline{NCT})}$$

where C = average class size,
R = student-teacher ratio, and
$\overline{NCT}$ = average fractional non-contact time for all teachers.

23 This was discussed in Chapter 2. For example some schools have 'pupil welfare co-ordinators' who are classified as teachers. The welfare role of these staff thus appears in the allocation of teachers time. In other schools educational welfare officers are appointed whose time does not appear in the allocation of teacher time.

The relationship suggested by Lindner is similar to the 'average class size equation preposed by Davies (1969:89) and Burke (1972). In terms of the arguments advanced earlier in this chapter the term 'average fractional non-contact time' could be alternatively expressed as the proportion of all available teacher time allocated to class teaching. This would then emphasize that the non-contact time referred to includes specialist teachers who might do little or no formal teaching or senior management staff such as the principal. Thus the formula proposed by Lindner would become:

$$C = \frac{R}{p}$$

where, C = average class size,

p = the proportion of available teacher hours allocated to class teaching, and

R = student-teacher ratio.

The implication of this relationship would be that the time-weighted average class size for a school depends upon the level of teaching resources (the student-teacher ratio) and the proportion of those resources allocated to class teaching rather than other functions.

The Size of Classes in Secondary Schools

In an early section of this chapter the various ways in which the average class size could be defined were discussed. One conclusion which arose from that discussion was that the most appropriate measure for comparing class sizes in different year levels and in different groups of schools was the time-weighted average class size. However it was also noted that this would not necessarily be identical to the time-weighted average class size experienced by students if a disproportionate amount of teacher hours were allocated to one section of the curriculum.

Time-weighted average class sizes, as calculated by the method outlined earlier in this chapter from education department records have been recorded in Table 5.11. The time-weighted average class size at any year level would be the result of the level of teaching resources available, the proportion of those resources allocated to direct class teaching, and the way in which teaching resources were distributed across year levels. From Table 5.11 it would appear that technical schools in Victoria generally had the smallest classes at each year level. Since these data referred to a time-weighted average they took into account the time students in those schools were in relatively small classes for trade studies. Over the compulsory school years 7 to 10 the size of classes in New South Wales schools was higher than in any other State. It is also worth noting that the time-weighted average class size in Queensland secondary schools was lower than might have been anticipated on the basis of teacher-student ratios. One explanation for this appeared to be that Queensland secondary schools reported that rather less time was given in teaching each week. Queensland schools reported an

Table 5.11 Time-weighted Average Class Sizes at Various Year Levels in Government Secondary Schools in 1979: (Probability Sample of Schools)[a]

System	Year level					
	7	8	9	10	11	12
ACT[b]	23.8	24.8	23.5	23.3	n.a.	n.a.
NSW	25.0	25.6	25.6	25.9	19.2	15.4
Vic. (High)	23.3	23.3	22.6	23.2	19.4	16.3
Vic. (Tech)[c]	17.9	17.6	17.6	16.6	12.0	n.a.
Qld	n.a.	25.6	23.0	23.2	21.8	18.7
SA	n.a.	23.6	22.6	21.7	17.6	13.3
WA	n.a.	23.7	22.7	22.5	19.5	14.6
Tas.[bc]	22.8	22.8	21.7	19.3	n.a.	n.a.

a Though critical value of a difference in mean to be significant at the five per cent level depends on the particular comparison being made an approximation can be stated. For most between State comparison at a given year level a difference of about 1.3 would be needed for statistical significance.

b Not including senior colleges.

c Based on survey data not official records.

average of 24 hours per week instructional time while the figure for all other systems exceeded 25 hours per week.

A general observation in all systems was that the time-weighted average class size was rather less in Years 11 and 12 than in Years 7 to 10. This means that in Years 11 and 12 more teaching resources were provided to students than were provided in Years 7 to 10. The data in Table 5.11 do not include the senior colleges of Tasmania and the Australian Capital Territory. From questionnaires distributed to colleges in those States it was possible to estimate a time-weighted average class size for the college but not for each year separately. In the Australian Capital Territory senior colleges the time-weighted average class size over the two nominal years appeared to be 17.1 and in Tasmanian colleges the value was approximately 23.4. These data do not support the proposition that senior colleges have more abundant teaching resources than Years 11 and 12 in six year secondary schools. In the case of the Australian Capital Territory the difference between time-weighted average class size in the colleges and in Years 7 to 10 at high schools is not much different than that between Years 11 and 12 and Years 7 to 10 in the six year secondary systems of other States. In Tasmania the size of classes in the colleges did not appear to be noticeably smaller on average than those in the four year secondary schools of that state. Indeed, it appeared that the time-weighted average class size in the senior colleges of Tasmania tended to be a little larger than the time-weighted class size in the Years 7 to 10 of the high school system of that state. In Chapter 3 it was noted that in both the Australian Capital Territory and Tasmania the ratio of teachers to students was more favourable for the senior colleges than for the

Table 5.12 Percentage Variation in Teacher Hours per Student per Week Across Each Year Level in Government Secondary Schools in 1979

System	Year level 7	8	9	10	11	12
ACT	-1	-4	-2	+6	n.a.	n.a.
NSW	-11	-16	-13	-15	+13	+41
Vic. (High)	-8	-10	-15	-12	+13	+25
Vic. (Tech)	-10	-9	-11	-5	+35	n.a.
Qld	n.a.	-12	-5	-4	+13	+19
SA	n.a.	-18	-17	-14	+4	+45
WA	n.a.	-18	-13	-13	+4	+39
Tas.	-6	-5	+2	+9	n.a.	n.a.

Note: Figures indicate percentage variation in mean teacher hours per student at each year level from a grand mean.

high schools. On the basis of these data it would appear that about 59 per cent of total time in the Australian Capital Territory colleges was allocated to class teaching. That figure was a little higher than the corresponding figure for Australian Capital Territory high schools but consistent with the colleges having a smaller proportion of specialist staff than the high schools. In Tasmanian colleges some 48 per cent of total available time was allocated to class teaching which was rather lower than that for high schools but consistent with the considerably greater proportion of senior staff in the colleges. For those colleges this would appear to assume a need for greater time for class-related management (mainly in preparation of lessons and consultation with students) for the later years of secondary schooling.

An alternative way of examining the distribution of teaching resources across year levels would be to consider the number of teacher hours per student at each year level. In Table 5.12 the percentage variation for each year level from a grand mean has been recorded. These data for each system year level from a grand mean has been recorded. These data for each system have been calculated to show the distribution of resources across year levels within school systems. This notion of percentage variation in teaching resources is thus analogous to the ideas of 'bonus' classes and 'borrowing' proposed by Davies (1969). From these data it can be seen that in most school systems there is some borrowing from Years 7 to 10 to provide resources for Years 11 and 12.

To investigate the distribution of resources to Year 12 in schools of varying size a further computation was performed. Government secondary schools across Australia were classified into 10 categories (each containing approximately the same number of schools) according to the total enrolment in Years 11 and 12. The time-weighted average class size for each size category in each State was then recorded in Table 5.13. Across the size categories indicated there were some fluctuations in the time-weighted average class size but it was noticeable that schools with small senior sections had small classes at both Year 11 and Year 12. The enrolment level in the senior school at which

Table 5.13 Time-weighted Average Class Size for Years 11 and 12 in Government Secondary Schools in 1979 According to Enrolment in Years 11 and 12

Enrolment in years 11 + 12	NSW		Vic. (high)		Qld		SA		WA	
	Yr 11	Yr 12	Yr 11	Yr 12	Yr 11	Yr 12	Yr 11	Yr 12	Yr 11	Yr 12
< 83	12.5	10.7	12.7	8.3	13.0	7.0	10.0	4.0	n.a.	n.a.
83-103	15.5	12.5	21.0	14.0	20.5	14.5	12.3	7.0	14.0	9.0
104-120	16.5	13.0	19.0	15.0	20.7	17.3	18.0	13.0	n.a.	n.a.
121-141	19.7	13.3	23.5	15.5	20.0	16.0	n.a.	n.a.	17.5	13.5
142-166	18.8	15.3	19.3	17.0	20.3	20.0	14.0	8.3	19.4	12.6
167-183	20.0	17.2	19.5	19.7	20.0	16.0	19.7	12.0	22.2	13.4
184-208	22.2	17.0	21.0	15.3	23.4	20.8	15.0	13.0	18.3	15.7
209-236	22.0	17.5	20.0	18.5	23.5	21.0	17.3	12.3	14.5	10.5
237-289	23.0	19.5	n.a.	27.0	22.3	19.3	19.4	13.1	21.6	16.4
⩾ 290	22.5	20.0	23.0	24.0	23.3	20.3	20.3	17.2	19.0	17.2
All[a]	19.2	15.4	19.4	16.3	21.8	18.7	18.1	13.3	19.5	14.6

[a] All schools with both Year 11 and Year 12 classes.

this reduction in class size became most apparent varied between systems but for Year 12 classes it seemed that when the enrolment in the senior section of the schools was less than about 100 the time-weighted average class size tended to be less than the mean value for the system. In these schools with small senior sections it appeared that additional resources needed to be provided to support the necessary curriculum range. Those resources could either be provided through the education system or by the school 'borrowing' from Years 7 to 10. When the time-weighted average class size for Years 11 and 12 in only those schools with senior sections which contained more than 100 students were compared with the time-weighted average class size figures for Years 7 to 10 the difference was not so great as when all schools were considered. However some differences remained. Even though the equal distribution of resources may have been potentially more likely in large high schools with a large senior school enrolment these data did not support the suggestion that that potential was always realized. It seems likely that such schools chose to maintain small classes at Year 12 because that was seen as educationally desirable or so that a suitably wide range of curriculum specialities could be offered at Year 12. The issue of curriculum range will be addressed in more detail in a section below.

Another aspect of the way in which resources were allocated across year levels in secondary schools concerns the seniority of the staff allocated at each year level. In Table 5.14 the percentage of teacher hours at each year level which were hours provided by senior teachers and higher classifications, have been recorded. In all systems where secondary education to Year 12 was provided in general secondary schools senior teachers were allocated disproportionately to Years 11 and 12. Not only did the older students apparently have a greater abundance of teaching resources but the resources

Table 5.14 Percentage of Teacher Hours at Each Year Level Provided by Staff the Category Senior Teacher and Above for Government Secondary Schools in 1979

System	Year level					
	7	8	9	10	11	12
ACT	13	15	14	19	n.a.	n.a.
NSW	10	10	11	12	19	25
Vic. (High)	5	6	6	7	11	12
Vic. (Tech)	4	6	7	10	12	n.a.
Qld	n.a.	7	7	9	22	23
SA	n.a.	17	16	17	21	29
WA	n.a.	9	9	10	18	30
Tas.	16	16	21	23	23	n.a.

allocated at those levels were more frequently the most experienced staff. This disparity was greater in some education systems than in others. The higher proportion of senior staff teaching in Years 11 and 12 of the high schools would appear to represent a policy within schools which matches the more abundant provision of senior staff to the senior colleges at system level which was discussed in Chapter 3.

The Allocation of Resources Within Years

In a section above it has been argued that the time-weighted average class size at a year level depended upon the teaching resources allocated to that year level and the aggregate number of students. It was also argued that the time-weighted average class size from the perspective of students might differ from the perspective of the school because not all options would be available to all students. Such a situation could arise when the curriculum consisted of a core and electives but would also arise under other curriculum structures. For this reason the range of choices available to students at each year level has been considered in the present section. The range of choice in students programs would be relevant also in that the range possible would be limited by the level of resources available.

One issue relevant to the extent of student choice would be the proportion of a students weekly time which involved 'compulsory' studies. A compulsory subject was defined in the survey as one 'which must be taken by all students at that year level'. The average percentage of each week devoted to compulsory studies has been recorded in Table 5.15. For most schools it was common for Year 7 to be almost wholly occupied by compulsory studies. This was consistent with the curriculum structures described in Chapter 4 but suggested that electives, where available, occupied but a small proportion of a students week. The pattern across all systems was for the proportion of time given to compulsory studies to decrease as the student moved from lower to higher year levels. In both the Australian Capital Territory and Queensland there was a marked increase in the percentage of time allocated to electives after one year of secondary

200

Table 5.15 Percentage of Student Time Devoted to Compulsory Subjects at Each Year Level in Government Secondary Schools in 1979

System	Year level					
	7	8	9	10	11	12
ACT	90	59	56	48	n.a.	n.a.
NSW	92	79	58	58	22	20
Vic. (High)	92	85	65	54	19	18
Vic. (Tech)	100	96	90	57	26	n.a.
Qld	n.a.	83	27	25	15	15
SA	n.a.	88	74	61	8	0
WA	n.a.	81	67	66	32	13
Tas.	89	74	58	57	n.a.	n.a.

Table 5.16 Percentage of Total Subjects Studied which were Compulsory for Students in Government Secondary Schools in 1979

System	Year level					
	7	8	9	10	11	12
ACT	87	55	56	53	n.a.	n.a.
NSW	91	70	60	62	22	20
Vic. (High)	94	89	66	56	17	19
Vic. (Tech)	100	95	89	59	43	n.a.
Qld	n.a.	88	28	31	18	17
SA	n.a.	89	72	59	23	0
WA	n.a.	75	53	52	15	15
Tas.	90	74	59	60	n.a.	n.a.

Table 5.17 Number of Subjects Taken by an Average Student as a Percentage of the Number of Separate Subjects Taught at Each Year Level in Government Secondary Schools in 1979

System	Year level					
	7	8	9	10	11	12
ACT	85	43	37	34	n.a.	n.a.
NSW	91	69	51	50	35	34
Vic. (High)	97	91	65	54	32	35
Vic. (Tech)	100	97	89	43	34	n.a.
Qld	n.a.	85	38	35	31	32
SA	n.a.	84	70	57	29	28
WA	n.a.	80	44	41	31	32
Tas.	89	74	44	44	n.a.	n.a.

school. For Victorian high schools and New South Wales a marked increase in the time for electives occurred after two years of secondary school. At Year 12 where about 20 per cent of a students time was allocated to a compulsory subject it would be consistent with one compulsory subject out of five studied.

Table 5.16 contains information relating to the percentage of subjects studied which were compulsory for students. As subjects might have differed in their weekly time allocation these data would not be expected to be necessarily identical to those in Table 5.15. In most instances these data were similar to the corresponding figures in Table 5.15 suggesting that elective subjects were on average of similar duration to compulsory subjects.[24] However, for Years 8 to 10 of Western Australian secondary schools a comparison of Table 5.15 with Table 5.16 leads to the inference that elective studies were of rather shorter duration than core studies. By contrast for Year 11 in South Australian high schools and Victorian technical schools the data suggest that the core subjects on average might have been a little shorter than the electives.

The third aspect of curriculum range which it was possible to address using these data was the size of the pool of subjects from which students could choose. In Table 5.17 the 'average number of subjects taken by each student' expressed as percentages of the total number of subjects taught have been recorded for each year level. Of particular interest was the range of subjects offered at Year 12. It seemed common across all the systems studied that approximately three times as many subjects were available as were studied by the average student. Expressed another way it seemed that on average each student was able to choose five or six subjects of 15 to 18 subjects offered at the school.

To investigate the effect of school size on the curriculum choice available to senior students the schools were classified in ten groups according to the size of the enrolment of Years 11 and 12. For each category of senior school enrolment in each system the index of subject choice used above has been recorded in Table 5.18. The relationship between senior school enrolment and subject choice at Years 11 and 12 is not smooth for every system but in general the data tend to suggest a wider choice for students in schools with a larger senior section. This is implied by a decrease in the number of subjects taken expressed as a percentage of the total subjects taught at the year level, as the size of the senior section of the school increased. However, it is important to note that the relationship was not smooth and probably not linear in that choice was most restricted in the 10 per cent of schools with the smallest senior sections. In other schools the increase in subject choice with increasing size was less obvious.

A consideration of the variation of the time-weighted average class size, and the

---

24 It is important to note that compulsory studies would often include art, music, etc. as well as English and Mathematics.

Table 5.18 Number of Subjects Taken by an Average Student in Years 11 and 12 as a Percentage of the Total Number of Separate Subjects Taught at those Levels in Government Secondary Schools Classified According to Senior Enrolment
(Survey Data, 1979)

Enrolment in years 11 + 12	NSW		Vic.		Qld		SA		WA	
	Yr 11	Yr 12	Yr 11	Yr 12	Yr 11	Yr 12	Yr 11	Yr 12	Yr 11	Yr 12
<83	48	50	43	57	(27)	67	64	56	61	n.a.
83-103	40	39	38	44	34	35	35	40	(24)	(24)
104-120	41	36	(24)	36	38	37	30	38	n.a.	n.a.
121-141	36	35	32	36	31	32	29	n.a.	30	31
142-166	31	28	29	29	31	33	29	26	40	43
167-183	31	31	30	30	33	32	31	35	32	39
184-208	35	34	26	27	33	31	(19)	(19)	36	38
209-236	28	27	31	17	32	32	25	23	29	30
237-289	26	25	29	31	34	34	24	24	26	28
≥290	30	36	(27)	25	25	25	25	23	24	25

range of subject choice available to students in the senior sections of high schools illustrates the factors which must be considered by schools in planning for the senior school. Schools would have to decide upon the curriculum range which they need to offer for their students and the extent to which they are able to obtain additional resources to support that range either from the relevant education authorities or by 'borrowing' from the junior section of the school. Additional resources provided by either means to support a reasonably wide curriculum range would result in smaller average class sizes. It would appear that in schools where the senior enrolment, defined as the number of students in Years 11 and 12, was less than about 80, the range of subject choice available was noticeably less wide than in other schools even though average class sizes were smaller than in larger schools.

Senior colleges were organized in a more complex way around units or levels and it did seem that in those colleges the pool of subjects from which students could choose was rather wider. In the senior college in the Australian Capital Territory students courses were structured around units of one terms duration. Each term a student would study between four to six units, depending on the structure of the course being pursued, each of which involved four hours tuition per week. The units could be grouped into different types of course comprising three, five, eight or 10 units. The combination of courses made up the students program. At Kendall College described by Sturman (1982) the pattern of choice was illustrative of the diversity. In Term 1 of 1980 there were approximately 200 classes in accredited units available of which 120 were in different units. However, even though an average student might choose only five of those units many of the units would be offered in every term. If those 120 were all that were ever offered each students choice would be about 30 units out of 120. In practice the students

choice would be wider than this, both because the total number of different units offered over two years would be greater than 120 and because there would be a small number (about 25) of units available which were not accredited[25]. Perhaps the best estimate of the index of subject choice which was available in senior colleges in the Australian Capital Territory would be that it was probably less than the 25 per cent typically reported by the larger high schools in other education systems. That means the range of choice even by that index was greater than in large high schools. But, it is important to note that the choice was of term length units rather than of year length subjects and so each students program could be more flexibly planned than in a traditional Year 11 or Year 12 program.

Estimations of the degree of choice for students in the senior colleges of Tasmania were similarly complicated by the existence of level 2 and level 3 subjects. Though the subjects offered were of one years duration the choice available to students seemed similarly wide as was the case for the Australian Capital Territory colleges. On the assumption that students studied about 4 subjects per year most colleges seemed to offer five or six times as many subjects as any individual student would study.

On the basis of the evidence it would appear that senior colleges were able to offer wider choice of subjects for students in Years 11 and 12 without being obliged to support very small classes. In addition other evidence (Anderson and Beswick, 1979) suggested that many adolescents expressed satisfaction with these types of shool. However, in planning educational policy cognizance needs to be taken of other factors. First, many small high schools serve small, relatively isolated communities which could not support a senior college. The costs of travel and accommodation for students to attend such institutions could well outweigh any benefits of concentrating resources in one location. Perhaps more importantly the prospect of such travel might well deter some young people from proceeding with their studies. Secondly, it has been argued that young people from low socio-economic status backgrounds can be encouraged to continue secondary education through the confidence they gain in a neighbourhood school and its staff. The prospect of changing school at the point when they are able to leave school could increase the loss of such students from the education system. The present study can offer no evidence regarding either of these two arguments against a system based on senior colleges and certainly has no evidence on which one could weigh these disadvantages against the advantages of wider choice of studies and a more adult environment which might accrue in a senior college. One tentative conclusion might be that there could well be a greater diversity of school types within education systems catering for the different demands of various communities in each state. There would

---

25 See Sturman (1982) for more details of these terms.

appear to be no necessary reason why any school system should totally adopt one type of structure or another.

These data do not permit a precise examination of whether the time-weighted average class size from the student frame of reference differed from that from the school as a frame of reference. The extent to which that theoretical possibility occurred in practice remains an issue for future exploration. The data have provided a map of the extent of choice for students in the subjects they studied at each year level and in different education systems.

In Summary

This chapter has been concerned with the allocation of resources within schools. It has mainly involved a consideration of the deployment of teaching staff as relatively few data were collected regarding ancillary staff in schools. Within that context the chapter addressed the distribution of teacher time among the various school functions, the average size of classes, and the distribution of class teaching resources across year levels.

A rough distinction in the functions to which teaching staff were allocated was made between class teaching, class-related management (which included preparation and correction) and school-wide management (which included such matters as curriculum development, counselling, library management, and the managing of individual learning as well as administration). It was argued that schools had some choice, even though that choice was restricted, in the way resources were distributed among these groups of functions. Data which were available suggested that there were differences between education systems at both primary and secondary level in the pattern of resource allocation among these functions. These differences were partly attributable to the proportion of teaching staff which was designated as specialist staff, partly to the time allocated for preparation and correction, and partly to the seniority structure of the schools teaching staff. Overall there was a difference between primary and secondary schools with a considerably greater proportion of time being allocated to functions other than class teaching in secondary schools. It was argued that there was no single most appropriate way for resources to be allocated between functions. That issue needed to be resolved in the context of the schools environment and goals.

For primary schools the size of 'roll' classes as calculated from official records was reported. In practice the size of actual teaching groups may have differed from these data to the extent that the grouping of students was fluid. In Chapter 4 it had been noted that there was some fluidity in teaching groups in primary schools. Generally the average size of classes appeared a little larger than those commonly quoted. This could arise because the sample chosen was a probability sample and thus reflected the schools

in proportion to the number of students being served. A distribution of the size of all classes would be skewed so that an 'average' reported as the mean of all classes or as the mean of a simple random sample of classes would be smaller than the mean class size experienced by the average student. There was relatively little difference in the average class size at different year levels in primary schools except for Years K to 2 where in most systems the size of classes was smaller than in older year levels.

For secondary schools the index of class size was the time-weighted average class size. It was argued that this was the most appropriate index for comparing teaching resources provided at various year levels even though under certain circumstances it might not correspond to the time-weighted average class size experienced by students. Across secondary schools it appeared that average class sizes were considerably smaller at Years 11 and 12 than in Year 10 and below. Moreover more senior staff were used in teaching these levels than in the lower secondary school. It was suggested that this could partly be due to a policy which was based on a belief in the value of smaller teaching groups at these levels or it could partly have arisen from the need to provide a reasonable curriculum range in relatively small schools. In general it appeared that approximately three times as many subjects were taught at Year 12 in an average school, as were taken by an average student.

The information in this chapter illustrates the types of choice exercised by schools and the contending priorities which need to be resolved so that resources can be rationally allocated to various functions, to different year levels and to different areas of the school.

CHAPTER 6

SOME FINAL REMARKS

This report has been concerned with the personnel resources available in schools, structures through which policies were formulated and implemented, and patterns of resource allocation. In Chapter 1 it was noted that schools were best considered as multi-purpose institutions even though many studies of school effects on learning outcomes took insufficient cognizance of those varied purposes. Sturman (1982) has described how school goals, explicit and implicit, were translated into practical policies which affected patterns of resource allocation in a number of selected schools. In a study of a large sample of schools it was not possible to analyse the priorities given to various facets of the generally acknowledged functions of schooling. It was only possible to recognize that underlying differences in resource allocation might have different priorities. Two of the various enquiries which have elaborated the notion that schools are expected to serve various purposes illustrate the point.

One approach advanced by a group of writers based at the University of Chicago is exemplified in detailed taxonomies of educational objectives in three domains which were designated as cognitive, affective, and psychomotor (Bloom, Englehardt, Furst, Hill and Krathwohl, 1966; Krathwohl, Bloom and Masia, 1964). Among the values of these taxonomies was that they made explicit the breadth of the purposes of schooling by suggesting domains in which educational goals could be classified. In practice they have sometimes been misinterpreted as carrying the implication that the domains were clearly separable. That would appear not to be a necessary conclusion of the work. It is possible to accommodate within the taxonomies proposed the proposition that development in the cognitive, affective, and psychomotor domains may be interpendent. For example cognitive development may depend on the development of certain attitudes or some attitudes may follow from the acquisition of cognitive skills.

From the perspective of an analysis of resource allocation the interpendence of goals means that it is difficult to say that certain resources have been unambiguously allocated to certain activities to pursue a particular goal. Not only would overall school programs be multi-objective programs but individual activities could have multiple purposes. For example a sporting program might be directed to both psychomotor and affective development or vertical grouping of students could be implemented with a view to both enhancing affective development and providing for higher levels of cognitive development.

From a sociological perspective Mitchell and Spady (1978) offered another interpretation of the functions of schooling. those authors argued that there existed a

set of broad societal expectations which were responsible for the creation and maintenance of schools:

1 to facilitate and certify the achievement of technical competence;
2 to encourage the fullest possible development of physical, emotional and intellectual skills and abilities;
3 to generate and support social integration among individuals across cultural groups and within institutions; and
4 to nurture and guide each student's sense of social responsibility for the consequences of his/her own personal actions and for the character and quality of the groups to which the student belongs.

(Mitchell and Spady, 1978:9)

Similar issues regarding the interpretation of specific resource allocations arise from the interdependence of these functions as was discussed above. The general point which can be drawn from both approaches to the classification of educational goals would appear to be that the expectations held for schools and schooling are broad. Both approaches recognize the multi-purpose nature of schooling. Implicit in this would be that resources would need to be allocated to a variety of purposes within schools and that the proportion allocated to any given function could vary between schools.

As part of the survey a number of the responding schools (about 40 per cent) enclosed a copy of the statement of the general goals of the school and an even larger number (about 90 per cent) indicated that they possessed such a statement. Generally those statements appeared to be reviewed each two or three years. Even though a detailed analysis of those statements was not possible it did appear common for the objectives to be expansive in expressing goals other than simple utilitarian aspects of cognitive development.

Given that schools are organizations with several purposes then it follows that there will necessarily be competing demands for resources. The discussion above has suggested that within schools there were different functions to which resources needed to be allocated. Even within any given function, such as class teaching, priorities could differ between schools regarding the allocation of resources to subject areas, to year levels and to particular groups of students. In Chapter 1 it was argued that in order to understand the impact of resources on students it was necessary to understand the ways in which resources were distributed to students. It was suggested that there were several dimensions along which that distribution could be considered. Two important dimensions were a dimension related to the functions of schools and a dimension related to the distribution of resources to students. With respect to the first of those dimensions it was argued that studies of outcomes of schooling would underestimate the impact of resources if the distribution of resources to those functions directly related to the

outcome being measured was not taken into account. Regarding the second of those dimensions it was suggested that it was necessary to understand the ways in which resources were allocated among students as a prior step in an understanding of the impact of resources on student learning.

Through the present report the distribution of available resources to students has been considered in three stages. First the nature of the personnel resources made available to schools by school systems was considered since policies at that level constrained the boundaries within which schools could deploy those resources. Secondly the structures in schools which could influence the pattern of resource allocation were considered. It was argued in Chapter 1 that school structures formed an important part of the process of resource allocation. Thirdly the ways in which resources were distributed to year levels and classes and other aspects of schooling were considered. The study did not consider the allocation of resources to students within classes though it has been argued that such a consideration was an important next step in research in the area (Bidwell and Kasarda, 1980).

Personnel in Schools

In examining the personnel resources available in schools four main issues were considered in the present report:

(1) the profile of personnel resources available in schools,
(2) the extent to which school needs were considered in allocating resources,
(3) the influence of schools in determining their staff complement; and
(4) the size of schools which were established.

Profiles of Resource Complements

The personnel in schools include people fulfilling a range of responsibilities. Though school personnel could broadly be classified as teaching and support staff that distinction needs to be qualified by a consideration of the tasks actually performed by each group of staff. Not all personnel employed as teachers would be employed for direct class teaching: some would have a counselling, welfare, support or managerial role. Support staff could include a wide range of types of personnel. Some, such as teachers-aides, would have a direct role in assisting the work of teachers. Others might perform clerical duties, have senior administrative responsibilities, or have a senior responsibility for the welfare of students. In some cases there were differences between systems in whether a given role was performed by a specialist teacher or by another professional employed as part of the support staff.

For the reasons outlined above it seemed important to examine school personnel resources in terms of the profile of total resources available (Hancock, 1980) rather than

simply in terms of gross ratios of students to teachers. This comment applies equally to simple comparative studies and those studies which attempt to examine the impact of different levels of resources on student learning. Differences between school systems and between schools suggested underlying differences in emphasis on various purposes of schooling.

In specific terms it was suggested in this survey that schools in systems which appeared to be abundantly provided with teaching staff often had a higher proportion of those staff in specialist roles, or were rather less well provided with support staff. An important issue in staffing schools would appear to be that of an appropriate balance between teaching and support staff. The present study has not reached any firm conclusions about this but has drawn attention to the existence of differences in current practice between systems. In a parallel study Sturman (1982) suggested that there were particularly strong arguments for increased support staff in small schools.

The Consideration of School Circumstance

Most education systems not only allocated staff to schools on the basis of various formulae but also allocated some staff in response to particular needs of particular schools. From the survey data it appeared that most teaching staff were allocated in proportion to school enrolments but that a small percentage of teachers were assigned to schools in response to particular circumstances. For primary schools in all systems this percentage was small and an inspection of departmental records suggested that it concerned mainly specialist staff. For secondary schools the percentage of teaching staff assigned to schools other than under simple formulae was larger than for primary schools but was still a very small proportion of the total. In both sectors of schools, but more especially for secondary schools, there was special provision for staffing of small schools. In the report it was suggested that in addition to formulae teaching staff were allocated in response to 'educational disadvantage', to isolated schools, to support innovation, and for small secondary schools to support a reasonable range of curriculum. For these reasons extreme care would be needed in attributing differences in student performance to these small variations in the availablity of teaching staff.

The numbers of support staff in schools were rather less closely related to school enrolments than were numbers of teaching staff. It seemed that rather more discretion was exercised in this area. This was partly attributable to the variety of funding arrangements for the provision of support staff. Especially where cognizance was taken of educational disadvantage in providing resources to schools additional provision appeared more likely to be manifest in additional support staff than in additional teaching staff.

It has been an accepted tradition of government school systems, throughout Australia and New Zealand, that there should be equality of provision of resources within

any education system. More recently that tradition was modified to incorporate elements of a theory of compensation through additional resources to facilitate better more equal outcomes. Without embarking on an extended discourse on the ethical ramifications of each of the propositions implicit in these notions it is possible to make two comments. The first is that the two ideals are necessarily in conflict. A system cannot aim to have both equality of provision and equality of outcomes. To pursue more of one necessarily means to sacrifice some of the other. The second is that the extent to which school circumstances other than enrolment level were considered in providing personnel to schools appeared to be small and involved mainly support staff. Within this second comment it needs to be noted that in some school systems there was rather less provision for special circumstances than in others. In general secondary schools appeared to incorporate a larger discretionary element than primary schools.

It seems important that staffing policies for schools be recognized as embodying rather more than a simple formula relating the numbers of teachers to the numbers of students. In most systems staffing policies are more complex than that but are not always discussed in such broad terms.

The Influence of Schools

In response to the ey most school principals indicated that there had been an increase in demands on the time of an average teacher. For primary schools the areas in which demands had increased to the greatest extent were curriculum development, in-service education and relations with parents. For secondary schools an additional area of increased demand concerned student counselling. Two pieces of information were sought concerning additional staff. One related to areas in which increased support staff was needed and the other concerned the types of staff which the school might employ if it were granted additional money for that purpose. Even though there were some general characteristics of the types of additional staff which primary and secondary schools would seek the overriding impression was one of differences in the priorities indicated by schools. With some relatively minor exceptions such as in technical schools in Victoria - in terms of senior staff - and in staff employed under Schools Commission funding in Tasmania, schools had, in 1979, relatively little influence over the staff appointed. The evidence of this survey tended to support an increase in the extent of that influence if only for staff above a basic allocation. Such a comment needs to be qualified by the statement that it is not suggested the schools or school councils become employing authorities, and by a recognition that the process of extending school authority in staffing may be a complex issue. Notwithstanding these qualifications it did seem that there was some support in the responses of principals for the idea of providing schools with greater authority for staff, and possibly for basing resource allocation to schools on a basket of services rather than on a fixed configuration of staff.

The Size and Structure of Schools

One aspect of the pattern of resource allocation to students involves the size of schools. In Chapter 2 it was argued that cognizance needed to be taken of the size of the school attended by students on average as well as the average size of schools as such. It seemed that there were differences in policy between systems with regard to the size of schools to which resources would be allocated. Within the primary school sector in Queensland and New South Wales more students were in large schools than in other States. Even though the provision of very small primary schools would usually be attributed to a need to match population distributions, the provision of large primary schools in population centres would appear to derive from other policy considerations. One such consideration would be relative per student costs in small and large schools. It would often be assumed that per student costs were lower in larger schools than in smaller schools though McKenzie and Keeves (1982) have suggested that cost functions in practice were not quite so simple. Against this it was suggested in Chapter 2 that on educational grounds the weight of research evidence favoured relatively small to moderate sized schools. Actual policy would depend on the balance of these two considerations in relation to the value placed on each. It would also be necessary to take cognizance of the ways in which staff time was allocated to different functions in small and large schools.

Most education systems appeared to believe that secondary schools should be larger than primary schools. Typically a 14-year-old student in Australia was in a secondary school with an enrolment of about 800 but in Western Australia and Queensland secondary schools were generally larger than in other States. An additional policy consideration in secondary schools needed to be added to those discussed in relation to primary schools. Given a belief that a curriculum specialized around subjects was appropriate to those schools there was a need to sustain a reasonable curriculum range in Years 11 and 12. Given average retention rates of 50 per cent and 30 per cent respectively to those two year levels a school of 800 students would have a combined enrolment in Years 11 and 12 of 135. In a later chapter it was argued that if the senior school enrolment was less than 80 to 100 the provision in Years 11 and 12 resulted in a more limited choice of subjects than in other schools and was sustained through rather small classes. At least three alternatives need further exploration. One is the use of sub-school structures in order to retain the benefits of small size in Years 7 to 10 and yet maintain reasonable enrolments in Years 11 and 12. Another is the establishment of senior colleges as separate institutions. Senior colleges appeared to have some benefits in resource utilization in that wider choice could be offered without needing to sustain very small classes. On the other hand it may be that there are arguments for full secondary schools based on continuity of contact between staff and students which might be particularly important in areas without a strong tradition of post-compulsory

education. A third alternative is clusters of schools sharing resources with each school specializing in some curriculum areas as a way of maintaining viable senior classes within modest sized secondary schools. Such arrangements would probably be limited to areas where such schools were in close proximity to each other.

In summary it appeared that questions surrounding the size of secondary schools and the structure of secondary school provision were complicated by the fact that those schools provided both compulsory and post-compulsory education. The arguments in support of each type of provision need further evaluation. Perhaps there should be a plurality of types of institution rather than one uniform pattern across each State. With different provisions in rural and urban areas for example.

School Structures

In Chapter 1 it was argued that a study of resources in schools was obliged to consider school structures providing the framework within which those resources were allocated to students. Two types of structures were delineated. The first were those structures concerned with policy formulation and the second were the structures within which policies were implemented. The former were important in establishing priorities for resource allocation either directly or indirectly. The latter constituted the general framework within which detailed resource allocation took place.

Policy-formulation Structures

Policy-formulation structures were considered as potentially important means through which school goals were established and reviewed and through which those goals could be articulated in the form of practical policies. A distinction was made between 'extraprofessional' structures, which involved people other then teachers, and 'professional' structures which mainly involved teaching staff.

In the Australian Capital Territory, Victoria, South Australia and New Zealand there were statutory councils, boards or committees for both primary and secondary schools. Generally, these bodies were reported as exercising authority in conjunction with the principal on matters of expenditure, providing advice on curriculum issues and having little influence in staffing issues. Notable exceptions were the conjoint authority of boards and principals in the Australian Capital Territory in curriculum matters, the power of school councils in Victoria regarding non-teaching appointments, and the involvement of the councils of Victorian technical schools in the appointment of senior staff. In systems where no statutory extraprofessional bodies had been established the level of involvement of parents associations was rather less than would be expected of a council or board. Extending the devolution of authority to schools would appear to depend on the strengthening of school councils where they already exist and the

establishment of such bodies where they do not exist. One should not presume that this is an easy process for it would seem to take time for a sense of partnership to develop. However it is probably a necessary process if lengthy decision making chains through bureacracies are to be shortened so that schools can be more responsive to local circumstance.

The different traditions of primary and secondary schools were evident in the examination of professional policy-formulation structures. In primary schools the role of the principal was more directly pervasive than in secondary schools. Mostly the principal's influence was reported as exercised in conjunction with other staff but there was support in the data for the theory that general policy was strongly influenced by the principal and that classroom policy was largely at the discretion of the class teacher. However, there was evidence of a number of schools developing structures which enabled co-ordination of school programs on more general or collegiate basis.

In secondary schools, where there has traditionally been greater emphasis on subject area based expertise, the role of the principal was less direct. Consistent with a tradition of discipline based authority the most commonly reported policy-formulation structure was the subject department. However, a number of secondary schools reported the existence of other structures which could be interpreted as a response to the changing role of the secondary school. School-wide curriculum committees were reported as meeting regularly in a number of schools as were year level groups of teachers.

It would appear to be important for schools to establish policy-formulation structures which are able to articulate appropriate goals, and which can function in congruence with those goals. Appropriate structures are central to the other activities and not peripheral. They need resources in terms of time and services in order to prove effective.

Policy-implementation Structures

The general category of policy-implementation structures was sub-divided into teaching structures and curriculum structures. Teaching structures embraced the ways in which students were grouped in classes and the basis on which teachers were assigned to those classes. Particular structures were seen as being interpretable through three underlying dimensions of organization. Those dimensions took account of whether the classes were horizontal or vertical with respect to age, whether they were homogeneous or heterogeneous regarding ability and whether they were fixed or fluid over a teaching week. Even though most classes in primary schools contained students from a single year level and were heterogeneous in ability there were a number of schools in some systems which adopted various forms of vertical grouping as being consistent with their objectives. Of equal importance was the indirect evidence of considerably more fluidity

in primary school class groupings than has previously been acknowledged. Though most schools reported a dominant mode of one teacher for one class for the majority of the teaching time there was evidence that more fluid groups were used for some activities. This has important implications for the co-ordination of programs throughout the school and for discussions of class size. As was elaborated in chapter 5 the idea of an average class size becomes complex in a school with fluid teaching groups: a point which has particular relevance for studies which use average class size as a measure of the resources available to students.

Vertical grouping was less common in secondary schools being mainly reported by those schools operating a curriculum based on term or semester length units. However, there was more fluidity in grouping than for primary schools and rather more use of ability groups. The extent of fluidity in groups complicates the calculation of average class size, especially in a 'core plus elective' curriculum structure and the use of ability grouping usually adds to the uneven distribution of resources among students.

Two features emerged from the examination of policy-implementation structures the first was the need for education researchers to take cognizance of the rich complexity of school organization both in considering structures as mediating factors in resource distribution and in checking assumptions when calculating average class size. The second was for schools to expand the range of possibilities to be considered when grouping students in classes so that effective policies consistent with school goals could be implemented.

Patterns of Resource Allocation

Throughout this report it has been argued that the allocation of resources within schools, and also the allocation of resources to schools, should not be considered solely in terms of the average sizes of classes in schools. Rather, it has been suggested that an analysis needs to be made of the ways in which the resources are allocated to the various functions of a school within the context of priorities among its goals. The present study has made but a tentative beginning towards methods of such an analysis. For both primary and secondary schools attention was given to the proportion of teaching time allocated to class teaching; to class-related management and to school-wide management. The latter category, as explained in Chapter 5, included broader aspects of school life than administration. It embraced a wide range of student welfare provisions, individual learning assistance, resource centre management and such like. A consideration of class size was part of the examination of the utilization of that portion of available resources devoted to class teaching. In that consideration some detailed attention was given to the ways in which average class size might be defined in the complex reality of a school. Finally other aspects of the distribution of class-teaching

resources were examined in terms of the patterns of allocation of more experienced teachers to different year levels.

For most systems of primary schools about 80 per cent of available teacher hours were allocated to direct class teaching. In 1979, Victorian and South Australian schools allocated a little less of available teacher hours to class teaching. These two States used a little more of the available time in specialist roles (Victoria) or in support roles (South Australia). Many of the specialist roles in Victorian primary schools appeared to be involved in remedial teaching and in ethnic education provision. By contrast in New Zealand full and contributing primary schools very little available teacher time was allocated to anything other than direct class teaching. There is no reason at present to suppose that one form of allocating teaching time is better than another for a given purpose. It remains simply a matter of interest that there were in 1979 some differences in policy which appeared to reflect some implicit differences in emphasis.

In secondary schools the percentage of total time allocated to class teaching was lower, at around 60 per cent, than that for primary schools. As for primary schools there were differences between systems often related to the proportion of specialist teachers on staff, though it should be noted that 'specialist teacher' is a term with a different meaning in secondary than in primary schools. An extension of the analysis presented in this report would include the time of both teaching and support staff and would establish categories of functions more directly related to school goals.

In Chapter 5 it was argued that there were a number of ways of defining the average class size for a year level or a school. It was suggested that different values for the 'average class size' would be obtained depending upon whether the 'roll' class, the simple average class size, or the time-weighted average class size was quoted. Furthermore, it was suggested that in certain types of curriculum structure, or where groupings of students were fluid, different values could be obtained depending on whether the frame of reference was the student or the school. When average measures were quoted for a group or system of schools different values for any one of these measures would be obtained according to whether the sample was a simple random sample or a probability sample. It was therefore important always to indicate the precise basis for calculating average class size and, in analytic studies, to choose a measure appropriate to any outcome measure included. The present report has cited 'roll' classes for primary schools and time-weighted average class sizes for secondary schools. In both cases aggregate data referred to probability samples of schools.

In the primary schools of most of the systems the size of classes in Years K to 2 were a little lower than those in the later years. It might be suggested that this could reflect a priority favouring students of younger age but it could be equally argued that it might reflect changes in the patterns of school enrolments. For secondary schools the size of classes was smallest in Years 11 and 12, within any system class sizes were

similar over the Years from 7 to 10. Senior staff tended to be allocated preferentially to classes at Years 11 and 12 rather than Years 7 to 10. It seemed that this was partly attributable to the need to maintain a reasonable curriculum range of specialities in the senior years and partly to a policy of maintaining smaller classes at those years. Given a fixed level of resources across an education system smaller classes in Years 11 and 12 necessarily result in larger classes in Years 7 to 10. For this reason it appeared that there was some merit in exploring some of the alternative ways of providing for post-compulsory secondary education. In a section above it was argued that it was unlikely that one type of provision would be equally suitable for all types of school circumstance and that a plurality of approaches might be most beneficial.

In Summary

In the first chapter of this report it was argued that an important development in studies of school effects on students had stressed the need for a theory of schools and of schooling, and had urged that greater attention be given to the ways in which resources were distributed to students. This report has attempted to examine resource allocation in the government schools of Australia and New Zealand. It has emerged as providing a picture of a complex network which needs to be understood in terms of purposes, circumstances and structures as well as in terms of ratios and class sizes. Policies for staffing schools need to be developed with an appreciation of the rich complexity which existed, and not simply in terms of balancing numbers. To some extent this complexity may be considered at present but the present report suggests a more comprehensive consideration be given to the needs of schools in terms of purposes, functions and circumstance.

REFERENCES

Abramowitz, S. and Tenenbaum, E. High School '77: A Survey of Public Secondary School Principals. Washington, DC: National Institute of Education, 1978.

Ainley, J.G. The Australian Science Facilities Program: A Study of its Influence on Science Education in Australian Schools. Hawthorn, Victoria: ACER, 1978.

Alexander, W.E. and Farrell, J.P. Student Participation in Decision Making. Toronto: Ontario Institute for Studies in Education, 1975.

Alexander, K.L., Cook, M., and McDill, E.L. Curriculum tracking and educational stratification: Some further evidence. American Sociological Review, 43, 47-66, 1978.

Anderson, D.S. and Beswick, D.G. Adolescents and school reform. Evaluation in Education: An International Review Series. 1979, 3(1).

Armstrong, D.G. Team teaching and achievement. Review of Educational Research, 1977, 47(1), 65-86,.

Australia. Schools Commission. School Based Decision Making Part 1. Canberra: 1978(a).

Australia. Schools Commission. School Based Decision Making, Part 2: Position Papers Prepared by the Main Groups of Participants. Canberra: 1978(b).

Australia. Senate Standing Committee on Education and the Arts. Inquiry into Education and the Workforce. (Progress Report). Canberra: AGPS, 1981.

Australian Council of State School Organisations. 1979/80 Policy. Sydney: 1979. (mimeo.)

Australian Education Council. Statistics Sub-Committee. Working Party on the National Collection of Educational Statistics. Report of Meetings. Canberra: 1979. (mimeo.).

Australian Teachers Federation. The National Survey of Conditions in Schools. Canberra: 1976.

Averch, H.S., Carroll, J., Donaldson, T.S., Kiesling, H.J., and Pincus, J. How Effective is Schooling? Santa Monica, Calif.: Rand Corporation, 1972.

Barker, R.J. Ecological Psychology. Stanford, Calif.: Stanford University Press, 1968.

Barker, R.G., and Gump, P.V. Big School, Small School. Stanford, Calif.: Stanford University Press, 1964.

Barr, R. and Dreeben, R. Instruction in classrooms. Review of Research in Education, 1978, 5, 89-162.

Bassett, G.W. Teachers in Australian Schools 1979. Melbourne: Australian College of Education, 1980.

Beare, H. Developments and major issues: The problems of participation and control. In P. Hughes and W. Mulford (Eds), The Development of an Independent Education Authority. (Australian Education Review No. 10). Hawthorn, Victoria: ACER, 1978.

Behrens, N., O'Grady, J., Hodgson, S., Hoult, P., and Hughes, A. The Huon Valley Study: Opportunities and Educational Priorities in a Tasmanian Country Area. Hobart: Education Department of Tasmania, 1978.

Bennett, N. Teaching Styles and Pupil Progress. London: Open Books, 1976.

Berliner, D.C. Tempus educare. In P.L. Peterson and H.J. Walberg (Eds). Research on Teaching. Berkeley, Calif.: McCutchan, 1979.

Bessant, B. The emergence of state secondary education. In J. Cleverly and J. Lawry (Eds), Australian Education in the Twentieth Century. Melbourne: Longman, 1972.

Bidwell, C.E. and Kasarda, J.D. Conceptualizing and measuring the effects of school and schooling. American Journal of Education, 1980, 88, 401-430.

Blakers, C. School and Work. Canberra: Australian National University, 1978.

Blalock, H.J. Theory Construction. Englewood Cliffs, NJ: Prentice Hall, 1969.

Bloom, B.S., Englehardt, M.D., Furst, E.J., Hill, W.H., and Krathwohl, D.R. Taxonomy of Educational Objectives, Handbook 1: Cognitive Domain. London: Longman, 1966.

Burke, G. The Supply of Secondary Teachers. PhD Thesis, Monash University, 1972.

Burke, G. and Hudson, H. The Changing Patterns of School Enrolment and their Implications for Educational Policy and Management: Report to the Australian Education Council prepared by the Centre for Policy Studies, Monash University. Canberra: AGPS, 1981.

Bowles, S. and Levin, H.M. The determinants of scholastic achievement: An appraisal of some recent evidence. Journal of Human Resources, 1968, 3, 3-24.

Butts, R.F. Assumptions Underlying Australian Education. Melbourne: ACER, 1955.

Campbell, W.J. Smaller classes get more work done. TTUV News, 1981, 15(7), 23-24.

Campbell, W.J., Cotterell, J.L., Robinson, N.M., and Sadler, D.R. Effects of School Size upon Some Aspects of Personality. Brisbane: University of Queensland, 1979.

Campbell, W.J. and Robinson, N.M. The Quality and Teaching Costs of Alternative Arrangements Made for Rural Senior Secondary School Students in South-East Queensland. Brisbane: Queensland Department of Education, 1980.

Centra, J.A. and Potter, D.A. School and teacher effects: An international model. Review of Educational Research, 1980, 50(2), 273-291.

Child, D. The Essentials of Factor Analysis. London: Holt, Rinehart and Winston, 1970.

Coleman, J.S., Campbell, E.Q., Hobson, C.J., McPortland, J., Mood, A.M., Weinfield, F.J., and York, R.L. Equality of Educational Opportunity. Washington, DC: US Government Printing Office, 1966.

Conant, J.B. The American High School Today. New York: McGraw-Hill, 1959.

Coulson, A.A. The role of the primary head. In R.S. Peters (Ed.), The Role of the Head. London: Routledge and Kegan Paul, 1976.

Crittenden, B. Changing Ideas in Australian Education: Some Key Themes Since 1960. (Australian Education Review No. 14). Hawthorn, Victoria: ACER, 1981.

Crosland, C.A.R. Equality of educational opportunity - A strong and a weak definition. Encounter, 1961 (May).

Courtney, B.J. Resourcing the Modern Primary School. Report submitted for the Associateship of the University of London Institute of Education, 1979.

Dahllof, U.S. Relevance and fitness analysis in comparative education. Scandinavian Journal of Educational Research. 1971, 15, (3), 101-121(a).

Dahllof, U.S. Ability Grouping, Content Validity and Curriculum Process Analysis. New York: Teachers College Press, 1971(b).

Davies, T.I. School Organization: A New Synthesis. Oxford: Pergamon, 1969.

Devin-Sheehan, L.S., Feldman, R.S., and Allen, V.L. Research on children tutoring children: A critical review'. Review of Educational Research, 1976, 46(3), 355-385.

Douglas, J.W.B. The Home and the School. London: MacGibbon and Kee, 1964.

Dukes, E.M. Departmental policy statement on resource teachers, South Coast Region, of New South Wales Department of Education, 1978. (mimeo.)

Dunkin, M.J. and Biddle, B.J. The Study of Teaching. New York: Holt, Rinehart and Winston, 1974.

English, F.W. and Sharpes, D.K., Strategies for Differentiated Staffing. Berkeley, Calif.: McCutchan, 1972.

Erickson, D.A. (Ed.). Educational Organization and Administration. Berkeley, Calif.: McCutchan, 1977.

Filby, N., Cahen, L., McCutcheon, G., and Kyle, D. What Happens in Smaller Classes? A Summary Report of a Field Study. San Francisco: Far West Laboratory for Educational Research and Development, 1980.

Fitzgerald, R.T. The Secondary School at Sixes and Sevens. Hawthorn, Victoria: ACER, 1970.

Fitzgerald, R.T., Musgrave, P.W., and Pettit, D.W. Participation in Schools? (ACER Research Series No. 98). Hawthorn, Victoria: ACER, 1976.

Fitzgerald, R.T., and Pettit, D.W. The New School Councils: A Study of School Government in Victoria. Burwood: Burwood State College, 1978.

Fordham, A.M. The Importance of Context in Teaching and Learning: Paper presented at the Hamburg Conference of the IEA Classroom Environment Study. Hawthorn, Victoria: ACER, 1980.

Glass, G.V. and Smith, M.L. Meta-Analyses of Research on the Relationship of Class Size and Achievement. San Francisco: Far West Laboratory for Educational Research and Development, 1978.

Glass, G.V., Cahen, L.S., Smith, M.L., and Filby, N.N. Class Size and Learning - New Interpretations of the Research Literature. San Francisco: Far West Laboratory for Educational Research and Development, 1979. (mimeo.)

Glass, G.V., Cahen, L.S., Smith, M.L., and Filby, N.N. School Class Size: Research and Policy. Beverly Hills, Calif.: Sage, 1982.

Gorwin, R.G. Models of educational organizations. Review of Research in Education, 1974, 2, 247-295.

Hancock, G. Equity in schooling: A practical look at a policy problem. In Australian College of Education, Politics in Education. Melbourne: 1980.

Hicks, S. Science at the Swinburne Community School. Australian Science Teachers Journal, 1979, 25 (2), 31-36.

Hill, K. A Cost Effectiveness Study of the Swinburne Community School. Unpublished paper presented at Monash University, Faculty of Education, 1979.

Hill, P.V. Non-Contact Time for Primary School Teachers. Perth: Education Department, 1977.

Hilsum, S. and Cane, B.S. The Teachers Day. Windsor, Berks: National Foundation for Educational Research, 1971.

Hilsum, S. and Strong, C. The Secondary Teachers Day. Windsor, Berks: National Foundation for Educational Research, 1978.

Holdsworth, R. Cross-age Tutoring: A Means of Increasing Motivation. (B. Ed. Task Force Occasional Paper No. 3,). Bundoora, Victoria: School of Education, La Trobe University, 1975.

Hoyle, E. Professional stratification and anomie in the teaching profession. Paedogogica Europaea, 1969, 5, 60-71.

Jackson, P.W. Life in Classrooms. New York: Holt, Rinehart and Winston, 1968.

Jencks, C., Smith, M., Acland, H., Bane, M.J., Cohen, D., Gintis, H., Hegnes, B., and Michelson, S. Inequality: A Reassessment of the Effect of Family and Schooling in America. New York: Basic Books, 1972.

Kandel, I.L. Types of Administration with Particular Reference to the Educational Systems of New Zealand and Australia. Wellington: NZCER, 1938.

Keeves, J.P. and Williams, T.H. The Staffing and Resources Study: A Proposal for an Investigation. Hawthorn, Vic.: Australian Council for Educational Research 1978. (mimeo.)

Knight, T. Students as teachers: Learning how to learn. Modern Teaching, 1977, 39, 1-7.

Kounin, J.S. Discipline and Group Management in Classrooms. New York: Holt, Rinehart and Winston, 1970.

Kriven, F. Enrolments and Demographic Trends in South Australia. Adelaide: Education Department, Research and Planning Branch, 1979. (mimeo.)

La Fleur, C.D., Sumner, R.J., and Witton, E. Class Size Survey. (ERDC Report Number 4). Canberra: AGPS, 1975.

Lindner, B. Derivation of the relationship between pupil-teacher ratio, average class size, and average teacher non-contact time in a school or system of schools. In South Australia. Committee of Enquiry into Education in South Australia, Education and Change in South Australia. (Chairman: J.P. Keeves). Adelaide: Education Department of South Australia, 1981, Appendix G.

Lofts, G. An Exploratory Study of Employment of Science Education Exit Students from Melbourne State College. Carlton, Victoria: Melbourne State College, 1981.

Lortie, D.C. The balance of control and autonomy in elementary school teaching. In A. Etzioni (Ed.), The Semi-Professions and their Organization: Teachers, Nurses and Social Workers. New York: Free Press, 1969.

Lovell, K. Team Teaching. (Paper No. 5). Leeds: University Institute of Education, 1966.

Madaus, G.F., Airasian, P.W., and Kellaghan, T. School Effectiveness: A Reassessment of the Evidence. New York: McGraw-Hill, 1980.

Marjoribanks, K. Academic achievement: Family size and social class correlates. In K. Marjoribanks, (Ed.), Environments for Learning. London: NFER, 1974.

Mayes, L.W. Technical School Innovation: A Case Study of the Cross-Age Tutoring Program at Richmond Technical College. (B. Ed. Task Force Occasional Paper No. 4). Bundoora, Victoria: Centre for the Study of Urban Education, 1978.

Mayeske, G., Wisler, C.E., Beaton, A.E., Weinfield, F.D., Cohen, W.M., Okada, T., Proshek, J.M., and Tabler, K.A. A Study of Our Nations Schools. Washington, DC: US Office of Education, 1969.

McIntosh, D.M. Use of resources in secondary schools. Administrators Bulletin, 1971, 2(4), 1-4.

McKenzie, P. and Keeves, J.P. Eight Education Systems: Resource Allocation Policies in the Government School Systems of Australia and New Zealand. (Staffing and Resources Study Report No. 1). (ACER Research Monograph No. 16). Hawthorn, Vic.: ACER, 1982.

McNemar, Q. Psychological Statistics. New York: John Wiley and Sons, 1969.

Mitchell, D.E. and Spady, W.G. Organizational contexts for implementing outcome based education. Educational Researcher, 1978, 7(7), 9-17.

Moser, C.A. and Kalton, G. Survey Methods in Social Investigation. London: Heinemann, 1971.

Murnane, R.J. The Impact of School Resources on the Learning of Inner City Children. Cambridge, Mass.: Ballinger Publishing Co., 1975.

Musgrave, P.W. The School as an Organization. Melbourne: MacMillan, 1968.

New South Wales. Committee Appointed to Investigate and Advise on Class Size and Teaching Loads in Government Secondary Schools in New South Wales. Report. (Chairman: Sir Walter Scott). Sydney: Government Printer, 1969.

New Zealand, Department of Education. Education Statistics of New Zealand. Wellington: Government Printer, 1980.

Newbold, D. Ability Grouping: The Banbury Enquiry. Windsor, Berks: National Foundation for Educational Research, 1977.

Oppenhiem, A.N. Questionnaire Design and Attitude Measurement. London: Heinemann, 1966.

Owen, J.M. The Impact of the Australian Science Education Project on Schools. Canberra: Curriculum Development Centre, 1978.

Perchard, D. A Report for Australian Principals on Schools Funding in Tasmania. Hobart: Tasmanian Media Centre, 1979.

Peters, R.S. Authority, Responsibility and Education. London: Allen and Unwin, 1970.

Peters, R.S. The Role of the Head. London: Routledge and Kegan Paul, 1976.

Piper, K. Curriculum Style and Social Learning. (ACER Research Monograph No. 4). Hawthorn, Vic.: ACER, 1980.

Porwell, P.J. Class Size: A Summary of Research. Arlington, Va: Education Research Service, 1978.

Robinson, V., Glynn, T., McNaughton, S., and Quinn, M. Parents as remedial tutors: A report on the work of the Mangere home and school project. set (Research Information for Teachers), 1980, No. 2.

Ross, K.N. Sample design for educational research. Evaluation in Education: International Progress, 1978, 2, 105-195.

Ross, K.N. Social Area Indicators and Educational Achievement. PhD Thesis, University of Melbourne, 1982.

Ryan, D.S. and Greenfield, T.B. The Class Size Question. Ontario: Ministry of Education, 1975.

Ryan, D.S. and Greenfield, T.B. Clarifying the Class Size Question. Ontario: Ministry of Education, 1976.

Schools Commission. See Australia. Schools Commission.

Scotland. Education Department. Secondary School Staffing. A Report on Secondary School Organization and Staffing in Scotland with Proposals for New Staffing Standards. Edinburgh: HMSO, 1973.

Shapson, S.M., Wright, E.N., Eason, G., and Fitzgerald, J. An experimental study of the effects of class size. American Education Research Journal, 1980, 17(2), 141-152.

Shaycoft, M.F. The High School Years: Growth in Cognitive Skills. Pittsburgh, Penns: University of Pittsburgh, Project Talent Office, 1967.

Shipman, M. In-School Evaluation. London: Heinemann, 1979.

Skidmore, R.H. School Size: The Continuing Question. Brisbane: Education Department, 1981.

Skilbeck, M. School Based Curriculum Development and Teacher Education. Canberra: Curriculum Development Centre, 1975.

Smith, M.L. and Glass, G.V. Relationships of Class-Size ot Classroom Processes, Teacher Satisfaction and Pupil Affect: A Meta-Analysis. San Francisco: Far West Laboratory for Education Research and Development, 1979.

South Australia. Committee of Enquiry into Education in South Australia - Education and Change in South Australia: First Report (Chairman: J.P. Keeves). Adelaide: Education Department of South Australia, 1981.

Spady, W.G. The impact of school resources on students. In W.H. Sewell, R.M. Hauser, and D.L. Featherman (Eds), Schooling and Achievement in American Society. New York: Academic Press, 1976.

Stackhouse, E.A. Another view of school structure. In S. Abramowitz and E. Tenenbaum, High School '77: A Survey of Public Secondary School Principals. Washington, DC: National Institute of Education, 1978.

Sturman, A. From School to Work: A Review of Major Research in Australia. (Australian Education Review No. 13). Hawthorn, Victoria: ACER, 1979.

Sturman, A. Patterns of School Organization: Resources and Responses in Sixteen Schools. (Staffing and Resources Study Report No. 3). (ACER Research Monograph No. 18). ACER, Hawthorn, Vic.: 1981.

Tisher, R.P., Fyfield, J.A., and Taylor, S.M. Beginning to Teach. (Volume 2). (ERDC Report No. 20). Canberra: AGPS, 1979.

Tukey, J.W. Exploratory Data Analysis. Reading, Mass.: Addison-Wesley, 1977.

Van der Wyst, A.J. Secondary Staffing Formulae. Unpublished report, Education Department of South Australia, 1979.

Vickers, M. Streamed Entry to Secondary Education. Advise (Victoria Institute of Secondary Education), 1981, No. 21, 3.

Victoria. Education Department. White Paper on Strategies and Structures for Education in Victorian Government Schools. Melbourne: Government Printer, 1980.

Weinstien, C.S. The physical environment of the school: A review of the research. Review of Educational Research, 1979, 49(4), 577-610.

Williams, M.C. Subschools: A Report of Planned Change in a Government Secondary School. Perth: Education Department of Western Australia, Research Branch, 1978.

Yates, A. The Organization of Schooling: A Study of Educational Grouping Practices. London: Routledge and Kegan Paul, 1971.

Zeller, R.A., and Levine Z.H. The effects of violating the normality assumption underlying r. Sociological Methods and Research, 1974, 2(4), 511-519.