CHAPTER ONE

INTRODUCTION TO THE SiMERR NATIONAL SURVEY

1.1 BACKGROUND

In July 2004, the Deputy Prime Minister the Hon. John Anderson officially opened the National Centre of Science, ICT and Mathematics Education for Rural and Regional Australia, at the University of New England. The SiMERR National Centre was established through a grant from the Australian Government in response to concerns about the lower levels of achievement of rural and regional students in these subjects relative to their metropolitan peers.

One of the first priorities of the SiMERR National Centre was to identify the key issues affecting student outcomes in science, ICT and mathematics at primary and secondary levels. To accomplish this task, a team from SiMERR developed the National Survey which was designed to collect base-line data on the characteristics, motivations and needs of rural and regional teachers, along with the perspectives of teachers, parents/caregivers and students regarding the strengths and obstacles associated with science, ICT and mathematics education in their schools.

1.2 OUTLINE OF THE NATIONAL SURVEY

The National Survey was conducted in two phases. In Phase One, five separate questionnaires were distributed to primary teachers, secondary science, ICT and mathematics teachers, and parent/caregivers. The four teacher questionnaires sought data on factors the literature suggested could be obstacles to rural students' achievement in the three subject areas. These factors included school staffing, professional isolation, resourcing, and student learning opportunities. The Parent/Caregiver survey sought family perspectives on science, ICT and mathematics education, and the strengths and obstacles that characterise rural schools.

The surveys were distributed to rural and regional schools in May 2005. In order to provide comparative data, questionnaires were also sent to a large sample of metropolitan schools. Responses were received from 2940 teachers and 928 parents/caregivers.

A second, parallel, phase of the survey involved research groups in the eight state and territory 'hubs' of SiMERR Australia interviewing teachers, students and parent/caregivers in a total of 37 rural and remote schools. The interviews provided in-depth perspectives to complement the mainly quantitative nature of the first phase. The hub reports are presented in a companion volume, *Science, ICT and Mathematics Education in Rural and Regional Australia: State and Territory Case Studies*.

1.3 SIGNIFICANCE OF THE NATIONAL SURVEY

There have been a number of important studies on rural education undertaken over the last decade. In addition, several reports on related concerns in rural and regional Australia, such as health, social conditions, Indigenous issues and rural industries have also been released. Many of these were commissioned by federal, state and territory governments. In some respects, the overall findings of the SiMERR National Survey are consistent with these reports, indicating that many of the difficulties identified by earlier studies have not been addressed, or that measures taken in response to recommendations have either not been successful, or have not

yet effected the required change. The National Survey team considers it important to draw attention to these reports, reviewed in Chapter Two, both to emphasise that many of the symptoms of fundamental problems in rural Australia have already been identified, and to provide a context for the specific findings of the SiMERR National Survey.

This report makes six substantial contributions to this body of literature. First, it focuses specifically on school science, ICT and mathematics education, rather than on education in general. Second, it compares the different circumstances and unmet needs of teachers in four geographic regions: Metropolitan Areas, Provincial Cities, Provincial Areas and Remote Areas, and quantifies these differences. Third, it compares the circumstances and unmet needs of teachers in schools with different Indigenous populations. Fourth, it provides greater distinction than previous studies between the needs of schools and teachers in each of these subject areas. Fifth, the analyses of teacher unmet needs have been controlled for the socio-economic background of school locations, resulting in findings that are more tightly associated with geographic location than with economic circumstances. This distinction has not been made in previous studies. Finally, the major reports on rural Australia discussed in Chapter Two (e.g., Alloway, Gilbert, Gilbert & Muspratt, 2004; Human Rights and Equal Opportunity Commission, 2000; Skilbeck & Connell, 2003; Vinson, 2002) were based upon focus interviews, public submissions or secondary analyses of available data. The National Survey, on the other hand, generated a sizable body of original quantitative and qualitative data.

1.4 DEFINITIONS OF RURAL AND REGIONAL

As Hugo (2000) observed, terms such as regional, rural and remote are often used in a vague and overlapping way. While this is acceptable in general discourse, research examining socio-geographic differences requires greater clarity of terms. Such research also needs to consider accessibility to services as well as location (Alloway et al., 2004; Hugo, 2000). However, the range of classification models available and the difficulties involved in applying the criteria often hamper such research. This problem is apparent in the review of literature in Chapter Two. For example, the recent Australian Council of Deans of Science publication, *Who's Teaching Science?* (Harris, Jensz & Baldwin, 2005) drew geographic comparisons using the five categories of the Accessibility and Remoteness Index of Australia (ARIA) developed by the Australian Bureau of Statistics. In contrast, a recent report on the Programme for International Student Assessment (PISA) (Thomson, Cresswell & De Bortoli, 2004) compared student performance across the three categories of the MCEETYA Schools Geographical Location Classification (MSGLC). Other studies have used postcodes, Local Government Areas, or simple metropolitan/non-metropolitan dichotomies. Ultimately, the different reporting models used by different state, territory and federal bodies make geographic comparisons difficult.

In an attempt to establish a standard classification, the Ministerial Committee on Employment, Education and Youth Affairs (MCEETYA) agreed in July 2001 to adopt the MCEETYA Schools Geographic Location Classification (MSGLC) developed by Jones (2000) for reporting nationally comparable schooling outcomes. The latest version of this classification (Jones, 2004) was used to identify schools in the SiMERR National Survey.

The eight categories of the MSGLC model (Table 1.1) consider both population and accessibility/remoteness. The first four categories are based on population, while the accessibility/remoteness of smaller locations (pop. < 25 000) is determined with reference to the Accessibility and Remoteness Index of Australia (ARIA) developed by the Australian Bureau of Statistics. Locations are given an accessibility/ remoteness value between 0 and 15,

based on the physical road distance to the nearest town or service centre. The higher the value, the more remote and inaccessible the location. For reasons outlined in Chapter Three, the results of the SiMERR National Survey are reported with reference to four categories, collapsed from the eight MSGLC sub-categories. Table 1.2 identifies these categories, their criteria, and some of the towns and cities covered.

Having four categories allows for greater distinction between Provincial Cities and Provincial Areas than would be the case using the three MSGLC Zones, and permits comparisons with studies using the CD ARIA plus categories[1].

Table 1.1 Categories of the MCEETYA Schools Geographic Location Classification

Major Category	Sub-category	Criteria
1. Metropolitan Zone	1.1 State Capital City regions	State capitals (except Hobart, Darwin)
	1.2 Major urban Statistical Districts	Pop. $\geq$ 100 000
2. Provincial Zone	2.1.1 Provincial City Statistical Districts	Pop. 50 000 – 99 999
	2.1.2 Provincial City Statistical Districts	Pop. 25 000 – 49 999
	2.2.1 Inner provincial areas	CD ARIA Plus score $\leq$ 2.4
	2.2.2 Outer provincial areas	CD ARIA Plus score > 2.4 and $\leq$ 5.92
3. Remote Zone	3.1 Remote areas	CD ARIA Plus score > 5.92 and $\leq$ 10.53
	3.2 Very Remote areas	CD ARIA Plus score > 10.53

Table 1.2 The four collapsed categories of the MCEETYA Schools Geographic Location Classification (MSGLC) used throughout the report

MSGLC Category	Code	Sub-category	Criteria	Examples
Metropolitan Area	1.1	State Capital City regions (except Darwin)	All cities pop. $\geq$ 100 000	Sydney, Melbourne, Brisbane, Adelaide, Perth, Canberra-Queanbeyan, Cairns, Gold Coast-Tweed, Geelong, Hobart, Newcastle, Townsville, Wollongong
	1.2	Major urban Statistical Districts		
Provincial City	2.1.1	Provincial City Statistical Districts + Darwin	Pop. 25 000 – 99 999	Ballarat, Bathurst-Orange, Burnie-Devonport, Bundaberg, Darwin, Launceston, Portland, Bunbury,
	2.1.2	Provincial City Statistical Districts		
Provincial Area	2.2.1	Inner provincial areas	Pop. < 25 000 and CD ARIA Plus score $\leq$ 5.92	Armidale, Busselton Mt. Gambier, Gympie Dimboola, Huonville
	2.2.2	Outer provincial areas		
Remote Area	3.1	Remote areas	CD ARIA Plus score > 5.92	Port Headland, Cowell, Lightning Ridge,

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[1] Various ARIA classifications have been developed by the ABS. The one used by the MSGLC is the Collection District (CD) ARIA Plus index.

	3.2	Very Remote areas		Mataranka, Cloncurry, Cape Barren Island

1.5 STRUCTURE OF THE REPORT

The following chapter provides a synthesis of the literature that informed the focus and design of the National Survey. The chapter outlines some of the social and economic changes recently experienced by rural communities, and the effects of these changes on school education. It then draws on a range of studies to highlight the main issues facing education generally, and science, ICT and mathematics education in particular. These include the demand and supply of teachers in these subject areas, the circumstances faced by teachers and students in rural areas, and disparities in the achievement levels of rural and metropolitan students.

Chapter Three outlines the main elements involved in designing and implementing the National Survey, including determining the study population, developing the questionnaires and establishing the analytical methodology. The chapter provides profiles of the responding schools, teachers and parents/caregivers, and concludes with some guidance on how to interpret the figures and tables presented in later chapters.

Chapter Four reports the findings with regard to school staffing. In particular, the chapter describes respondent teachers' perceptions of staff turnover and recruitment in their schools, their motivations for teaching in rural or regional schools (if relevant), reflections on their own teacher education and preparation, and a summary of their teaching qualifications.

Chapter Five summarises the professional development needs of respondent teachers, including the degree to which they felt professionally connected or isolated, and whether the type and level of need varied with school characteristics, such as geographic location.

Chapter Six concerns teachers' responses to questions about the importance and availability of material resources and support personnel to help them teach science, ICT and mathematics. Again, responses were compared across a range of variables, including geographic location and Indigenous student population.

Chapter Seven reports respondent teachers' perceptions of the need for a range of learning experiences for their students. The chapter provides an outline of the opportunities available to students in different locations, particularly with regard to subject choice and specialist teachers.

Chapter Eight explores the perspectives of parents/caregivers on a range of issues relating to their children's experiences with science, ICT and mathematics education. These include educational aspirations for their children, perceptions of the abilities of their children's schools to attract and retain suitable teachers, and views on the quality of education available at these schools.

Chapter Nine provides a summary of the main findings with some discussion of their implications with reference to the literature. Each set of findings is accompanied by recommendations for action by relevant education authorities and other bodies.

Chapter Ten outlines a proposal for a National Rural School Education Strategy as the principal recommendation of the report. The chapter provides a rationale for the Strategy, an indication of how such an initiative might be established, and some suggestions as to its structure and primary aims. Given the scale of the concerns about rural and regional education in Australia revealed in Chapter Two and in the Report itself, Chapter Ten concludes that a collaborative National Strategy is the next logical step.

1.6 ACRONYMS

ABS	Australian Bureau of Statistics
ACDS	Australian Council of Deans of Science
ANCOVA	Analysis of Covariance
ARIA	Accessibility and Remoteness Index of Australia
CEO	Catholic Education Office
COAG	Council of Australian Governments
DEST	Department of Education, Science and Training (Federal)
DET	Department of Education and Training (State or Territory)
DOTARS	Department of Transport and Regional Services
HoD	Head of Department
HREOC	Human Rights and Equal Opportunity Commission
ICPA	Isolated Children's Parents Association
ICT	Information and Communication Technology
MANCOVA	Multivariate Analysis of Covariance
MCEETYA	Ministerial Council for Employment, Education, Training and Youth Affairs
MSGLC	MCEETYA Schools Geographic Location Classification
MWHI	Median Weekly Household Income
NESB	Non-English Speaking Background
SES Indicator	DEST Socio-economic Status Indicator for schools
SiMERR	National Centre of Science, Information and Communication Technology and Mathematics Education for Rural and Regional Australia
UNE	University of New England