2. CONCERNS ABOUT RURAL EDUCATION

2.1 WHY WAS A NATIONAL SURVEY NEEDED?

For some time now there have been concerns that schools in rural and regional Australia struggle to maintain equivalent educational standards, and to achieve comparable educational outcomes in science and mathematics, to those in metropolitan areas. For example, there is evidence of a significant geographical disparity in student achievement in science and mathematics. Figure 2.1 compares the scientific literacy, mathematical literacy and problem solving skills of Australian students from metropolitan, provincial and remote schools participating in the 2003 Programme for International Student Assessment (PISA). It is clear that students in metropolitan schools outperformed those in provincial schools, who in turn had a higher mean achievement than students in remote areas. According to Thomson, Cresswell and De Bortoli (2004), the international mean score was 500 and all of the differences between regions were statistically significant.

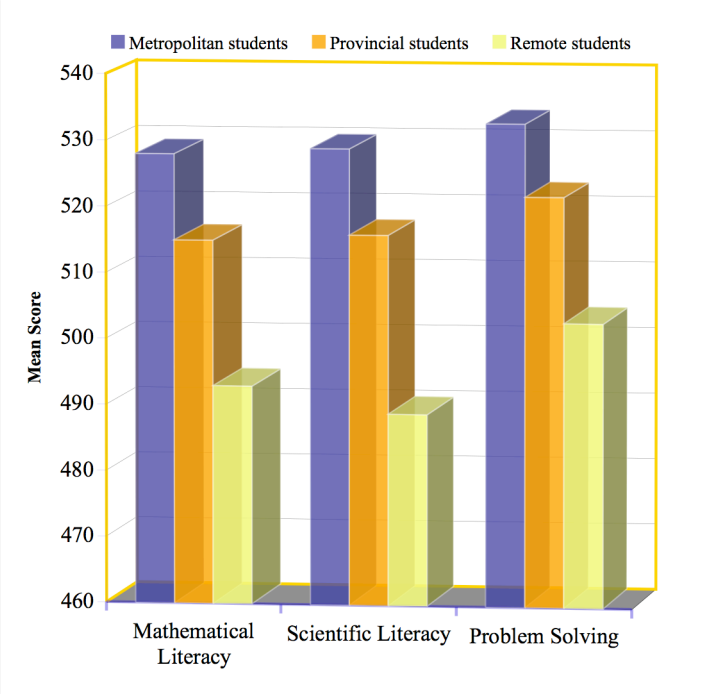

Figure 2.1. Mean scores of Australian students from different locations in the PISA 2003 tests of mathematical literacy, scientific literacy and problem solving (adapted from Thomson, Cresswell & De Bortoli, 2004)

The reasons behind this geographical divide in achievement levels have not been explored to any great extent. However, a number of studies (e.g., Alloway, Gilbert, Gilbert & Muspratt, 2004; Human Rights and Equal Opportunity Commission (HREOC), 2000; MCEETYA, 2006; Roberts, 2005; Vinson, 2002) have revealed similar divides in other aspects of school education that may be associated with the gap in outcomes.

For example, reports on the demand and supply of teachers (MCEETYA, 2003; 2005) identified difficulties in filling two types of teacher vacancies, those in rural and remote areas and those requiring specialists in mathematics, science and ICT. Undoubtedly, rural vacancies in these subject areas are therefore particularly hard to fill, leaving many schools to develop

other less ideal staffing strategies. Two recent reports (Harris, Jensz & Baldwin, 2005; Skilbeck & Connell, 2003) indicate that it is not uncommon for students to be taught science and mathematics by non-specialist teachers, and suggest that the likelihood of this situation increases with distance from a major centre. The studies also report that staffing difficulties are likely to increase with the retirement of many science and mathematics teachers over the next five years.

Teachers in rural and remote areas also face greater difficulties in maintaining high standards of professional practice than do their urban colleagues. Squires (2003) and Herrington and Herrington (2001) reported that many rural teachers feel professionally isolated and unable to access opportunities to update skills, familiarise themselves with new syllabus or assessment requirements, or participate in professional discourse that benefits their students.

Some studies (e.g., Cresswell & Underwood, 2004; HREOC, 2000; Vinson, 2002) have reported that rural and remote schools lack the level of resourcing available to city schools, particularly in the area of ICT connectivity. The literature is less specific about resourcing disparities in science and mathematics, and the National Survey aimed to provide some clarification in this area.

Parents in rural and remote areas face particular dilemmas in relation to their children's schooling. They worry about the breadth of educational opportunities and subject options available to their children at local schools, and are concerned about the additional expense of excursions to cities. Alternatives are also problematic, with research indicating that the appropriateness of distance education decreases with the age of the child (HREOC, 1999). Boarding in city schools is expensive, and neither family nor community friendly. Preston (1999) argued that 'middle class flight' (e.g., sending rural students to boarding schools) lessens the attractiveness of rural and remote schools.

While studies such as those above have identified the main areas of concern about rural education, there are gaps and inconsistencies in the literature which, in many cases, relates to school education in general, rather than science, ICT and mathematics education specifically. The need for up-to-date, nationwide data on these themes provided both the motivation and framework for the SiMERR National Survey.

2.2 WHAT IS THE CONTRIBUTION OF THE SIMERR NATIONAL SURVEY?

The National Survey makes six substantial contributions to our understanding of issues in rural education. First, it focuses specifically on school science, ICT and mathematics education, rather than on education in general. Second, it compares the different circumstances and needs of teachers in four regions of a nationally accepted geographic framework, and quantifies these differences. Third, it compares the circumstances and needs reported by teachers in schools with different proportions of Indigenous students. Fourth, it provides greater detail than previous studies on the specific needs of schools and teachers in these subject areas. Fifth, the analyses of teacher '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 mentioned above were generally 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.