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# AN EXPLORATION OF ISSUES IN THE ATTRACTION AND RETENTION OF TEACHERS TO NON-METROPOLITAN SCHOOLS IN WESTERN AUSTRALIA

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## ABSTRACT

*Recent graduates of pre-service primary/early childhood education programmes completed a written questionnaire to ascertain their teaching locations and professional development needs. Analysis of the data raised important questions concerning the attraction and retention of graduate teachers to non-metropolitan schools, challenging some commonly-held beliefs and revealing that: it is not necessary to 'go country' to obtain fulltime employment upon graduation; both metropolitan and non-metropolitan employment positions lead to changing locations and/or jobs; and it is not the younger graduates who take up teaching positions in non-metropolitan schools. The findings also suggested there are differences in professional development needs, with 'time' more predominant as a need for non-metropolitan teachers.*

## INTRODUCTION

A major concern in education in Australia is that of the attraction and retention of teachers to regional, rural and remote areas. At a national level, there have been many reports of teacher shortages in these locations (e.g., Committee for the Review of Teaching and Teacher Education, 2003; Lyons *et al.*, 2006a; Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA), 2003). A related fundamental issue is that teacher education in Australia is predominantly metropolitan in character, "mostly carried out in large, metropolitan institutions" (Skilbeck & Connell, 2003, p. 20). More recently, Lyons *et al.* (2006b) reported that nationally within Australia "teachers tended to gain employment in locations similar to those in which they lived while undertaking pre-service education" (*p.v*). An implication of this statement is that states such as Western Australia, where this study was conducted, face additional challenges in attracting graduates to regional, rural and remote locations because almost all teacher education programmes in the state are based in the capital city of Perth. While it is imperative that universities and governments address this challenge and further develop teacher education programmes that are accessible to a wide range of students outside the Perth metropolitan area, it is also important to know more about the demographics of recent graduates.

This report examines employment data from a sample of recent graduates of teacher education programmes at a Perth university. The larger study for which these data were collected was focused on the teaching practices and professional development needs of recent graduates, particularly pertaining to mathematics,

information and communication technology, and science. In the data analyses from this larger study, some unanticipated findings emerged concerning the employment of teachers in non-metropolitan areas; specifically, in relation to who takes up jobs in non-metropolitan schools, job security, and professional development needs.

The main study was developed in the context of science, ICT, and mathematics as curriculum priorities in Australia. It was designed to further examine, with a relatively focused sample of early career teachers, findings from the study *Science, ICT and Mathematics Education in Rural and Regional Australia, The SiMERR National Survey* (Lyons *et al.*, 2006a) regarding staffing in rural and regional schools, and the experiences, practices and professional development needs of teachers in these schools. At the same time the study was designed to inform the preparation of teachers in pre-service programmes. The focused sample consisted of graduates of Bachelor of Education (Primary/Early Childhood Education) degrees at a large urban university in Western Australia (WA). Three research questions framed the design of the study:

1. What are the employment demographics of recent graduates; specifically, what are their school locations and year levels taught?
2. How are these graduates teaching mathematics, ICT and science?
3. What do these graduates want to develop further in their teaching of mathematics, ICT and science?

Findings reported in this paper relate to Research Questions 1 and 3. Of particular value in conducting this research was tracking graduates employed in regional, rural or remote schools. The generally accepted 'belief' is that graduates who want fulltime, ongoing employment immediately upon graduation will need to 'go to the country'. It is also accepted belief that 'country' placements are challenging and difficult for graduates. Since no reliable data existed on the employment locations of recent graduates, or the challenges they experience, it was vital to programme evaluations to determine whether graduates were adequately prepared for the range of teaching environments they encountered. This preparation would be particularly important in relation to graduates employed in non-metropolitan schools, because programme enrolment data indicated that only a minority of Bachelor of Education (B.Ed.) students had come from non-metropolitan home locations. With regard to the significance of this research within the context of the ongoing B.Ed. programmes, graduates' reports of how they want to further develop their teaching would provide insight into how to revise the B.Ed. programmes to better support their teaching practices and ongoing professional learning after graduation.

## RESEARCH AND THEORETICAL CONTEXT

Western Australia is a state of 2.5 million square kilometres with only about 400,000 people outside the metropolitan area of Perth, its capital city. Geographic contexts in Western Australia can vary considerably, from desert regions and isolated mining sites with daily temperatures that can soar up to 50 degrees Celsius, to lush forests, agricultural lands, and seaside resort communities. The distances are great, the population is sparse, and people live and work in a range of geographic and socio-economic environments. Perth is recognised as the most isolated capital city in the world, so that, even with a population of over 1.2 million, it and all other communities in WA are characterised by geographic separation from other populated centres. The population of towns and communities outside the Perth area can range from fewer than 100 people in some remote Indigenous communities to about 50,000 in the largest regional centre (Bunbury), with only two other regional centres having a population larger than 20,000 (Albany and Geraldton).

In this research study it is acknowledged that “terms such as regional, rural and remote are often used in a vague and overlapping way” (Lyons *et al.*, 2006b, p. 4), and that when measuring or comparing geographical differences there is a need to distinguish “between the levels of accessibility and remoteness of different locations” (p. 4). Within Australia, as outlined by Moriarty, Danaher and Danaher (2003), criteria and frameworks to define regional, rural and remote have been derived in relation to geographical distance from other population centres, population density, and/or access to services along road networks. In analysing the data from the graduate surveys, this study has adopted a classification in which regional, rural and remote are grouped together as ‘non-metropolitan’, however it is noted that the terms regional, rural and remote have different meanings, dependent upon which classification scheme is used. For example, figures can vary between 15% and 34% for the proportion of the population in Australia living in regional, rural or remote (i.e. non-metropolitan) areas (Stokes, Stafford & Holdsworth, 2000). Thus, although this research study uses a broad classification of metropolitan versus non-metropolitan locations, it is noted that this dichotomy makes a relevant and practical distinction for the geographical context, Western Australia, in which the study was conducted.

In making such a dichotomy, however, two important considerations need to be acknowledged. The first is that the boundaries between ‘non-metropolitan’ and ‘metropolitan’ are considerably blurred, and definitions of ‘rural’ and ‘remote’ imply a somewhat unrealistic idea of there being a ‘typical’ circumstance for people living in rural and remote Australia (Stokes *et al.*, 2000, p. 14). Second, and very importantly for the objectives of this study, the use of such a dichotomy does not imply a deficit approach to viewing rural, regional and remote education in Western Australia. There is the danger that any comparison of rural Australia with metropolitan regions positions those in rural locations as being ‘other’ to the metropolitan ‘norm’, against which “non-metropolitan residents are measured and found lacking or wanting” (Moriarty *et al.*, 2003, p. 134). It should be recognised that there can be significant benefits attached to living in non-metropolitan locations, not only in terms of employment, but also socially and personally, and that rural and remote teaching can offer diverse and rewarding experiences.

## **METHOD**

The research was a survey study using a written response, short answer questionnaire. The questionnaire, in addition to gathering demographic data on the graduates' employment history since graduation, was designed to identify key teaching factors related to each of the areas of mathematics, ICT and science, including: regularly used teaching practices; curriculum planning influences; professional development endeavours; formal or informal leadership roles or influences; and views of professional development needs.

### ***Research sample***

The Bachelor of Education (Primary/Early Childhood Education) programmes from which graduates for this study were surveyed are 4-year pre-service teacher education courses. The Early Childhood programme focuses on Kindergarten to Year 3 students in Western Australian schools (4-8 year olds), while the Primary programme focuses on Years 1 to 7 (6-12 year olds).

Initially 300 surveys were mailed out to four consecutive years of graduates, from 2002 to 2005. Mailing addresses were obtained from the university's student data base, which was known to be a problematic information source because graduates' contact details are not always updated. Of the approximately 200 surveys it is believed reached their intended recipients, 55 were returned, which consisted of 6 forms from 2002 graduates, 17 from 2003, 15 from 2004, and 17 from 2005. Three of the 55 completed questionnaires were from graduates who were not currently teaching in a Western Australian school; one was teaching in another Australian state, one had left after a year to teach overseas, and the other had left teaching after a year to pursue other employment. Hence, the data analyses were completed for the 52 surveys from graduates currently teaching in WA.

### ***Data analysis***

The questionnaire data were recorded into spreadsheets. Responses were tallied for items that required respondents to tick or circle from a selection of choices. For the more open-ended, short answer questions, responses were initially recorded in a spreadsheet and then two of the researchers identified common aspects into which the primary data were then categorised. For example, in responding to questions about support required to develop teaching, key categories that emerged included 'Professional development', 'Mentorship', and 'Resources' (e.g., see Table 5). Statistical tests were not conducted with any of the data due to the small sample size (N=34 for graduates in metropolitan schools and N=18 for graduates in non-metropolitan schools). However, overall trends were examined, and general trends were considered in making any comparisons between graduates in metropolitan and non-metropolitan schools.

## FINDINGS AND DISCUSSION

### *Research Question 1: Employment demographics*

The current teaching location (metropolitan or non-metropolitan) and the school system of employment (Government, Catholic, or Independent) for the sample are reported in Table 1, while the age distribution for these graduates in relation to current teaching location is reported in Table 2, and their employment 'history' is reported in Table 3.

**Table 1**  
*Current Employment by Location and School System (N=52)*

<b>System</b> <b>Location</b>	<b>Government</b>	<b>Catholic</b>	<b>Independent</b>
Metropolitan 34 (65%)	23 (44%)	7 (13%)	4 (8%)
Non-Metropolitan 18 (35%)	16 (31%)	1 (2%)	1 (2%)

*Note: Metropolitan and Non-Metropolitan locations were identified by the postal code of the school.*

The data in Table 1 show that although a majority of graduates are currently working in the metropolitan area (65%), more than a third are in non-metropolitan schools. Most graduates are working in the government school system, which is not surprising when one considers that at the primary school level most children are enrolled in government schools. The data in Table 1 also indicate it is not necessarily the case that graduates must 'go to the country' if they wish to have employment upon graduation. Although the relatively small sample size excludes making broad generalisations, it does appear that many graduates are able to obtain work in the metropolitan area.

**Table 2**  
*Current Teaching Location and Age Distribution (N = 52)*

<b>Age</b> <b>Location</b>	<b>&lt;25</b>	<b>25-30</b>	<b>31-35</b>	<b>36-40</b>	<b>&gt;40</b>	<b>25+</b>
Metropolitan 34	19 (37%)	8	1	3	3	15 (29%)
Non-Metropolitan 18	6 (12%)	8	1	2	1	12 (23%)
<b>Total</b> <b>52</b>	<b>25</b>	<b>16</b>	<b>2</b>	<b>5</b>	<b>4</b>	<b>27</b>

The employment location age distribution data are reported in Table 2 according to the age category choices by which the graduates completed the questionnaire, and in this format do not indicate any distinct relationships. However, if the sample is categorised into the two categories of 'young' graduates (<25 years) versus 'older-aged' graduates (25+ years), then a different picture emerges. To divide the age categories at the 25-year point is reasonable in that it identifies individuals who graduated in their early 20s, whereas the remaining portion of the sample would be graduates who studied as 'mature-aged' students. Thus, from the data in Table 2 it appears a smaller proportion of 'younger' graduates currently work in non-metropolitan schools in comparison to 'older-aged' graduates, but for graduates 25 years or older the two proportions are similar. Within the under 25 years age

category (N=25), 76% are in metropolitan schools, whereas only 24% are in non-metropolitan schools. For the total numbers within the 25 years or older categories (N=27), the proportions are 56% for metropolitan schools and 44% for non-metropolitan schools. These figures could indicate that recent graduates who take up employment in non-metropolitan areas are more likely to be 'older-aged'. This finding challenges the general perception that younger adults are more mobile and keen to travel and re-locate outside the metropolitan area, but at the same time it confirms anecdotal evidence that younger graduates tend to be reluctant to leave the city area because they have never lived away from home. It is part of the current social norms that many students and even graduates, for financial as well as personal reasons, continue to live with parents.

**Table 3**  
*Teaching Location Changes since Graduation (N = 52)*

<b>Movement</b>	<b>Number (percentage)</b>
Metropolitan only	27 (52%)
Non-Metropolitan to Metropolitan	7 (13%)
Non-Metropolitan only	14 (27%)
Metropolitan to Non-Metropolitan	3 (6%)
Non-Metropolitan to Metropolitan to Non-Metropolitan	1 (2%)
<i>Notes: In 'Metropolitan only', 70% (N=19) have changed schools. In 'Non-Metropolitan only', 29% (N=4) have changed schools.</i>	

The data in Table 3 indicate that a majority of graduates (N=41, 79%) have, since graduation, maintained employment solely in a metropolitan location or solely in a non-metropolitan location. For those that have changed location between metropolitan and non-metropolitan schools (21% in total), there has been a bigger shift from non-metropolitan to metropolitan locations than the other direction. The shift from a non-metropolitan to metropolitan location has been approximately double that of the other direction, although it must be noted that the related numbers are small. What is perhaps more noteworthy is that, taking into account the number of graduates in the 'Metropolitan only' or 'Non-Metropolitan only' categories who have changed schools (N=19 and N=4, respectively), a majority of graduates have changed schools at least once (N=34, 65%). Of these 34 graduates, 8 were in their first year of teaching, and 7 of these were in Metropolitan schools solely. These facts indicate that many graduates, although employed, are not in positions that are ongoing vacancies in a school. There is the possibility that some moves were decisions made by the graduate, rather than as an employment necessity, but that is not likely in light of the fact that graduates are not able to be considered as 'permanent' within the government or Catholic school systems without earning that status through years of service.

Clearly, the degree of movement between schools revealed by these findings indicates that graduates need to be informed about, prepared for, and supported in the professional challenges associated with changing one's teaching situation,

particularly within the relatively short time periods of less than a year through to less than three years. A related issue that needs to be recognised is that, although there are not as many graduates who have been in non-metropolitan schools only and have changed location in comparison to those who have been in metropolitan schools only and have changed location (29% versus 70%), graduates who take up positions in non-metropolitan locations need to recognise they might need to change where they live early in their career. That is, since it is predominantly the case that non-metropolitan schools in Western Australia are in relatively small communities, changing school location often necessitates also changing the community in which one lives.

The challenges associated with changing home environment and settling into a new community need to be recognised as an integral aspect of the professional support needed for graduates who take up employment in non-metropolitan areas. In fact, the degree of change of teaching situation in evidence in the data overall indicates that pre-service teacher education programmes need to prepare graduates to be adaptable, flexible, and resilient as professionals. They will need to be able to prepare and implement teaching programmes for contexts that will vary with respect to school location, school culture, demographics of the school clientele, nature of school programmes and priorities, and grade level(s) taught.

**Table 4**  
*Grade Level(s) Taught since Graduation (N=113, where N represents an employment position)*

<i>Structure Location</i>	<i>Single grade</i>	<i>Multi-grade; 2 grades</i>	<i>Multi-grade; 3 grades</i>	<i>Multi-grade; &gt;3 grades</i>
<i>Metropolitan (N=68, 60%)</i>	41 (36%)	24 (21%)	3 (3%)	0 (0%)
<i>Non-Metropolitan (N=45, 40%)</i>	19 (17%)	17 (15%)	6 (5%)	3 (3%)
<i>Notes: N represents an 'employment position', and hence N&gt;55.</i>				

The diversity of the student cohorts the graduates have taught is further in evidence in the data in Table 4. Approximately half (47%) the employment positions reported involved teaching a class of children from more than one grade level. Many non-metropolitan schools are structured as multi-grade classes from necessity, because the school enrolment is relatively small and does not allow for individual classes for each grade level. Thus, it is not surprising that 58% (26 out of 45) of the non-metropolitan employment positions have involved multi-grade classes. Although the same breakdown for metropolitan positions shows a smaller proportion overall have been multi-grade classes (39%, 27 out of 68), it is noteworthy that it is relatively common for metropolitan positions to use multi-grade classes. Thus, it is clear that graduates need to be prepared with skills to programme for, teach, and assess classes of children of a range of ages and achievement levels.

### ***Research Question 3: Graduates' needs to develop their mathematics, ICT and science teaching***

According to data and categories generated in Table 5, graduates identified 'Professional development' and 'Resources' as the main things needed to support the

development of their teaching in all three subjects. It is interesting to note that a trend in the data in Table 5 is that the percentage of graduates indicating 'Professional development', 'Mentorship' or 'Resources' as a needed support mechanism is higher for metropolitan than non-metropolitan graduates, but for 'Time' the trend is the opposite. For 'Time' it might be speculated that the generally smaller school size in non-metropolitan locations might be an influential factor. Concerning 'Professional development', 'Mentorship', and 'Resources', it might be expected that larger schools would be better positioned to provide needed support, yet this does not appear to be the case. It is also interesting to note that there was a stronger indication of a need for mentorship to support mathematics teaching in comparison to science or ICT. Reasons for this need within mathematics need to be explored further, but are not surprising in the context of the research literature, which reports that primary teachers report a lack of preparedness to teach mathematics (e.g., Angus, Olney & Ainley, 2007).

**Table 5**  
*Support required to develop mathematics, ICT and science teaching*

Subject	Mathematics		ICT		Science	
	M (N=34)	NM (N=18)	M (N=34)	NM (N=18)	M (N=34)	NM (N=18)
Professional development	16 (47%)	7 (39%)	17 (50%)	8 (44%)	14 (41%)	5 (28%)
Mentorship	11 (32%)	5 (28%)	5 (15%)	1 (6%)	4 (12%)	1 (6%)
Resources	9 (26%)	3 (17%)	18 (53%)	7 (39%)	14 (41%)	4 (22%)
Time	1 (3%)	3 (17%)	1 (3%)	1 (6%)	2 (6%)	3 (17%)
Other	5 (15%)	6 (33%)	5 (15%)	3 (17%)	4 (12%)	1 (6%)
No response	5 (15%)	2 (11%)	4 (12%)	4 (22%)	5 (15%)	8 (44%)

M = Metropolitan; NM = Non-Metropolitan



## CONCLUSIONS AND FUTURE RESEARCH

The aim of this paper was to describe key findings related to employment data from a sample of recent graduates of pre-service teacher education. The study itself sought to obtain data, particularly in reference to non-metropolitan and metropolitan locations, to inform the design and delivery of the pre-service programmes with regard to three key areas:

- Determining whether graduates are adequately prepared for the range of teaching environments they are likely to encounter following graduation;
- The 'match' between current B.Ed. programme preparation and subsequent 'real world' teaching practices; and
- How existing programmes might be revised so that they better support graduates' teaching practices and ongoing professional learning after graduation.

For these three key areas, there are specific implications regarding issues concerning regional, rural and remote education. Key findings are summarised below within the context of the two research questions that are considered in this paper. Related issues, questions, and avenues in need of future research are also discussed.

### ***Research Question 1: Employment demographics***

The survey findings regarding employment demographics were surprising in that they challenge some commonly-held beliefs about which graduates go to non-metropolitan locations, and whether it is necessary for recent graduates to do so. It is widely believed that a high proportion of country placements are filled by recent graduates. In a report for the National Inquiry into Rural and Remote Education (Human Rights and Equal Opportunities Commission, 2000), for example, it was noted that "recruitment and retention difficulties mean that a disproportionate number of country teachers are inexperienced and English as a Second Language (ESL), maths, science and information technology (IT) staff, in particular, are in short supply" (p. 32). The same report also noted that "students throughout Australia were critical of the inexperience and high turnover of their teachers" (p. 31). The survey data for this study, however, indicated that graduates do not need to 'go country' to obtain employment, with two thirds of the graduates surveyed having found employment in the metropolitan area. In addition, it is not necessarily the 'younger' graduates who take up non-metropolitan employment positions, as is a commonly held belief. In fact, the data reveal that within the younger (less than 25 years) age category just over three-quarters of the graduates surveyed were working in metropolitan schools. Existing research does little to resolve the question of whether or not inexperienced graduates are required to 'do their time' in the bush. Sharplin (2002) noted that "Department of Education in Western Australia believes there has been a reduction in difficulties experienced with the staffing of remote schools. Only thirty four percent of teachers employed by the Remote Teaching Service in 2000 were identified as new graduates" (p. 2). The same study goes on to state that "recent reports continue to identify the employment of inexperienced staff in rural and remote schools as an issue" (p. 2). It is clear that further research into

this question is required if teacher educators are to have a sound understanding of the needs of their graduate teachers.

The findings of this study also raise issues concerning the attraction and retention of teachers for non-metropolitan schools. First, since Lyons *et al.* (2006b) reported that nationally within Australia “teachers tended to gain employment in locations similar to those in which they lived while undertaking pre-service education” (*p.v*), there is a need to examine the range of study locations and experiences available to WA pre-service teachers. There are some opportunities available outside of Perth to study for a Bachelor of Education, but it is unlikely that employment needs in the non-metropolitan areas will be met by these relatively few graduates. The demographics of university enrolments are such that the majority of teacher education graduates, in the near future if not longer, are likely to continue to come from Perth. It is also noted here that within metropolitan based education programmes elsewhere in Australia, incentives to encourage teacher education students to take up employment in non-metropolitan schools upon graduation have focused on relatively few individuals via financial sponsorship or support for completing student teaching placements in a rural location (e.g., Nelligan, 2006). Sharplin (2002) noted, however, that “in Western Australia, such practices are expensive due to the distance of placements from the metropolitan area and the cost of living in remote locations” (p. 3). Hence, it is of much importance that metropolitan teacher education programmes explore and develop ways in which pre-service teachers can make direct links to non-metropolitan locations, if not through school-based practicums then through other avenues such as special projects or research endeavours, excursions, or the use of ICT to link with non-metropolitan schools and teachers for joint professional learning activities. Other recruitment-oriented efforts developed within teacher education programmes in recent years have included, for example, rural excursions, promotional videos, or rural education units (e.g., Gregson, Waters, & Gruppetta, 2006). However, these efforts have not necessarily addressed the issues in an integrated way that targets a majority of students within a pre-service programme.

The expectations of student teachers with regard to non-metropolitan placements in Western Australia can be unrealistic and contradictory. Sharplin (2002) found that “pre-service teachers are under-informed about what may be perceived to be the benefits and difficulties involved in rural and remote teaching” (p. 8), and that teachers’ expectations were often based on vague, clichéd understandings of what life in the bush would be like. Pre-service teachers are often apprehensive about accepting a non-metropolitan placement. The teachers in Sharplin’s study, for example, identified concerns about “isolation, lack of resources, lack of access to professional and personal support, standards of housing and cultural differences of students” (p. 8). In fact, there can be many advantages to working in regional, rural and remote areas. The often smaller size of schools, for example, can equate to an increased capacity for teachers to respond to the individual needs of students and the community (Stokes *et al.*, 2000, p. 33), and it is important that understandings of non-metropolitan teaching positions be viewed in a balanced, realistic way. However, it is noted that the issues pertaining to incentives and disincentives for employment in non-metropolitan areas are complex and

encompass a broad range of financial, social, personal and professional factors, including: cost of living; resources; isolation; professional preparation; community interactions; support networks; and the nature of teaching experiences in rural communities (Boylan, 2003; Gibson, 1994).

Another issue concerns the retention of teachers in non-metropolitan locations and the fact that this study revealed that job security for graduates is not common. Lyons *et al.* (2006b) reported that teachers' motivations for initially going to non-metropolitan locations were different to their reasons for staying, with initial motivations related to job availability and decisions to stay related to lifestyle and community relationships. However, if non-metropolitan as well as metropolitan early career teachers are commonly in employment positions that are not open or permanent vacancies, then they are often not necessarily able to base their location decisions upon lifestyle or community relationships. Hence, pre-service programmes need to consider how to work with pre-service teachers to prepare them personally and socially, as well as professionally and academically, for the adaptability and resilience needed to learn to live and work in schools and communities that are very diverse in social, political, geographical, and economic features.

### ***Research Question 3: Graduates' needs to develop their mathematics, ICT and science teaching***

In asking what the graduates wanted to develop further in their teaching of mathematics, ICT and science, the third research question focused specifically on issues of professional development (PD). While an explicit link between teacher professional development and improved student outcomes has proven difficult to identify, PD is nevertheless widely acknowledged as playing a significant role in improving the quality of education (Meiers & Ingvarson, 2005). Participation of teachers in high quality professional development is recognised as being highly desirable, and in recent decades debate has shifted from whether or not teacher PD is necessary, to questions of how, when and what is best (McCrae *et al.*, 2001). Professional development has the potential to change teacher practice in significant and lasting ways, and to contribute to improved outcomes for teachers and students in schools. A number of studies have demonstrated that teachers are keen to participate in PD, yet feel they do not have adequate or appropriate access to PD opportunities (Garnett 2003; McCrae *et al.*, 2001; Yates 2005).

It is common belief that limited opportunities for PD sessions, due to distance and cost factors, place non-metropolitan schools at a disadvantage. For example, Garnett (2003) reported that 70.5% of the 207 science coordinators surveyed in regional, remote and rural areas of Australia stated that "not enough SMET [science, mathematics, engineering and technology] professional programmes were available to them and they would like to attend more" (p. 78). In possible contrast to Garnett's findings, the results of this study indicate that a greater percentage of metropolitan teachers identified PD as a needed support mechanism, with more non-metropolitan teachers identifying 'Time' as a greater need than 'Professional development', 'Mentorship', or 'Resources'. This finding raises questions about the nature of non-metropolitan teachers' professional needs; they might not take the form of direct PD input in a recognised formal structure, but rather time-related regular opportunities

to engage in professional learning activities. The professional development needs of non-metropolitan teachers are clearly an area warranting further research.

In summary, the findings of this research raise some important questions for the design and delivery of pre-service teacher education programmes and professional development programmes for graduate teachers, particularly as they pertain to non-metropolitan locations. To address these issues, further research needs to be conducted in the following areas:

- Why graduates choose to teach in non-metropolitan or metropolitan areas, and then stay or change from these locations.
- What factors influence graduates who change jobs after relatively short employment periods (i.e., less than 3 years).
- How pre-service teacher education programmes can prepare graduates for the flexibility and adaptability they will need to teach a range of ages and achievement levels in a range of locations.
- How pre-service teacher education programmes can better promote non-metropolitan teaching locations for all graduates, and particularly for the younger graduates.
- What specific school-related factors influence graduates' curriculum planning and their professional learning needs, and how these vary between metropolitan and non-metropolitan locations.
- How appropriate mentorship, professional development and resource needs vary between graduates teaching in metropolitan and non-metropolitan locations, and how these might be provided effectively.

## REFERENCES

- Angus, M., Olney, H. & Ainley, J. (2007). *In the Balance: The future of Australia's primary schools*. Kaleen, Australian Capital Territory: Australian Primary Principals Association.
- Boylan, C. (2003). *Putting rural into pre-service teacher education*. Paper presented at the joint conference of the Australian Association for Research in Education/New Zealand Association for Research in Education. Retrieved 29 August 2005, from <http://www.aare.edu.au/03pap/alph.htm>
- Committee for the Review of Teaching and Teacher Education. (2003). *Australia's teachers: Australia's future – Advancing innovation, science, technology and mathematics*. Canberra: Commonwealth of Australia.
- Garnett, R. (for the National Reference Group) (2003). *Reaching all Australians: A report on delivering science, mathematics, engineering and technology education and awareness programmes to regional, rural and remote Australia*. Canberra: National Reference Group.
- Gibson, I. W. (1994). Policy, practice, and need in the professional preparation of teachers for rural teaching. *Journal of Research in Rural Education*, 10, 68-77.
- Gregson, R., Waters, R., & Gruppetta, M. (2006). Breaking the ice: Introducing trainee primary and secondary teachers to rural education settings. *Making teaching public: Reforms in teacher education* (Proceedings for the 2006 Australian Teachers' Education Association national conference, pp. 201-211). Perth: ATEA.
- Human Rights and Equal Opportunity Commission. (2000). *Emerging themes: National inquiry into rural and remote education*. Sydney, NSW: Human Rights and Equal Opportunity Commission. Retrieved 13 January 2008, from [http://www.hreoc.gov.au/pdf/human\\_rights/rural\\_remote/emerging\\_themes.pdf](http://www.hreoc.gov.au/pdf/human_rights/rural_remote/emerging_themes.pdf)
- Lyons, T., Cooksey, R., Panizzon, D., Parnell, A. & Pegg, J. (2006a). *Science, ICT and mathematics education in rural and regional Australia. The SiMERR National Survey*. Armidale, NSW: University of New England.
- Lyons, T., Cooksey, R., Panizzon, D., Parnell, A. & Pegg, J. (2006b). *Science, ICT and mathematics education in rural and regional Australia. The SiMERR National Survey abridged report findings*. Armidale, NSW: University of New England.
- McCrae, D., Ainsworth, G., Groves, R., Rowland, M. & Zbar, V. (2001). *PD 2000 – A national mapping of teacher professional development*. Canberra, ACT: Commonwealth Department of Education, Training and Youth Affairs.
- Meiers, M. & Ingvarson, L. (2005). Investigating the links between teacher professional development and student learning outcomes. Canberra, ACT: Australian Government, Quality Teacher Programme. Retrieved 20 January 2008, from [http://www.dest.gov.au/sectors/school\\_education/publications\\_resources/profiles/teacher\\_prof\\_development\\_student\\_learning\\_outcomes.htm](http://www.dest.gov.au/sectors/school_education/publications_resources/profiles/teacher_prof_development_student_learning_outcomes.htm)
- Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) (2003). *Demand and supply of primary and secondary school teachers in Australia*. Retrieved 25 September 2005, from <http://www.mceetya.edu.au/public/demand.htm>
- Moriarty, B., Danaher, P. & Danaher, G. (2003). Situating and interrogating contemporary Australian rural education research. *Journal of Research in Rural Education*, 18(3), 133-138.
- Nelligan, P. (2006). Rural professional experiences: Supporting preservice teachers. *Making teaching public: Reforms in teacher education* (Proceedings for the 2006 Australian Teachers' Education Association national conference, pp. 317-330). Perth: ATEA.
- Sharplin, E. (2002). Rural retreat or outback hell: Expectations of rural and remote teaching. *Issues in Educational Research*, 12. Retrieved 20 January 2008, from <http://www.iier.org.au/iier12/sharplin.html>
- Skilbeck, M. & Connell, H. (2003). *Attracting, developing and retaining effective teachers: Australian background report*. Canberra: Commonwealth of Australia.
- Stokes, H., Stafford, J. & Holdsworth, R. (2000). *Rural and remote school education. A survey for the Human Rights and Equal Opportunity Commission*. University of Melbourne: Youth Research Centre.
- Yates, S. M. (2005). *The promise of professional learning for teacher renewal*. Retrieved 15 January 2008, from <http://www.aare.edu.au/05pap/yat05077.pdf>

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### **Dr Sandra Frid**

Dr Frid's contributions to education in Australia have been awarded a Fellow of the Australian College of Educators (2007). Her innovative, learner-focused teaching practices have also been recognised through several university teaching excellence awards, including a national Australian Award for University Teaching (2005; joint with Len Sparrow). She has received a Practical Implications Award for Research (2002; joint with Len Sparrow), and her commitment to research, curriculum development and learning/teaching in teacher education is further demonstrated through her work in key editorial positions on state and international journals.

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Ms Smith is a Research Assistant with the Western Australian Hub of SiMERR (National Centre of Science, ICT and Mathematics Education for Rural and Regional Australia). She has extensive experience in teaching English as a second language, and has been a teacher trainer on Cambridge CELTA (Certificate of English Language Teaching to Adults) courses since 1999. She also has experience in working with Indigenous Australians in their literacy development, and is currently working on PhD research around the topic of the social practice of literacy for Indigenous adult learners.

### **A/Prof Len Sparrow**

A/Prof Sparrow is the author of numerous books and research papers related to mathematics teaching and has held key editorial positions with mathematics education journals. His innovative and engaging university teaching has earned him much recognition through several University Teaching and Learning Awards, including a prestigious Australian Award for University Teaching (2005; joint with Sandra Frid). His research in teacher education was awarded a Practical Implications Award for Research (2002, joint with Sandra Frid) and current research work with the Western Australian Hub of SiMERR (National Centre of Science, ICT and Mathematics Education for Rural and Regional Australia) keeps him active in research and teacher professional development endeavours.

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Associate Professor Trinidad has over 20 years experience in the area of technology implementation and building sound learning environments using technology. She has been involved in the construction of numerous online teacher-learning programmes delivered through Learner Management Systems, and has participated in many projects in Australia, Canada and Hong Kong, writing and presenting regularly in the area of technology education. She is a member of a number of editorial boards and committees and was awarded a life membership of [ECAWA](#) for her work with teachers in 2001. Her current research involves evaluating suitable e-learning environments and helping teachers construct suitable learning environments to meet student learning outcomes.