

Graduate Survey

Page Index

[Description](#)
[Participants](#)
[Findings](#)
[Outcomes](#)
[Impact](#)
[Related Documents](#)

Quick Links

[Download Infosheet](#)
[Download Report](#)
[Visit Website](#)

Project Title	Graduate Survey of Science, ICT and Mathematics Teaching
Project Team	Dr Sandra Frid, Associate Professor Len Sparrow, Associate Professor Sue Trinidad, Ms Kirsteen McCrory, Ms Melanie Smith (SiMERR WA)
Period	2006
Funding Agency	SiMERR
Organisational Base	SiMERR WA

Description

[↑ Top](#)

This project gathered written survey and interview data from recent graduates (2002-2005) of Curtin's Bachelor of Education (Early Childhood and Primary) programs. An aim of the project was to identify the graduates' post pre-service experiences in order to investigate how effective their pre-service education was in preparing them to teach mathematics, ICT and science, in a range of geographic contexts (e.g., urban, regional, rural, or remote), school year levels (e.g., K-7, single year group as well as multi-year groups), and school settings (e.g., small or larger schools; government, Catholic, or independent schools). Factors examined by the study included: employment demographics, teaching practices in mathematics, ICT and science, and graduates' professional development needs in mathematics, ICT and science.

Participants

[↑ Top](#)

300 early career teachers; graduates of Bachelor of Education programs at Curtin University of Technology.

Findings

[↑ Top](#)

The survey findings revealed some unexpected results regarding the attraction and retention of teachers to regional, rural, and remote schools. The participants' responses indicated that, contrary to popular belief, it is not necessary to 'go country' to obtain fulltime employment upon graduation, and it is not necessarily the younger graduates who take up teaching positions in non-metropolitan schools. The study also found that both non-metropolitan and metropolitan employment positions commonly led to changing locations and/or jobs, indicating a need for graduates to be adaptable and resilient to be able to change their teaching environment and duties, and also perhaps their living location. Other issues that emerged that are in need of further research are: for mathematics and science, but not ICT, the 'school' as a major influence upon curriculum planning and implementation was stronger for metropolitan than non-metropolitan teachers, perhaps reflecting the autonomy that teachers have in smaller schools in comparison to larger schools with school-wide plans; teachers in non-metropolitan schools identified 'time' as a major factor needed to support development of their teaching, whereas for metropolitan teachers time was not as prominent a factor, but stronger professional development, resources and mentorship were more prominent.

Perhaps less surprisingly, the findings revealed that science was receiving relatively little attention within school curricula, and a lack of appropriate resources impacted upon teaching, particularly for ICT and science. Teachers had received little or no professional development in science, and resources and personalised professional development and support were seen as being crucial to efforts aimed at enhancing science, ICT and mathematics teaching. For mathematics, approximately double the number of teachers in non-metropolitan versus metropolitan schools had been influenced by the 'Getting it Right' and 'First Steps in Maths' professional development programs and resources. This higher level of participation reflects the fact that access to these programs is based on a school's scores on state standardised literacy and numeracy tests, which themselves show higher achievement scores in general for metropolitan schools. However, it is noteworthy that the teachers did indicate that these professional development experiences were actually having an influence on their planning and teaching in mathematics.

Outcomes

[↑ Top](#)

Published refereed papers

- Trinidad, S., Frid, S. Sparrow, L., & Treagust, D. (2007). Science, ICT and mathematics as curriculum priorities: What

- are the practices and needs of beginning primary teachers? Proceedings of the annual conference of the Australian Association for Research in Education, Fremantle, WA: AARE.
- Frid, S. & Sparrow, L. (2007). Towards 'breaking the cycle of tradition' in primary mathematics. In J. Watson & K. Beswick (Eds.), Mathematics: Essential research, essential practice. (Proceedings of the 30th annual conference of the Mathematics Education Research Group of Australasia, Vol. 1, pp. 295-304). Sydney: MERGA.
 - Frid, S., Sparrow, L., Trinidad, S., & Smith, M. (under review). Innovation in Science, ICT and Mathematics Teaching: Practices and needs of beginning primary teachers. Submitted to the International Journal of Innovation in Learning.
 - Frid, S. & Sparrow, L. (under review). "You just have to take a bit of a risk sometimes": Breaking the 'cycle of tradition' in primary mathematics. Submitted to Mathematics Teacher Education and Development.

Conference presentations

- Trinidad, S., Frid, S., Sparrow, L., & Treagust, D. (2007, November). Science, ICT and mathematics as curriculum priorities: What are the practices and needs of beginning primary teachers? Paper presented at the annual conference of the Australian Association for Research in Education, Fremantle, WA.
- Frid, S. & Sparrow, L. (2007). Towards 'breaking the cycle of tradition' in primary mathematics. In J. Watson & K. Beswick (Eds.), Mathematics: Essential research, essential practice. (Proceedings of the 30th annual conference of the Mathematics Education Research Group of Australasia, Vol. 1, pp. 295-304). Sydney: MERGA.

Impact

[↑ Top](#)

The survey and interview findings have served as a form of evaluation of the Bachelor of Education programs, indicating a need for the programs to develop mechanisms to better prepare graduates for the realities of their likely future employment positions, particularly in regard to developing their capacities to teach to 'diversity'. Since relatively few graduates were taking up employment in non-metropolitan locations, there is also a need to develop experiences for pre-service teachers to learn more about the rewards and opportunities of living and teaching in non-metropolitan locations of WA. Thus, plans are in progress to include teaching and assessment activities in the core mathematics and ICT units that have an explicit focus on 'diversity'. In this regard, an application under the Carrick Competitive Grants Scheme (now called the Australian Learning and Teaching Council) was prepared. This project, titled Developing primary teacher education students' professional capacities for children's diverse mathematics achievement and learning needs, was successful in receiving funding for a 12 month project beginning July 2008. There is a 'rural and remote' focus as well as an 'indigenous mathematics learning' focus within the 'diversity' emphasis of this project. In particular, the project aims to increase teacher education students' awareness of teaching in non-metropolitan areas, and in this way begin to attend to the challenge in WA of attracting teachers to non-metropolitan schools.

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[↑ Top](#)

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