

## Editorial

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# Reflections: Past/future intersections

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I am currently out of the country and have been struck by a few issues that I believe are pertinent to the future of mathematics education research.

I was invited to speak at a one day conference organised by the sociology department in the institution I was visiting. The focus was on gender issues. As I was to share the platform with a female member of parliament, one of 16 women out of 120 members, it was suggested that I include relevant messages in my talk that would strike a chord and have the potential to lead to political action. I found this a daunting challenge.

I carefully planned my talk to highlight international comparisons in mathematics participation and achievement. I drew on the TIMSS 2003 (Mullis, Martin, Gonzalez, & Chrostowski, 2004) and PISA 2003 (OECD, 2004) results to illustrate the huge variations in the gender differences around the world, highlighting the fact that such differences are not the inevitable consequence of biology, and are more likely to be explained by a range of socio-cultural and psycho-social factors.

As my host nation only participated in the grade 8 TIMSS 2003, I examined the grade 8 findings in detail. To my dismay, I discovered that although gender differences among Australian grade 8 students were not statistically significant (males' mean score = 511; females' mean score = 499), a comparison with 1995 TIMSS data revealed that the girls' achievement scores had decreased by 13, while boys' scores had increased slightly by 4<sup>1</sup>. Although the changes in the Australian grade 8 students' scores over the eight year period were not statistically significant, in my view the direction of the overall change was, that is, that there was an increase in the gender gap in favour of males.

I offer additional data to support my disquiet. In a recent study<sup>2</sup>, it was found that in Australia there was an overall decrease in the total enrolments in year 12 Intermediate level (Barrington & Brown, 2005) mathematics subjects (those which serve as pre-requisites for many mathematics and science-related tertiary courses) over the five year period 2000–2004, and that male enrolment numbers were consistently higher than female numbers. Slight variations were noted among the states/territories. However, it was found that female

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1 Interestingly, for NZ, the trend was in the opposite direction with no change in the mean score for females and a decrease of 12 in the mean score for males.

2 The technical report on which this comment is based was commissioned by the International Centre of Excellence for Education in Mathematics (ICE-EM), which is funded by the Australian Government through the Department of Education, Science and Training. ICE-EM holds the intellectual property rights to the technical report.

enrolments were the main contributors in states/territories with decreased enrolments, and male enrolments the main contributors in states/territories with increased enrolments. That is, overall, there was an increase in the participation gap in this category of mathematics subject in favour of males.

In summary, based on data within a similar and recent time frame, there are now signs in Australia of lower female achievement levels in mathematics compared to males (TIMSS 2003 results), and higher decreased participation rates for females than for males in the Intermediate category of mathematics subjects at the grade 12 level.

I was left to ponder what might have contributed to these outcomes, and what the implications might be. One particular issue came to mind - the role of government policy. Before policy interest waned, there continued to be evidence that the disadvantages faced by females in mathematics and science had not been completely overcome. While fully supportive of the need to address the educational disadvantages confronting males in Australian society, it seems apparent that the effects of the premature withdrawal of funding supporting efforts to redress female disadvantage in the fields of mathematics and science may now be apparent. While more evidence to support my hypothesis is sorely needed, my experiences in a foreign context drew my attention to the importance of government support in tackling educational inequities.

Another purpose for my international visit was to work on a cross national mathematics research project involving the interaction of culture and gender. The data gathered to date, and the preliminary analyses of them, appear to provide a new perspective on the important role of ethnicity, and the interaction of educational opportunity and societal expectations. Gaining funding for collaborative international research in mathematics education appears to remain a stumbling block to the rich, and informative research opportunities that would inevitably arise.

This is my last editorial as I pass on the baton to a new editorial team. It has been a privilege and a pleasure to have served as the editor of this important, and influential, journal. I wish MERJ and all future editors all the very best in meeting the challenges in furthering the cause of mathematics education research in our region of the world.

## References

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