Reflections on Resources with Mary Coupland

Changing the Faces of Mathematics: Perspectives on Gender

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This book includes a diverse collection of research reports concerning gender equity in mathematics. At the beginning of the introductory chapter the editors of the book ask the question: 'Why at the end of the twentieth century are we editing a book on gender equity? The "gender gap" in mathematics has disappeared, has it not?' They go on to present data and include nineteen chapters to show that the gender gap has not narrowed to the extent often argued, and that gender issues are more complex than measures of differences in achievement and participation. They include chapters on ethno-mathematics, the social context of learning mathematics, assessment and various intervention projects. Each chapter contains an extensive list of references.

As a publication of the National Council of Teachers of Mathematics of the USA, the editors have understandably focussed on American data and research studies. Care therefore needs to be taken interpreting these data and reports as the situation in Australia varies in some interesting ways (see Forgasz et al., 2000). The only chapter contributed by authors outside the USA is from Australia. The well known Australian researchers Helen Forgasz and Gilah Leder combined with Julianne Lynch to write about two projects, one about a single-sex mathematics intervention program and the other about the experiences of students in tertiary mathematics. Their chapter is entitled 'The social context and women's learning of mathematics'.

The first chapter, 'Psychosocial dimensions of gender differences in mathematics', provides an overview of research concerning gender differences in mathematics for the past 25 years. The chapter is easy to read and covers the range of theories on gender differences research, but I was disappointed that the writers reported almost exclusively American research and relatively few studies from the 1990s, the most recent being published in 1996.

I was looking forward to reading the chapters dealing with ethno-mathematics and the experiences of women from non-white cultural backgrounds, especially as in Australia we have identified that socio-economic background is associated with gender differences. We have also become more concerned about the educational outcomes of Indigenous students and many teachers are grappling with teaching students from an increasing diversity of ethnic and racial backgrounds. Amongst these chapters I found some gems: two in particular that were biographical.

One of these 'A Latina Tale: The experience of one Latina mathematician', was an autobiographical account of a young Hispanic woman. She described the family values and expectations and her experiences of mathematics at school. In her secondary schooling she had been identified as a high achiever and selected for a special class in mathematics. She had the same mathematics teacher for three years. The following excerpt when she was placed in the 99th percentile in the state placement test and the teacher asked to see their reports made me cringe:

> I will not try to guess what was going on in her head. Maybe she refused to believe me... Nor can I hazard a guess about what she thought when she realised that this little Spanish girl, whom she had barely noticed over three years, could be excelling in the subject she was teaching... I do not reflect back with any bitterness toward that teacher, but I do know that I learned mathematics in spite of her. And that is sad. (p. 106)

The other biographical chapter reported the experience of two minority female teachers who were engaged in bringing about change to improve the learning of minority students in their schools. One was a primary teacher, the other a secondary mathematics teacher. Both spoke with passion

about their goals and reported on the difficulty of women from minority background garnering support from their peers. As the author of this chapter reports, there is a lack of research on women of colour in leadership. Her chapter concurs with other reports that I know of investigating issues of women in leadership in Australian schools and universities. The experiences on non-Anglo women in positions of mathematical leadership have not been researched in Australia to my knowledge.

The chapter on ethno-mathematics was easy to read and the concept was clearly explained. It provides a good starting point for anyone interested in gaining a better insight into the interests and needs of students from cultures other than white middle class Australia, by examining the mathematics of various cultures. I was however disappointed with the lack of substantive classroom applications in this and other chapters following this theme. One chapter on the mathematics of seamstresses began well, but I thought that the mathematics was not explored to sufficient depth. It did however conjure up some good ideas for classroom investigations. Busy teachers though, I think, need some trialled examples of investigations to use. A lot of work has been done in our part of the world, Australasia, from the perspective of ethno-mathematics. The mathematics of Indigenous kinship systems for example, and 'How long does it take an ant to walk to Darwin?' a problem developed by Tamsin Roberts for students in central Australia, immediately come to mind.

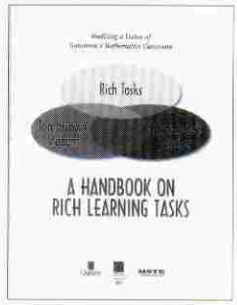
Some chapters did include classroom applications based on the research reports. More would have encouraged teachers to investigate some of the ideas to change the faces of mathematics in their own classroom. It is however a useful reference. Education students will find the issues accessible and teachers and other educators will find some of the chapters a good and affordable introduction for their research interests.

Reference:

Forgasz, H., Leder, G.C. & Vale, C. (2000). Gender and Mathematics: Changing Perspectives. In K. Owens & J. Mousley (Eds), *Mathematics Education Research in Australasia: 1996–1999* (pp. 305–340). Turramurra, NSW: Mathematics Education Research Group of Australasia.

Colleen Vale

A Handbook on Rich Learning Tasks: Realising a Vision of Tomorrow's Mathematics Classroom



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This book is designed for teachers (and pre-service teacher trainees) in all grades and disciplines, as well as for in-service providers, and people who develop curriculum, resources and tests. It was produced as a foundation document to influence and shape 'vision-related' projects in Canada, and arises from a project involving mathematics educators over the period 1994–2000 at Queen's University. The focus is on the future: what would be the features of tomorrow's mathematics classrooms, tomorrow's students and teachers? For my money, the future described is very exciting.

In this future, teachers 'provide students with stimulating and well designed rich learning tasks to promote intellectual, emotional, and social growth', while students 'build their own knowledge of the discipline through a process of exploration, interaction, and reflection, centred on rich learning tasks.' This and more of the vision is in the introduction, then in chapter 1, the characteristics of Rich Learning Tasks (RLTs) are described with examples. Issues such as, 'When should "traditional" skills be taught?' and the status of basic skills are addressed in passing in chapter 1, with more emphasis placed on features of models of the inquiry process that students would use in working on RLTs.

The first example of an RLT is given in the context of a teacher discussing with a grade 7 class the loss of farmland to urban sprawl. The question arises: 'How much land has to be taken out of production to build a new, 36 kilometre-long, 2 lane highway?' The students discuss this in small groups, make (and test) assumptions and estimates, and finally come up with ballpark estimates for the answer. The teacher asks each student to explain, in writing, how they arrived at their answer: their group's result or whatever they consider to be a better estimate, and to justify the reasonableness of their estimate. Perhaps this is not an enticing task for everyone, but the key to