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Date: Wed, 14 Dec 2005 12:25:46 +1100
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From: Jane Watson <Jane.Watson@utas.edu.au>
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Dear Barry,

Although I appreciate that the terms of reference of the Review are mainly aimed at the tertiary level and above in terms of research in the mathematical sciences and its relationship to other research areas important to Australia, I believe that the Infrastructure (Part C) issues extend to what is happening at the school level in mathematics.

Three general issues concern me about the preparation of young people to study the mathematical sciences. One is related to motivation. Following the line of argument of Lynn Arthur Steen (and colleagues) in the United States on Quantitative Literacy, it is essential that all students, even those who show early talent in mathematics, are given opportunities in the school curriculum to appreciate the application of the concepts to contexts across the spectrum of the curriculum (e.g., health, social science, science, even literacy in areas such as media studies). I believe that there is some indication that students choose other fields for further study at university because they perceive mathematics as very narrow and there are other areas (e.g., commerce, law, etc.) where their skills can be used to greater personal economic gain.

My second concern is more specific and is related to the place of statistics in the school curriculum. It is my belief that from the middle school level, much more emphasis must be placed on statistical literacy (as part of quantitative literacy) and on specific elements of statistical thinking and understanding. Such thinking and reasoning is just as rigorous as that associated with the algebra/calculus stream of the curriculum. Not only is statistical literacy essential to all students who will be citizens of Australia, but it is important to motivate students to the further study of statistics, which should be present at the senior secondary level. I have been involved in discussions with various representatives of statistical bodies (e.g., ABS, SSA) and they are concerned about the shortage of statisticians across Australia, including universities and research institutes. Starting with an emphasis on statistical thinking and its benefits at the school level can be part of the solution to this problem.

My third concern is about the professional development needed for teachers in Australian schools, if we are to achieve the goal of more students positioning themselves to undertake degrees and higher degrees in mathematics and statistics, with a view to participating in the significant research the Review wishes to facilitate. I do much work with teachers and they are open about their deficiencies in the above areas. It would be useful if the Review could suggest government funding for upgrades of content knowledge for inservice teachers. The recruitment of more mathematics graduates to become powerful influences in schools is also a priority that should be considered by the Review.

Thank you for considering these issues.

Regards,
Jane

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Dr. Jane M. Watson
Reader in Mathematics Education
University of Tasmania
Private Bag 66
Hobart, Tasmania 7001

Phone: 03-6226-2570

Fax: 03-6226-2569
Email: Jane.Watson@utas.edu.au

http://www.educ.utas.edu.au/users/watsonjm/