

STEM sell gets girls involved in science

EXCLUSIVE

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A real chance exists to bridge the gender divide in the number of girls studying maths and sciences, by demonstrating how these subjects are a springboard to socially valuable, stimulating and worthwhile careers, a world-renowned researcher says.

Australian Helen Watt finds teachers and parents have a critical role to play in helping girls recognise the possible benefits of pursuing maths.

"Girls who regard maths as important and worthwhile are more likely to aim to pursue, and more subsequently actually pursue, more mathematically intensive careers," said Professor Watt, of Monash University's Faculty of Education.

Understanding these motivations provided a powerful lever to encourage girls to continue with maths in their senior years and beyond by demystifying how maths and science careers can contribute to society, and by debunking the stereotypes of mathematicians stuck in their office doing sums or scientists in white laboratory coats looking at test tubes, she said.

The decrease in students entering the STEM (science, technology, engineering and maths) fields is widely recognised as a major handbrake on Australia's future as a knowledge-based economy.

"We've found that losses in interest, the perceived value of mathematics and their own perceived abilities during secondary school predict choices away from STEM, and more so for girls and women," Professor Watt said.

Data from the Australian Mathematical Sciences Institute shows the proportion of students choosing Year 12 advanced maths has declined by 20 per cent from 2000 to 2015, and by 32 per cent from 1995 to 2015. The proportion of girls studying advanced maths in Year 12 is about 7 per cent,

compared to 13 per cent of boys.

Professor Watt is conducting long-term longitudinal studies in Australia, and collaborating with leading international experts in the US, Germany and Finland to identify why young students — particularly girls — are not motivated to pursue the STEM fields. Her research will form the basis of recommendations to government, educators and industry.

The work, highlighted by the Media Centre for Education Research Australia, is advancing Professor Watt's recent research, published in the journal *Sex Roles*, which finds teenage girls are more likely to pursue maths and physical sciences if they feel confident in their skills and abilities in maths and that the subjects are useful and have a social value.

While teenagers perform at the same level at maths regardless of gender, boys are more likely to be confident in their abilities.

Among the factors that contribute to this confidence is that boys are more likely to think their parents and teachers believe they are good at maths — whether or not this is true.

"On the other hand, adolescent females seem more realistic in their assessment of their abilities, although they are more likely to feel maths or science anxiety; together these factors limit their thinking about STEM-related potential study and career options," she said.

Professor Watt pointed out that gender differences in STEM subject enrolments and aspirations could prematurely restrict the career options for female students.

"Since young women especially make choices about their STEM studies and career paths based on their concepts of the value of mathematics and sciences, we need to be making links to their social uses and purposes to attract young women to those careers.

"If we can show them the valuable and stimulating careers that will be open to them, we may have a real chance at bridging the gender gap."