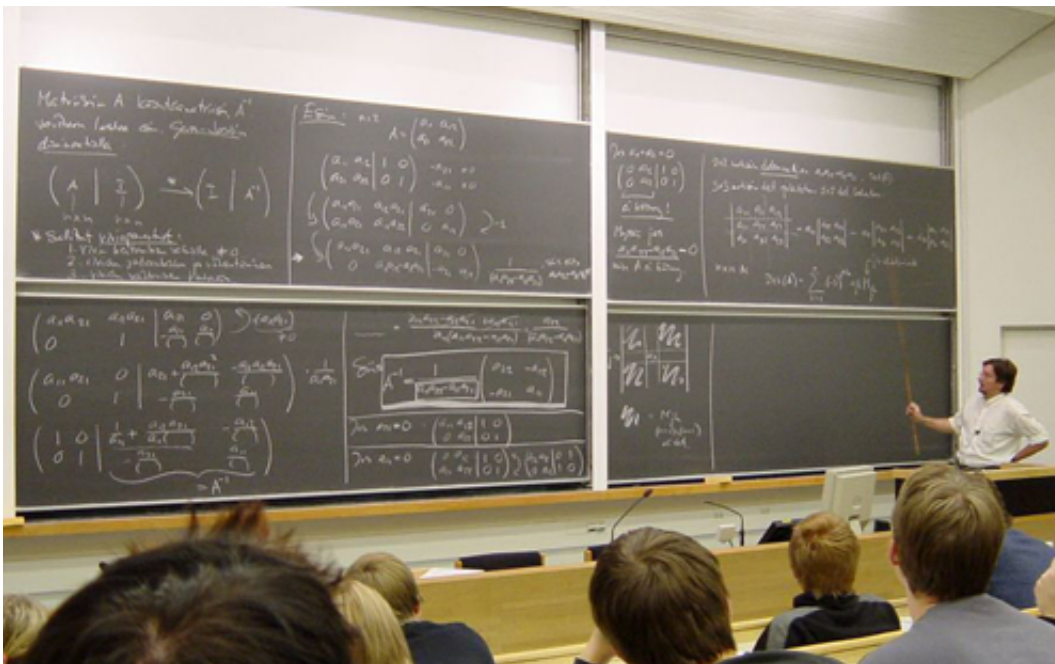


# Study finds 'dire' lack of interest in maths careers among Australian students

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Credit: University of Western Sydney

An Australian study into why students choose science, mathematics, engineering and technology (STEM) careers has revealed a "dire" lack of interest in careers focused on mathematics.

Professor Kathryn Holmes of Western Sydney University's School of Education was part of a study conducted at the University of Newcastle, led by Professor Jenny Gore, exploring who expresses an interest in

STEM careers, what careers they aspire to, and what background factors are linked to this interest.

Using data collected in the NSW four-year longitudinal study, Educational and Career Aspirations in the Middle Years of Schooling: Understanding Complexity for Increased Equity, Professor Holmes and colleagues followed a group of students who were in Years 3, 5, 7 and 9 when the study started, and in Years 6, 8, 10 and 12 when it finished.

Primary school students were asked 'what would you like to do when you grow up?' and secondary students 'do you know what kind of work you would like to be doing at 25 years of age?'

The study revealed "a dire lack of interest in, or possible lack of knowledge of" careers focused on [mathematics](#), with only eight of 6,492 students expressing such interest during the four years of the study.

The finding comes as [student](#) participation in year 12 mathematics is declining and for science is at its lowest point in 20 years. At the same time, Australian students' performance in mathematics and science, compared to students in other countries, has consistently dropped since 2003.

"While this lack of interest in maths is concerning for the future of mathematics study in this country, it is even more concerning because of the role of mathematics – and studying mathematics subjects at school – in a wide range of STEM careers," Professor Holmes said.

"Demand for qualified graduates in some STEM fields is predicted to grow substantially – but at this rate Australia won't have the graduates to fill the positions."

The study also reinforced other evidence that males are more likely to

aspire to STEM careers than females – and found that students' academic ability was a key factor in determining their plans for STEM careers, especially for females.

"Schools clearly have a role to play in improving the achievement levels of all students in STEM disciplines," Professor Holmes said. "However, for females the importance of school achievement appears to be even more crucial than it is for males because it can drive interest in STEM.

"In boys, interest in STEM careers has been found to lead to increased achievement at school and high achievement also increases their interest in STEM careers. But for girls, while achievement in STEM disciplines has been shown to lead to increased interest, the reverse doesn't occur.

"Teachers must be aware of the importance of inspiring students' interest and achievement levels in mathematics in the early years so both boys and girls believe a STEM [career](#) is achievable."

However, Professor Holmes noted that teachers should also monitor their own behaviour in the classroom to watch for "unconscious bias" that might affect both males' and females' interest and achievements.

"Prior studies have shown that female students' achievement in STEM is still being undermined through teachers' unconscious bias towards males in the classroom, leading them to spend more time interacting with male students," she said.

Professor Holmes said the current study also showed that students who have a parent working in a STEM occupation are more likely to express interest in a STEM career.

"Having knowledge of potential STEM careers is clearly important in stimulating interest," she said. "We need to educate teachers about the

full range of contemporary STEM career possibilities so they can discuss these with students and trigger their interest, and students can then investigate what they will need to do in terms of [achievement](#) and further study options to pursue those careers."

**More information:** Kathryn Holmes et al. An Integrated Analysis of School Students' Aspirations for STEM Careers: Which Student and School Factors Are Most Predictive?, *International Journal of Science and Mathematics Education* (2017). [DOI: 10.1007/s10763-016-9793-z](https://doi.org/10.1007/s10763-016-9793-z)

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