

Title: Gender and VCE enrolments in mathematics subjects 2001-2015: Does school type matter?

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Session: Gender Equity and Diversity in Mathematics

In Australia, there are ongoing concerns about declining enrolments in mathematics, and in females under-representation in mathematics and science studies and related careers.

On a regular basis, the relative benefits of single-sex or co-educational schooling are debated in the public sphere, with passionate supporters on both sides. There is a widely held belief that single-sex schooling has distinct advantages for girls in general, and for the study of science and mathematics, in particular. At the same time, co-educational schooling is viewed as beneficial for boys.

In Australia, in the government sector of education, entry into single-sex schools is generally selective, based on academic achievement. It is in the fee-paying sectors of education that single-sex schools predominate. In general, students attending non-government schools have higher socio-economic backgrounds than students attending government schools. The literature is equivocal about the benefits of single-sex settings for girls with respect to achievement and attitudes towards mathematics. Little is known about the mathematics enrolment patterns for boys and girls attending single-sex and co-educational schools. If single-sex schooling does indeed favour girls likelihood to study and succeed in the maths/science fields, is this apparent in enrolment patterns in grade 12 mathematics? In this paper we explore the enrolment patterns in the three Victorian Certificate of Education mathematics subjects offered at the Grade 12 level for girls and boys attending co-educational and single-sex schools over the time span 2001-2015. We also report on survey responses from adult females on their views of whether single-sex or co-educational schools will best serve boys and girls interested in STEM studies.

The data reveal that for Specialist Mathematics, there are higher proportions of boys than girls in both single-sex and in co-educational schools enrolled. While there was a higher proportion of girls from single-sex than

co-educational schools enrolled, the same was true among boys in the two school types. For Mathematical Methods CAS, higher proportions of both girls and boys in single-sex schools than in co-educational schools were enrolled. For Further Mathematics, the proportions of students enrolled was virtually identical for boys and girls in both school types.

Considering that the same proportions of boys and girls in both school types were enrolled in further mathematics, it is simplistic to conclude that the gendered settings of schools alone contribute to the differences found for the other two mathematics subjects. Explanations by a well-educated group of adult females we surveyed on their reported preferences for a single-sex or co-educational school to promote STEM-related subjects for girls and for boys suggest that personal histories play a part. There was evidence that the belief that girls, more often than not, benefit from attendance at a single-sex school persist.