

Students need to be 'switched on' to maths, say researchers

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(Phys.org) -- The precarious decline in children's participation in mathematics can only be reversed by tackling a complex mix of factors, including positive and negative attitudes of a student's parents, peers and teachers, new research has found.

The study, published in the *International [Journal of Educational Psychology](#)*, is the first to reveal that 'switching off' and 'switching on' to maths needs to be addressed in different ways.

"A two-pronged approach is essential. Not only is it crucial to stop students disengaging, but it is also necessary to take deliberate actions to 'kick start' their engagement in mathematics," chief investigator Associate Professor Janette Bobis said.

The study was prompted by ongoing concerns about school and post-school participation in mathematics. In 2010, a panel of the nation's top mathematicians described maths participation as being at 'dangerously low levels'.

"'Switching off' from mathematics is a significant factor in the declining trend in the mathematical performance of children in Years 6 to 8," said Associate Professor Bobis. "Previously, experts have just focused on either switching off or switching on, or have assumed both are the same."

Along with co-researchers Professor Andrew Martin, Associate

Professor Judy Anderson and Dr Jenni Way, Associate Professor Bobis investigated the motivations and behavior of 1601 students in Years 6 to 8 from 200 classrooms in 44 Australian schools.

At home, parents' interests in mathematics and in helping their children with mathematics were major factors affecting middle year students' engagement and disengagement.

According to Associate Professor Bobis: "Parents can have a really positive role to play - including stressing [positive attitudes](#) to mathematics and building up their child's self belief.

"But almost all major contexts in a student's life were found to affect their engagement and disengagement: home, school, class. Other factors relate to a student's personal attributes, such as their confidence to do mathematics, the value they placed on the subject, their enjoyment level and, in the case of switching off mathematics, their anxiety level."

In the classroom, overall classroom climate was a major influencing factor that impacted strongly on individual students.

"If a school is going to do something to improve mathematics competencies they need to come from two or three angles to enhance the children's self-belief and promote their positive engagement with mathematics. But they also need to develop strategies to reduce the [negative attitudes](#) to maths, such as anxiety and negative parental attitudes to maths."

Because various contexts impact in distinct ways, parents, teachers and the students themselves have unique roles and responsibilities in terms of increasing engagement in mathematics and addressing disengagement.

While the study involved Australian students, the implications have

enormous international significance for reducing student disengagement in mathematics and promoting more positive intentions for students' involvement in mathematics at school and beyond.

The study is part of an innovative ARC Linkage research project and ongoing partnership between the Faculty of Education and Social Work and the Catholic Education Office, Sydney.

Switching On and Switching Off in [Mathematics](#): An Ecological Study of Future Intent and Disengagement Among Middle School [Students](#) was published in Issue 1, 2012 of the *International Journal of Educational Psychology*.

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