



Catherine Attard explores some strategies to increase student engagement in Maths ...

### **“I like having a teacher who is really passionate about maths”: Getting students to engage with mathematics through positive pedagogical relationships**

How often do teachers of Mathematics hear the phrase “why do I need to learn this?” or “I’m no good at Maths”? Many people attribute anxiety or a dislike of Mathematics to their experiences during the middle years of schooling (Years 5 to 8) and although students are influenced to some degree by parents and peers, it is the teacher who has the most influence on students’ engagement with mathematics. This article explores the construct of engagement as it relates to Mathematics, and suggests that for deep and sustained engagement to occur, positive pedagogical relationships, the interpersonal relationships between teachers and students that optimise engagement, must first be established.

## **Defining engagement**

As teachers, we use the term ‘engagement’ often, but do we really understand what real engagement looks like? When we see students who are ‘on task’, are they engaged, or are they just involved in busy work, and in getting the task done? Consider the difference between students who are ‘on task’, and students who ‘in task’. When students are ‘in task’, their minds and bodies are focused on what they are doing. They might be participating in substantive dialogue about the topic, or they might be working in silence, thinking deeply about Mathematics they are involved in – either way, they are engaged.

Many definitions of engagement are found in education literature. Some provide a narrow view that relates only to behaviour and participation. Others provide a deeper understanding that is multi-dimensional. Fredricks, Blumenfeld and Paris (2004), define engagement as a deeper student relationship with classroom work, multi-faceted and operating at cognitive, emotional, and behavioural levels. In this paper, I draw on work of the Fair Go Project (Fair Go Team NSW Department of Education and Training, 2006) and define engagement as the coming together of three facets – cognitive, operative, and affective, which leads to children valuing and enjoying, and actively involved with school mathematics, and seeing connections between the Mathematics they do at school, and their own lives beyond the classroom now and in the future.

## **Pedagogical relationships and mathematics**

This paper is informed by a longitudinal study on the influences on engagement (for a more in depth description see Attard, 2011, 2013, in print). In the study, data were collected from a group of 20 children across three years of their schooling from Year 6 to Year 8. The major selection criterion for participation in this project was that the students had to identify themselves as being engaged with Mathematics (through the use of a Motivation and Engagement Scale (Martin, 2008)). Data were collected through individual student and teacher interviews, student focus groups, and classroom observations.



During the first phase of the study when the students were still attending primary school, they identified their current teacher as someone they perceived to be a good Mathematics teacher. They articulated several attributes directly relating to the pedagogical relationships the teacher had formed with her students, such as her ability to cater to individual needs through the differentiation of tasks, and her modeling of enthusiasm and passion towards Mathematics. Comments such as these were typical: “I like having a teacher who is really passionate about Maths” (Alison, Year 6), and “...while you’re doing the work she also has fun teaching the Maths as well” (Tenille, Year 6).

In the second phase of the study, things changed for this group of students. They began their secondary education, at a new school that was significantly different at the time from traditional secondary schools. At the time the school identified itself as a ‘ground breaking’ learning community in relation to its multi-disciplinary approach to curriculum, large open teaching spaces and a teaching structure that saw a group of Mathematics teachers rotate amongst classes, which meant each class group did not have one allocated teacher and saw each teacher every fourth lesson. These structures were not conducive to building relationships – the teachers had very limited opportunities to identify student needs and abilities, and as a result, students became disengaged: “everyone’s excited when there’s no Maths. I think it’s because, not having someone explain it to you and you don’t get it. If you don’t get it that means you don’t like it” (Kristy, Year 7).

Fortunately circumstances improved for the students in Year 8. Teachers were allocated a class group and the students were back on the path to engagement. They felt that they were now seen as individuals rather than a collective, and teachers cared more about their learning. They also felt that if they required assistance from their teachers, they felt safe in asking for help and felt the teachers now wanted to help them. The increased opportunity to develop pedagogical relationships also improved the level of feedback students received, which began to re-build their confidence as well as their engagement.

During the course of the study the students experienced a wide range of teaching and learning situations that resulted in significant fluctuations of their engagement levels. Although the data overwhelmingly confirmed the teacher was the strongest influence on these students’ engagement, this influence appeared to be complex, consisting of two separate yet inter-related elements: pedagogical relationships and pedagogical repertoires. Pedagogical repertoires refer to the day-to-day teaching practices employed by the teacher.

Results of this study suggest that it is difficult for students to engage with Mathematics without a foundation of strong pedagogical relationships. Positive pedagogical relationships exist when:

- students’ backgrounds and pre-existing knowledge are acknowledged and contribute to the learning of others;
- interaction among students and between teacher and students is continuous;
- the teacher models enthusiasm and an enjoyment of Mathematics and has a strong Pedagogical Content Knowledge;
- the teacher is aware of each student’s abilities and learning needs; and
- feedback to students is constructive, purposeful and timely.



It can also be argued that it is through engaging pedagogies that positive pedagogical relationships are developed, highlighting the connections between relationships and engaging repertoires. So what are considered engaging pedagogies in the Mathematics classroom? These will be explored in the next issue of The Journal of Professional Learning.

***Catherine Attard worked as a school teacher and proceeded to complete a PhD on student engagement. She has been a part of the Fair Go Project Team at the University of Western Sydney. She is also editor of the journal Australian Primary Mathematics Classroom.***

Catherine Attard, University of Western Sydney  
c.attard@uws.edu.au

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