



# AAMT Position Statement

## Promoting positive attitudes towards mathematics

The Australian Association of Mathematics Teachers Inc.



POSITIVE ATTITUDES

### Introduction

Mathematics has had a significant influence in the development of the modern world. For thousands of years mathematics has been at the heart of discoveries from early counting systems to the greatest scientific and medical discoveries of our time. While almost everyone in society appreciates the value of mathematics in our everyday life, the majority of people admit to feelings of anxiety and inadequacy when faced with mathematics.



In the early 1600s, Galileo used mathematics to invent his telescopes to observe the Moon and Jupiter.



Mathematics is also used when reconstructing the picture from a CAT scan and when building bridges.

For the most part, society's misconception is that a person is either born with a mathematical ability or they are not. This misconception has created a culture where it is socially acceptable for someone to openly proclaim that they are 'no good' at mathematics and where a weakness in mathematics is worn as a badge of honour. Unfortunately, these self-proclamations contribute to the development of a mindset that becomes fixed and often unwavering. A fixed mindset is one significant impediment to learning as it affects the ability of the learner to 'believe' that they can achieve at a higher level.

This mindset is closely linked with the attitudes that a person brings to mathematics; attitudes which are influenced by many variables, including previous school experiences, cultural beliefs, educational values, parental attitudes, teacher attitudes and peer attitudes. All of which contributes to a person's emotional disposition towards mathematics, where a positive attitude supports a positive disposition and a negative attitude supports a negative disposition. Dispositions are habits of thinking and doing that influence a student's confidence, motivation, attitudes and behaviour in and towards mathematics.

## Attitudes and dispositions

Attitudes and dispositions, both positive and negative, affect the way a person thinks about themselves as a learner. They are affective on an emotional level and affect one's behaviour in the future. When considering mathematics, most people believe that if you follow the rules and the procedures then you will get to the 'correct' answer. When we get the correct answer we feel good about ourselves. This positive emotional response contributes to a positive attitude, which impacts on an individual's behaviour and confidence. Therefore a positive attitude towards mathematics is a favourable quality to possess in the mathematics classroom. However, the converse can be true when a student obtains a 'wrong' answer. In the same way, there are other influences on students' attitude and achievement in the mathematics classroom.

Teachers at parent-teacher interviews often report hearing parents (particularly mothers of girls) say how bad they were at mathematics at school and their expectations of their child is not high. A common belief held by adults and parents is that a child who is mathematically capable inherits their 'talent' from the parent who was 'good' at mathematics, while those students who require more time and encouragement inherited the genes that contributed to being 'bad at mathematics'. Unfortunately these parental beliefs are extremely influential in student attitude and behaviour towards mathematics and often create a situation where it is generally considered more acceptable to fail in mathematics than in other curriculum areas.

### Parents can contribute to their children's positive attitude by:

- using mathematics with them while shopping (money) or cooking (measuring);
- playing games that use cards and dice (probability);
- make patterns (pre-algebra);
- using counting games (number); skip counting (multiplication/ algebra);
- saying rhymes that use counting (sequencing);
- finding shapes in the real world (geometry);
- avoiding negative talk about mathematics regardless of what you believe about your own mathematical abilities.

While parents have a substantial influence on their children's attitudes towards mathematics, it must be acknowledged that teachers have a significant influence on student attitudes and beliefs about the learning of mathematics. A teacher's behaviour in the mathematics classroom is keenly observed by students; whether it is the teaching practice, the content delivery or the attitude that a teacher exhibits when dealing with mathematics.

Many teachers seldom realise how their behaviour influences student achievement and that students' draw from the attitude and disposition exhibited by the teacher in order to form their own attitude.

*Success is  
measured by  
willingness to  
keep trying*

### Teachers can influence students by:

- fostering the belief that everyone can 'do' mathematics;
- demonstrating their enthusiasm for mathematics;
- knowing their subject matter;
- avoid placing too much emphasis on tests;
- providing opportunities that encourage investigation and questioning over routine procedures;

In order to bring about a cultural shift in attitudes towards mathematics, we must first bring about a change in society's attitude towards mathematics. The word 'nerd' is often associated with one who enjoys or studies mathematics. There is a certain persona that goes along with that name and most children do not wish to be associated with it. There are some things that we can do to change attitudes towards mathematics, such as, encourage students to take risks with their thinking, tell them that it is okay to get a wrong answer so long as you don't give up; stop believing that we either have a 'maths brain' or we don't; change our mindset from fixed to growth; see that mathematics is everywhere in our world and *never* give up. Even Andrew Wiles, who solved Fermat's Last Theorem spent seven years working on it.

*"The winner's edge is not in a gifted birth, a high IQ, or in talent. The winner's edge is all in the attitude, not aptitude. Attitude is the criterion for success"*

Denis Waitley, *The Winners Edge* (1989)

### For further information see:

- You cubed, Jo Boaler <https://www.youcubed.org/parents/>
- Mindset, Carol Dweck <http://mindsetonline.com/whatisit/about/>
- PBSParents <http://www.pbs.org/parents/education/math/math-tips-for-parents/instill-a-love-of-math/>
- AAMT Student Activities <http://www.aamt.edu.au/Student-activities>

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