

# MEANING & MEANINGFULNESS: EXPANDING MATHEMATICS IN THE MINDS OF OUR LEARNERS

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## THEME

Engaging students in STEM education

## AIMS AND BACKGROUND

In today's world, virtually anyone you stop on the street can tell you what they think mathematics is. The responses may come with a fair dose of emotion and attitude - usually negative—but they will also be quite consistent, with the vast majority of people describing numbers, equations and formulas as the core of what they remember and experience of mathematics from school or daily life. While these concepts are central to mathematics, they are not comprehensive and the fact that so many students leave school with these features of mathematics dominant in their minds is a sign that we have an opportunity and a responsibility to expand learners' conception of mathematics.

To help our students find mathematics meaningful, we can expand the meaning of mathematics to them, and STEM provides us with an ideal setting in which to do so. Strategic competence, adaptive reasoning and productive disposition should have prominence in our classrooms, and these can be emphasised by using real-world contexts and authentic problems as our medium for teaching mathematical concepts and skills. The iterative design process that comes as second nature when constructing solutions in a STEM environment has important parallels in the attributes that we want our students to develop as growing mathematicians.

This presentation will focus on the practical principles and lessons learned from implementing STEM in a secondary context by an interdisciplinary team of classroom teachers.