

## **Identity and Modelling in Mathematical Literacy: A Case Study in Designing Mathematical Literacy Investigations**

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In this study, I engaged with 170 Grade 11 learners to observe the way mathematical literacy learners think of themselves as individuals who can learn and do math. Mathematical literacy is a uniquely South African subject, offered as an alternative to core mathematics, aiming to improve accessibility to mathematics education and mathematical literacy rates in the country.

This study observed how learners' perceptions of their mathematical ability may be influenced by context-rich mathematical literacy material, whether these learners thought mathematics will be useful to them now or in the future, and how these views motivated them to choose mathematical literacy.

I collected data for three months using questionnaires, written reflections by the learners, work produced by the learners, and a small group interview. The learners participated in two separate mathematical modelling orientation sessions to discuss and attempt to describe problems in the school environment as a mathematical equation. I used the learners' ideas to devise two mathematical investigations that were completed by all learners as part of their formal school assessment programme – to determine how well the learners could draw connections between mathematics and the real-world implications of numbers.

I conducted a group interview with 10 learners to find out how the context-rich investigations and mathematical literacy, in general, made them feel about the usefulness of mathematics and their mathematical abilities. The data showed that these learners were positive about mathematics but that their ability to envision the role of mathematics in their lives had been hindered by being exposed only to standardised, contextually shallow materials.

From the literature about the global need for mathematical literacy as well as the nature and intended aims of mathematical literacy as a subject, I argue that mathematical modelling can be used to enrich learning experiences and accurately inform learners' mathematical identity.

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