

# INVESTIGATING USING THE THEORY OF REALISTIC MATHEMATICS EDUCATION TO ELICIT AND ADDRESS MISCONCEPTIONS

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This paper reports on some of the results of a case study, consisting of 12 individual cases, carried out in a local urban high school in South Africa. In the study, an intervention for low attaining Grade 8 mathematics learners was implemented in an attempt to improve the conceptual understanding of the participants with regard to place value, fractions and decimals. The intention of the intervention was to revisit familiar topics with an emphasis on eliciting and addressing misconceptions so that these could serve as a source of information (Dockrell & McShane, 1992) that could be used as motivational devices and starting points for mathematical explorations (Borassi, 1987). The literature pertaining specifically to learners with learning disabilities or low attaining learners appears to indicate that these learners on average demonstrate a greater percentage of systematic errors (misconceptions), than higher achieving learners (e.g. Cox, 1975; Woodward & Howard, 1994). Analysis of the error patterns revealed that many of the errors occur due to limited conceptual understanding of the algorithms and strategies taught to learners. For this study, the hypothesis was therefore made that if some of the fundamental misconceptions held by learners could be elicited and addressed during the intervention, their conceptual understanding, relating to the mentioned topics, would improve.

After consulting the literature on low attainers and related terms such as Special Educational Needs (SEN), learning disabilities and difficulties, common aspects that could be included in a working framework for an intervention were identified. The theory of Realistic Mathematics Education (RME) was selected as the vehicle to drive the design and implementation of the intervention as it encompassed all the aspects included in a working framework. The instructional design principle of 'guided reinvention through progressive mathematisation' (Gravemeijer, 1994) also potentially provided a good basis from which to work with the misconceptions. Results from the intervention varied but were overall quite positive and are discussed with specific reference to the hypothesis regarding misconceptions stated above.

## REFERENCES

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