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An exploration of grade 8 learners' responses to real-world and standard mathematical problems

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AN EXPLORATION OF GRADE 8 LEARNERS' RESPONSES TO REAL-WORLD AND STANDARD MATHEMATICAL PROBLEMS.

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A research report submitted to the School of Science Education in the Faculty of Science, University of the Witwatersrand, Johannesburg, in the partial fulfilment of the requirements for the degree of Master of Science.

Johannesburg, October 2007

Declaration

I declare that this research report is my own unaided work. It is being submitted for the degree of Master of Science in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other university.

_____

M.A Mkwanazi

____ day of _____ 2007

Abstract

This study explored how the use of real-life contexts influences South African Grade 8 learners' responses in solving mathematical word problems. A mathematical task was given to investigate whether the influence exists and if so how. The study falls within a social constructivist framework which emphasizes construction of learners' own knowledge in the learning process. Learners do so when they are able to recognize and interpret a mathematical task as one for which everyday knowledge as well as mathematical knowledge would be a relevant resource on which to draw. The research method employed was a case study. Data for the study was collected through written a mathematical task and individual learner interviews. In the report key issues are identified and discussed. They are concerned with (a) learners representation of a number and (b) learners' mathematical and real-world knowledge. The study concludes that current use of word problems does not foster in learners realistic considerations even though the South African curriculum emphasizes the incorporation of everyday life experiences into mathematics. Rather than providing realistic contexts that encourage learners to use commonsense knowledge and experience in the problem-solving process, school word problems are perceived as artificial, undoubtedly solvable, but also that everything in the problem text is confined to relevance and no-ambiguity. The report concludes with recommendations for classroom practice, teacher education and further research.

Dedication

To
my wife,
our children,
and my
supervisor

Acknowledgements

Thank you to learners who so willingly gave their time and participated in this research study. You will all undoubtedly benefit from the results of this research as I have learnt so much from you.

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