Abstract:

This is an action research study which focuses on a didactical model founded on base ten decomposition as an algorithm for performing division on naturals. Base ten decomposition is used to enhance the algebraic structure of division on naturals in an attempt to cross the cognitive divide that currently exists between arithmetic long division on naturals and algebraic long division on polynomials. The didactical model that is proposed and implemented comprises three different phases and was implemented over five one hour lessons. Learners' work and responses which were monitored over a five-day period is discussed in this report. The structure of the arithmetic long division on naturals formed the conceptual basis from which shorter methods of algebraic long division on polynomials were introduced. These methods were discussed in class and reported on in this study.

Keywords:
Long Division
Base Ten Decomposition
Division Algorithm
Arithmetic
Structure
Polynomials
Cognitive Gap
Variable

Declaration

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

Jacques Desmond du Plessis

2nd day of May, 2007.

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