ABSTRACT

This master's thesis focuses on the understanding of algebraic expressions by higher primary school pupils. The objective is twofold. First, to determine, based on the quantitative evaluation of research data, the most common mistakes pupils make under the headings of *generalization, algebraization, interpretation, geometrization, & manipulation*; and then second, to compare the introduction of algebraic expressions in different mathematics textbooks. Beyond this, a theory is also appended. Including several research results, literature review also delves into several activities effective in enhancing pupils' understanding of algebraic expressions, as well as an illustration of their typical errors associated to the aforementioned headings. The second part of the thesis then consists of the two-part textbook analysis: First, a qualitative analysis of authors' reasoning when validating modifications of algebraic expressions, and then a quantitative analysis of the algebraic tasks concerning the headings (i.e., the creation of a task overview). The third part of the paper finally evaluates the author's research. With the test sample of 207 pupils selected from the last years of compulsory education, two additional objectives were set out – first, to find out which tasks (according to said headings) are the most difficult in the context of algebraic expressions; and then, to check whether they coincide with TIMSS 2007 (that being the geometry, generalization and complex cases of algebraization). Partial agreement was found for the second objective. Both geometry and generalization marked for TIMSS 2007 as the most difficult items also scored the lowest success rate in this study. On the other hand, algebraization scored comparatively the best. According to the decreasing average success of pupils the overal order of headings was: algebraization, interpretation, manipulation, generalization and geometrization of expressions. The most demanding headings was thereafter the geometrization.

KEYWORDS

Algebraic expressions, variable, comparison of textbooks, didactic test