

Title: Implementation of Challenging Tasks in Mathematics Education

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ABSTRACT

The thesis deals with practical implementation of challenging tasks in mathematics education. The methodology for examining “the fidelity of implementation of mathematical tasks” is being designed to describe whether the task is used according to the original intention of the teacher or according to the intention of its author. This methodology is employed in the analysis of four experiments to examine mathematical tasks and task environments. Then, based on the experience with the analysis, the methodology is adapted to the needs of both the teaching practice and educational research. The main result of the thesis is the creation of the methodology for examining the fidelity of implementation of mathematical tasks which is based on contrasting the descriptions of four general elements of the mathematical task at different phases of its implementation.

KEY WORDS: mathematics education, mathematical task, challenging task, implementation of tasks