

## Abstract

Mechanical knowledge is presently considered to be the major problem in didactics of mathematics. The aim of this diploma thesis is first, to diagnose possible instances of mechanical knowledge in cognition of an A student, i.e. a student with excellent results in mathematics, and second, to provide a discussion of their probable causes.

The thesis consists of two parts. In the first part, i.e. the theoretical one, the concepts which are essential for the empirical part are introduced. The pivotal sections of the theoretical part of this thesis are therefore devoted to the introduction to the theory of generic models and mechanical knowledge. In case of mechanical knowledge, the emphasis is put on a discussion of its possible causes, as well as ways of their diagnostics, reeducation and prevention.

The empirical part of the thesis is dedicated to a case study which was conducted. In this study, a number of examples of mechanical knowledge in various branches of mathematics were identified in cognition of a lower-secondary student, based on the analysis of in-depth interviews and teaching materials. It is concluded that the most probable cause of the identified instances of mechanical knowledge is the transmissive education style, in which the priority is placed on remembering definitions and formulas and drilling algorithms and procedures.

**Keywords** mechanical knowledge, diagnostics, problematic mathematical topics, case study, A student