

## **ABSTRACT**

The diploma thesis deals with the topic of a didactic mathematical environment Biland. The theoretical part is concerned with the definition of two opposite educational styles, transmissive and constructivist, and their comparison. Within the constructivist educational style, it is also focused on The Hejný's method, and it defines the two basic pillars of this conception. The first pillar is the personality of the teacher and the other one is the mathematical content, which is provided by different mathematical environments.

This diploma thesis introduces the environment Biland, describes on which mathematical basis it stands on and shows why should be Biland included into the teaching of mathematics. It answers the question of importance of teaching also non-base ten systems and therefore it describes the history of place-value system. It also studies the tasks in contemporary textbooks of mathematics for primary schools by Hejný et al. published by publishing house FRAUS.

The practical part includes the preparation and implementation of experiments in which the new environment Biland was introduced to the pupils. The experiments were recorded into protocols, followed by analysis. Another aim of the practical part was creation of worksheets for the pupils which were handed out after the experiments and the pupils' solving strategies were analysed. The last part of the practical section was creation, distribution and evaluation organization of a questionnaire detecting teachers' attitude to the environment Biland.

## **KEYWORDS**

the environment Biland, number as a magnitude, place-value system, binary system, solving strategies