ABSTRACT

The aim of this diploma thesis is to gain insight into the geometric reasoning of lower secondary school pupils in the area of geometric solids. The thesis is divided into a theoretical and a practical part.

The theoretical part includes essential theories related to geometric thinking, such as prototype theory and the van Hiele theory, which serve to identify the level of geometric reasoning. It also outlines the expected outcomes from the Geometry in Plane and Space section of the Framework Educational Program for basic education, supplemented by indicators from the Standards for basic education.

The practical part focuses on original research that describes the different levels of geometric thinking among pupils. A pilot study formed the basis for the research format, task structure, and task content. The research comprises seven tasks and uses the think-aloud method, where pupils, paired in twos, record their thoughts using voice-recording devices. The practical section presents the research findings obtained from the analysis of pupils task solutions. This analysis includes examples of pupils responses and transcripts of pupils commentary and dialogue. The conclusion of the practical part summarizes the research results and provides didactic recommendations for developing spatial visualization and geometric reasoning.

The results of the diploma thesis reveal that each pupil has a different level of geometric thinking, with the majority not reaching the expected level of reasoning for lower secondary school.