

## **ABSTRACT**

The aim of the thesis is to use a series of pedagogical experiments to introduce the volume of a pyramid, a cone and a sphere using Cavalieri's principle for pupils of the ninth year of primary school. First, the thesis characterizes the theories and approaches on the basis of which the experiment was built, such as the generic model theory and constructivism. The next part deals with the analysis of schoolbooks for the upper primary school and gymnasium, which are devoted to the introduction of the volumes of solids of pyramids, cones and spheres, and especially those schoolbooks which introduce the given volumes using the Cavalieri principle. The pedagogical experiment was preceded by a series of lessons focused on familiarizing pupils with given geometric solids and deriving calculations of their surfaces. This was followed by the introduction of the Cavalieri principle in the plane and also in space. In the practical part of the thesis, the tasks that were used in the pedagogical experiment are presented. The description of the course of the pedagogical experiment is supplemented by copies of the pupils' solutions. The conclusions are illustrated by the pupils' observations and summaries, which they arrived at in the form of a discussion on the tasks. At the end of the thesis, an evaluation of the pedagogical experiment is presented and an evaluation of how the pupils approached the teaching and what they learned from it. It turned out that Cavalieri's principle is definitely one of the ways to approach the teaching of this topic.

## **KEYWORDS**

Cavalieri's principle, volume, pyramid, cone, sphere