

The thesis deals with the process of construction of mathematical knowledge of an individual and a group of pupils. At the outset, some concepts are discussed which belong to the theoretical background of our research (knowledge construction process and its mechanism, typology of mathematical knowledge, character of a mathematical structure, constructivist approaches to the teaching of mathematics, creative teaching, action research). Some results of selected local and foreign research focusing on constructivist approaches and action research in mathematics education are given. The methodology mainly consists of teaching experiments which can, to a certain extent, be seen as cycles of cooperative action research. The target group consists of pupils of lower secondary grammar school. The data gathered through traditional methods of qualitative research (participation observation, audio and videorecordings, pupils' artefacts, notes of an external observer, etc.) were analysed using the techniques of grounded theory. The research has generated results of three types: (1) The categories of individual and group constructions in mathematics have been described in depth including their dimensions (the measures of the teacher's influence on the construction, of the pupils' cooperation, of pupils' formal acceptance of knowledge); examples have been given. (2) In terms of methodology, some limitations of action research have been identified and a need for a clinical teaching experiment emphasised. (3) Some practical applications have been drawn in terms of the applicability of constructivist approaches in teaching.