

Theory of Teaching of Mathematics

Mathematical preparation of future undergraduate students

supervisor: prof. RNDr. Jozef Doboš, CSc.

study form: full time

Annotation: Analysis of mathematical preparation of secondary school pupils for university level mathematics with the aim to align the expectation of university lecturers with the possibilities of mathematical education at secondary schools. Development of proposals for the improvement of the status quo.

Inquiry-based approaches to teaching functions

supervisor: doc. RNDr. Stanislav Lukáč, PhD.

study form: full time

Annotation: Nowadays, we can observe efforts to apply inquiry approaches to mathematics and science education. Elementary functions belong to the basic topics of school mathematics. Misunderstanding of concepts and relationships associated with functions and their properties leads to various students' mistakes and misconceptions. Inquiry approaches to teaching have the potential for inductive way of building knowledge and understanding of educational content. The research aims involve: analysis of the possibilities to implement inquiry approaches to teaching functions in high school; development of teaching and learning materials based on the application of inquiry approaches to teaching functions; examining innovative teaching and learning materials in mathematics teaching and evaluation of the effect of the designed approaches on the development of students' inquiry abilities.

Advancement of mathematics pedagogical content knowledge in the process of teachers' professional development

supervisor: doc. RNDr. Dušan Šveda, CSc.

consultant: RNDr. Veronika Hubeňáková, PhD.

study form: full time

Annotation: Mathematics pedagogical content knowledge is the theoretical concept, which concerns knowledge that is unique to teachers. Students' learning is broadly influenced by its level. It is the reason to focus the Professional development of mathematics teachers on its advancement. The thesis should analyze present state of the mathematics teachers' professional development and identify possible options of its measurement and development in the scientific literature. Moreover, the effectivity of the suggested training activities for mathematics teacher should be experimentally verified.

Development of exibility of pupils' thinking in mathematics education

supervisor: doc. RNDr. Dušan Šveda, CSc.

consultant: RNDr. Ingrid Semanišinová, PhD.

study form: full time

Annotation: Flexible usage of different representations and strategies while solving mathematical tasks is part of cognitive variability development. It is the component of creativity which enables one to solve different problems fast and accurately. It is the reason to foster its development in mathematics education. The thesis will be focused on the identification and advancement of the exibility when different representations and strategies are used by students while solving the tasks.