

ABSTRACT

KISS, Tünde, PaedDr. *Students' argumentation in solving physics problems*. [Dissertation thesis]. Comenius University in Bratislava. Faculty of Mathematics, Physics, and Informatics. Department of Didactics of Mathematics, Physics, and Informatics. Supervisor of dissertation thesis: doc. PaedDr. Klára Velmovská, PhD. Level of professional qualifications: PhD. Study programme: Theory of Physics Education. Bratislava. 2021. 129 p.

Dissertation thesis deals with students' argumentation in solving physics problems. Within the theoretical part basic characteristics of arguments are specified, as well as definitions of terms, analysis, or types of arguments. As a part of a pre-research, a criterion for evaluation of students' answers in solving physics problems was chosen from the listed options for evaluation of the argumentative text. Due to the needs of research, we created an achievement test, in which we included tasks focused on application of argumentation. As a part of the ex post facto research, we were monitoring and comparing the level of argumentation of primary school students from three countries – Slovakia, Czech Republic, and Hungary. We found out, that argumentation of students does not improve with increasing number of years of school attendance, and we also found out that Czech students had the best results in comparison to the students of other countries. We compared the level of argumentation of students, who use various physics textbooks. We found out, that students who use one of the Czech textbooks had statistically significant better results than the students who are following the other monitored textbooks. Subsequently, we were looking for the reason for given state with use of a content analysis of basic pedagogical documents such as state educational programs and physics textbooks from the point of view of development of argumentation and from the point of view of the number of years of teachers' experience. The benefit of this dissertation thesis is a suggestion, how to evaluate students' arguments in solving physics problems, as well as the finding that the high-quality documents focused on the development of ability to argue can improve argumentation abilities.

Key words:

argumentation in teaching physics, evaluation of students' arguments, analysis of pedagogical documents