

Abstract

ŠROMEKOVÁ, Karolína, Mgr. Research in the capabilities of ISCED 2 pupils to graphically process data gained within their physics inquiry. [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. Viera Haverlíková, PhD. Level of professional qualifications: PhD. Study programme: Theory of Physics Education. Bratislava. 2023. 116 p.

The central topic of the dissertation is the construction of graphs at the earliest stage of systematic Physics education. Contemporary Physics education is based on the principles of inquiry-based approach, an integral part of which is processing and interpretation of data. One of the ways pupils can process data is by creating graphs. The aim of the work is to examine how 6th grade elementary school pupils create their first Physics graph and how their graph-making skills can be developed. The work is based on grounded theory which enables participatory research. It is a suitable tool when the course of an event or phenomenon is to be described. In this case, grounded theory is used to describe the process of creating a graph from one's own experimentally obtained data. The research consisted of three stages. During the first and second stage, pupils' solutions (graphs they constructed) were examined; during the second stage, pupils were also interviewed individually to discuss their solutions. Based on the evaluation of the two stages, a set of inquiry-based activities was designed, focused on developing pupils' graphing skills. Supporting materials for teachers were prepared along with the activities. In the third stage, these activities were implemented at the researcher's school as well as two other schools. Results are presented in the form of categories and subcategories of grounded theory, with specific examples taken from the pupils' solutions. Key elements necessary for the development of integrated ability (scientific work) to construct graphs were defined based on the results and current literature. The results can be applied in Physics teaching as well as in formulating further research questions.

Key words: graphs, inquiry-based approach, grounded theory.