

Abstract: This doctoral thesis is an extension of the diploma thesis entitled Physics Problems for Development of Various Cognitive Operations. The thesis focuses mainly on physical tasks available in the Collection of Solved Problems (<http://physicstasks.eu>). The main aim of this work is to sort individual tasks of the Collection in terms of cognitive operations. The analysis showed that the largest number of tasks involved are tasks requiring routine calculations, deduction and tasks focused on synthesis. However, tasks requiring categorization and classification, abstraction and generalization and tasks aiming at specification are almost absent in the Collection of Solved Problems, and therefore, according to our recommendation, these tasks could be added in the future. Tasks were categorized according to the taxonomy by D. Tollingerová into seventeen categories. The main benefit of this work for the creators of the Collection is to guide the categorizing of newly created tasks to the corresponding category of cognitive operations. This manual includes, among other things, cognitive operations' characteristics and demonstrations of specific physical tasks with commentaries. Other aim was to create four tests (topics Electrostatics and Electricity) with an emphasis on different types of tasks in terms of cognitive operations.

Key words: physical task, cognitive operation, taxonomy by D. Tollingerová,  
Collection of Solved Problems