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Primary School Teachers' Attitudes towards Heuristic Teaching of Natural Sciences in Initial Education[2]

Extended summary

Heuristic model of teaching natural sciences in initial education, and in general as well, is important for a proper acquisition of knowledge and skills. Despite all the advantages of this model of learning, research shows that it is rarely used in natural science lessons. Previous research dealing with the objective reasons for the rare application of heuristic teaching indicates that they are more closely related to subjective difficulties. Teachers' attitudes towards the application of heuristic teaching influence significantly its presence in teaching practice. The aim of this research was to examine the attitudes of teachers regarding the use of heuristic teaching in integrated science classes (school subjects: *The World around Us* and *Social, Environmental, and Scientific Education*) in primary education. In addition, the researchers wanted to determine whether there was a statistically significant difference between the attitudes of teachers of different gender and years of service. The research tasks were focused on: analyzing teachers' attitudes towards the heuristic teaching, as well as their views on the effectiveness of its application in the classes of the subjects *The World around Us* and *Social, Environmental, and Scientific Education*. The research included N = 71 teachers from eight primary schools on the territory of the Autonomous Province of Vojvodina. For the purposes of this research, the

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descriptive-analytical and comparative methods were used. The research technique was survey, and the survey questionnaire was an instrument. The questionnaire consisted of 22 questions divided into two blocks. The data obtained by the questionnaire were processed using descriptive statistics (percentages), while the differences between the average values of the two groups of respondents were determined using the independent t-test technique in the statistical program SPSS version 23. The results of the first block of questions showed: that teachers rarely apply heuristic teaching in natural science lessons; that they are partially informed about the ways of its implementation; and they are aware of the fact that they need additional professional-methodological training for its implementation. The results of the second block of questions showed the following: teachers have a positive attitude towards the effectiveness of applying heuristic teaching in natural science classes; they pinpointed some advantages and disadvantages of heuristic teaching and believe that heuristic teaching can provide quality knowledge that pupils can apply in their everyday experience. These data confirm the first six sub-hypothesis of the research, as well as the first alternative hypothesis: *Teachers have a positive attitude towards the application of heuristic teaching at the classes of the subjects The World around Us and Social, Environmental, and Scientific Education in initial education*. A statistically significant difference in the attitudes of teachers of different gender and years of service regarding some issues in the survey was also identified. Male teachers were more successful in specifying the most appropriate method for the application of this model of teaching; they agreed to a greater extent with the offered statements about the effectiveness of heuristic teaching, while female teachers ranked it as a more successful teaching and listed a larger number of its advantages and disadvantages. Teachers with less years of service were more successful: when stating the most appropriate method for the application of this teaching, they ranked it as a more successful teaching and provided a greater number of its advantages and disadvantages than teachers with more years of service. These data confirm the last two sub-hypotheses of the research, as well as the second alternative hypothesis: *There are differences between the attitudes of teachers of different gender and years of service about the application of heuristic teaching in the classes of integrated science*. Based on the aforementioned facts, it can be concluded that teachers' positive attitudes towards the application of heuristic teaching are not a sufficient reason to make them use it more often in the teaching process. Their positive attitudes towards heuristic teaching need to be used and directed towards the necessary methodological improvement, resulting in the increased awareness of the possibilities and importance of heuristic teaching in integrated natural sciences classes. For this reason, organised permanent education should be provided to increase the quality of teachers' knowledge about the specificities of heuristic teaching and opportunities for its implementation in the classes of *The World around Us* and *Social, Environmental, and Scientific Education*. A number of practical educational activities in the form of workshops and seminars should also be developed to inform teachers, through practical experience and by using concrete examples and content, about the most applicable and the easisest ways of implementing this teaching model in practice.

Keywords: initial education, natural sciences, attitudes, primary school teachers, heuristic teaching.

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