

# MARGINAL TOPICS IN THE RESEARCH OF SCIENCE EDUCATION

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The researchers all over the world are focused on different topics. Many of them have got a character of “mainstream”. When the reader is searching for science education journals, it is possible to find some research areas typical for every science subject (physics, chemistry, etc.). One of the topics is the problems connected with wrong ideas/preconceptions/misconceptions among different age groups, from elementary school pupils through high school pupils till university students and adult population. The areas of research are different, for example, nature of matter (Budimaier & Hopf, 2022), different aspects of chemistry – chemical equilibrium (e.g., He et al., 2022). Also, in biology subject the research about conceptions is very popular, the research studies are focused on the photosynthesis, botany, physiology of animals and plants, zoology, ethology, evolution, etc. (e.g., Sandoval et al., 2022). Another common topic presented in scientific educational journals are curricular articles regarding the whole subject, where the reform activities are described, and also authors presented impact of reforms on the education, on society, and also positive and negative sides are shown of the curricular reform on policy (e.g. Caramaschi et al., 2022; Wei, 2019). In some cases, curricular aspects of some topics are presented. For example, Ward et al. (2014) in their study presented curricular reform regarding biology, with focusing on the botany and how reform in this biological discipline could change educational process. However, this kind of curricular studies are in lower level. It is also possible to find another topic, which is typical for scientific educational research, and it is research of school textbooks, where they are examining type of tasks, difficulty level, comparison of difficulty, scientific level of textbooks from different publishing houses, illustrations, etc. (e.g., Vojir & Rusek, 2022). In some cases, among accepted articles scientific educational journals also included some studies, which are focused on the opinion of pupils/students on different scientific phenomena. For example, Prado et al. (2022) were focusing on the interest of future teachers toward insects. Authors in these kinds of studies are using a scale and quantitative approach which are typical for them. As it was presented in above mentioned study, the focus is sometimes very specific (e.g., insects), but some studies focus on attitudes toward subjects, for example Wahyudiati et al. (2020) presented attitudes toward chemistry among university students. Some years before, the concept of inquiry-based learning started as a significant method, which could lead into the higher interest and better attitudes of pupils and also students toward science subjects. On the basis of this fact, many researchers tried to prove the effect of inquiry-based learning on the pupils’ assessments and also views of science subject (e.g., Rokos & Zavodska, 2020).

The paragraph, which is presented above, included research studies, which are focused on the most preferred topics in science education. On the other side there are some studies, which are very rare, and they are marginal for researchers. These kinds of studies are not focused only on problematic of didactic issues, but the other disciplines are joined. So, the scientific disciplines like psychology, sociology, philosophy are part of these research studies. For example, we could observe, that some studies focus on the perception of different aspects of science subjects, for example, knowledge about plants, perception of animals and other topics. However, the authors examined the effect of other variables, which can influence the perception

of knowledge about different phenomena. These variables would be from different fields of study, for example like happiness scale or satisfaction with live or perceived vulnerability (Fancovicova et al., 2020). These studies are minimally presented in the scientific journals, regarding to science education. It is also possible to notice that problematic of environmental education and environmental literacy are presented mainly in the journals focused on the environmental problematic. However, this topic belongs to science education. The environmental problematic includes nature, scientific subjects, and also pedagogical concerns regarding to scientific subjects like biology is. For the science educational journals, it could be important and interesting to classify these issues in terms of their content. These topics also could bring some new ideas into curriculum of science subjects, mainly biology. It could help to include ecological activities among pupils and children. This kind of research is possible to read in the studies from authors like Cincera et al. (2020) or Winklerova et al. (2018). There are also many topics, which are focused on different aspects of science education with the variables, which are from different scientific disciplines. It is possible to mention motivation toward learning, which is connected with many examinations, which are regarding to science education research. Also, in some articles, which were published, it was possible to notice personality traits. –

However, it is important to say, that marginal topics could also be in the interest of classic scientific educational journals. This age is not focused separate disciplines, but it is time for connection between various scientific disciplines. The results and findings could lead to new conclusions, which could aim to better understanding of this how children/pupils/students perceive scientific subjects and how the change could be performed.

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