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Teachers' Attitudes Toward Environmental Issues In Pre-Primary And Primary Education: The Role Of Selected Variables

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Abstract

This study investigates the attitudes of pre-primary and primary education teachers in Slovakia toward environmental issues and examines the influence of selected demographic and contextual variables. Data were collected from 177 randomly selected teachers using a reliable and validated questionnaire (Cronbach's $\alpha = 0.88$). Results from Kruskal–Wallis tests showed statistically significant differences primarily in gender and job position. Female teachers reported higher interest and greater acceptance of proposed environmental solutions, while kindergarten teachers demonstrated more positive attitudes than their primary-level counterparts. However, variables such as age, place of residence, level of education, and school type did not significantly affect attitudes or knowledge levels. A correlational analysis revealed a weak but statistically significant positive relationship between interest in environmental topics and the acceptance of environmental solutions. Other correlations, especially between knowledge and acceptance, were weak or insignificant, suggesting that personal engagement plays a more critical role than factual knowledge in shaping pro-environmental attitudes. These findings highlight the importance of motivation and emotional involvement in promoting effective environmental education.

Keywords: *Environmental attitudes, teachers, pre-primary education, primary education, environmental education.*

1. INTRODUCTION

Environmental education plays a key role in shaping students' attitudes and responsible behavior towards nature and the environment (Neal & Palmer, 2003). It is not merely about transmitting knowledge about nature but primarily about fostering an active and responsible approach to environmental issues (UNESCO, 2017).

Environmental education creates opportunities to develop a positive relationship with nature from an early age. According to Palmer (1995), children aged 6 to 10 acquire the cognitive abilities needed to understand basic environmental concepts, although their explanations of causes and consequences may still be predominantly intuitive. Empathy toward nature also plays an important role, emerging even in preschool-aged children. Research by Li Huang and Zhao (2024) confirms that a higher level of empathy toward nature correlates with pro-environmental attitudes and behaviors.

Environmental attitudes are most effectively formed in younger children, when children are most receptive to adopting new values, including those related to the environment (Van De Wetering et. al, 2022).

The development of environmental attitudes in children and students results from the interaction of multiple factors. In early childhood, family and the broader society play a key role by providing behavioral models (Kahn & Kellert, 2002). Gradually, both formal and informal education enter the process, offering effective opportunities to shape attitudes through experiential learning or project-based teaching. To raise environmentally responsible individuals, it is essential to cultivate emotional and affective bonds with nature (Tilbury, 1995).

In the modern understanding of the educational process, teachers in environmental education do not provide ready-made answers but guide students to discover solutions independently, explore the causes of

ecological problems, and engage actively in learning. This constructivist approach builds on students' individual experiences, autonomy, and cooperative skills (Baptista, Pinho & Alves, 2025).

Teachers' personal interest in environmental issues, their level of ecological literacy, and their belief in the importance of the topic directly influence how intensively and effectively environmental education is implemented in practice (Hunter & Jordan, 2010). Studies show that an increasing number of educators view environmental education as an integral part of general education. As Bilčík et. al, (2015) notes, Slovak teachers recognize the growing importance of environmental topics in relation to climate change and global ecological challenges. However, they often highlight insufficient methodological support, limited space in curricula, and a lack of practical tools, which may result in environmental education remaining superficial or merely formal. Although teachers generally express a positive attitude toward environmental education, its full integration into teaching often faces various obstacles, such as lack of time, insufficient preparation, vaguely defined goals, or low support from school leadership (Reese, 2019). Some teachers also report concerns about their own unpreparedness or lack of subject-matter expertise in environmental education (Rickinson, 2001).

An important factor influencing teachers' attitudes is their professional development. Research shows that educators who have completed environmental education training exhibit higher self-confidence and are more likely to apply active and participatory teaching methods (Small et. al, 2012).

Teachers' attitudes toward environmental education are influenced by a variety of individual, social, and institutional factors (Pooley & O'Connor, 2000). Among the most significant individual factors are teachers' personal beliefs about the importance of environmental issues, their ecological literacy, and prior experience with environmental education. Teachers with greater environmental sensitivity and a positive relationship with nature are more likely to actively implement environmental education in their teaching (Ernst, 2007). Self-reflection also plays a role, if teachers do not feel sufficiently competent, they may omit environmental topics from instruction despite their positive attitude (Barrable & Lakin, 2020). The quality of professional training and access to systematic education in environmental topics are crucial. Teachers who have undergone specialized training or methodological courses in environmental education demonstrate a higher level of engagement and use a broader range of instructional methods (Ernst, 2009). Conversely, insufficient training during university studies often leads to low confidence and uncertainty when teaching environmental issues (Rickinson, 2001). The overall climate and culture of a school also affect teachers' attitudes. Schools that actively engage in environmental initiatives and provide methodological support, creative space, and opportunities to integrate environmental education into the curriculum create favorable conditions for shaping positive attitudes. In contrast, when school leadership shows little interest in environmental issues, teachers may view environmental education as an unnecessary burden (Stevenson, 2007). Teachers' attitudes are also influenced by the broader societal awareness of environmental issues and how these are reflected in national educational policies. When society pays increased attention to climate change, sustainability, or ecological justice, it creates a context that enhances the perceived importance of environmental education in schools (UNESCO, 2017). Moreover, clearly formulated curriculum requirements and systematic support from the Ministry of Education significantly contribute to strengthening teachers' positive attitudes toward environmental education (Piscová, Lehotayová & Hreško, 2023). There are significant cross-national differences in teachers' attitudes toward environmental education, shaped by economic and cultural contexts. These differences are influenced by the level of societal environmental awareness, national policies, educational standards, and the availability of teaching resources (Nyberg et al., 2020). In countries facing serious economic challenges, environmental education is often deprioritized in favor of subjects perceived as more directly linked to economic development (Kola-Olusanya ola, 2025).

In Central and Eastern Europe, including Slovakia, teachers' attitudes toward environmental education are generally positive. However, its implementation in schools frequently encounters systemic barriers such as insufficient funding, lack of methodological support, and low institutional motivation (Piscová, Lehotayová & Hreško, 2023).

In cultures with more traditional values and authoritarian educational models, environmental education tends to be perceived as a supplementary activity rather than an integral part of the curriculum (Rickinson, 2001).

Teachers' attitudes toward environmental education may also be shaped by demographic factors, with gender emerging as one of the most significant. Studies on environmental behavior and attitudes often show that women demonstrate higher levels of environmental engagement and interest than men (Zelezny et al., 2000). Several studies confirm that female teachers tend to emphasize values such as nature conservation, sustainability, and environmental responsibility (Chawla & Cushing, 2007). In educational systems where environmental education is strongly supported and embedded in the curriculum, however, gender differences tend to diminish (Stevenson, 2007).

The location where teachers work, urban or rural, can also significantly affect their attitudes. This is influenced by different environmental experiences, access to educational resources, and the specific needs of each setting. Teachers in rural areas often exhibit a stronger connection to nature, likely due to daily contact with natural surroundings and the use of local natural resources (Leech et al., 2023). Urban environments often offer limited access to nature, which can lead to lower environmental engagement or different perceptions of environmental issues. Other barriers that influence a teacher's decision to use or not to use an outdoor classroom include: lack of time in tightly controlled lesson schedules, lack of support from administrators, lack of teacher development, weather, and lack of time to research and prepare lessons (Ruether, 2018).

On the other hand, teachers in cities may have better access to innovative educational tools, though they may lack a strong personal connection to the environment (Piscová, Lehotayová & Hreško, 2023).

Our work aims to investigate how selected demographic and contextual variables influence the environmental attitudes of teachers in pre-school and primary education in Slovakia. Specifically, we focus on factors such as gender, age, job title, level of education, place of residence, and school characteristics to identify which of them contribute most significantly to the formation of pro-environmental attitudes. The study also examines the relationships between teachers' interest in environmental topics, their factual knowledge, and their acceptance of environmental problems and proposed solutions. By analyzing between-group differences and internal correlations, we can better understand what drives teachers' engagement in environmental education and which factors may support or hinder its effective implementation in the context of early childhood education.

2. METHODS

The aim of this study is to analyze and compare the attitudes of pre-primary and primary education teachers toward environmental issues and to determine the extent to which these attitudes are influenced by selected variables. The study seeks to identify the factors that support or hinder the development of environmental awareness and engagement among teachers in environmental education at the pre-primary and primary levels.

Data collection was carried out among kindergarten and primary school teachers from various parts of Slovakia using a random sampling method. An electronic questionnaire was chosen as the research instrument and was distributed to respondents via the Google Forms platform. The questionnaire consisted of 12 questions focused on investigating teachers' environmental attitudes. The research tool was adapted from previously published studies that focused on measuring teachers' attitudes toward environmental topics (Andrea & Petkou, 2022; Činčera & Štěpánek, 2007; Kroufek, 2013; Şama, 2003). The reliability of the questionnaire was assessed using Cronbach's alpha, with an average value of 0.88, indicating very high internal consistency. The validity of the instrument was evaluated by three experts from the Faculty of Education at Trnava University in Trnava.

The questionnaire items were organized into four main dimensions:

1. Sociodemographic data (gender, age, job position, years of teaching experience, educational attainment, place of residence, school type, and school location),
2. Engagement in environmental issues,
3. Knowledge of environmental issues,

4. Personal perception and beliefs regarding environmental problems.

All questions were closed-ended. In most cases, respondents were asked to select one answer from multiple options. Data collection took place between May and June 2025. The questionnaire was anonymous, and all participants were informed in advance about the purpose of the research.

2.1 Sample Characteristics

The research sample consisted of a random selection of teachers working in the field of pre-primary and primary education in the Slovak Republic. The aim was to reach the widest possible range of teachers from various regions of Slovakia to ensure diversity within the sample. A total of 177 respondents participated in the study. The sample included teachers from both kindergartens and primary schools, with the majority being women (n = 154), which corresponds to the typical gender distribution in this profession.

The collected data were processed using statistical methods aimed at identifying relationships between variables and levels of environmental attitudes. The data were analyzed using the software STATISTICA (StatSoft Inc., 2011). For each questionnaire item, descriptive statistics were calculated (mean, standard deviation). Due to the non-normal distribution of the data (confirmed by the Shapiro–Wilk test), the results indicated a statistically significant deviation from normality ($W(1947) = 0.88$, $p < 0.001$), suggesting that the data were not normally distributed.

Therefore, non-parametric statistical tests were used for further analyses. The Kruskal–Wallis test was applied to compare differences between groups, while Spearman's rank-order correlation analysis was used to examine relationships between variables. A significance level of $p < 0.05$ was applied throughout the analyses.

3. RESULTS

To provide a clear and structured interpretation of the findings, the results section is divided into two thematic parts. The first part focuses on differences between respondent groups, exploring how selected demographic and contextual variables (such as gender, age, teaching position, or school characteristics) influence environmental interest, knowledge, and acceptance.

The second part presents a correlational analysis between key dimensions, namely interest in environmental topics, factual knowledge, and the acceptance of both environmental problems and their proposed solutions. Through Spearman's rank-order correlation, we assessed the internal relationships between these constructs to determine whether higher interest or knowledge is associated with greater acceptance and pro-environmental attitudes.

Together, these analyses offer a comprehensive view of both external differences across respondent subgroups and internal dynamics among the studied variables.

3.1 Differences Between Respondent Groups – Analysis Based on Selected Variables

To assess differences in interest, knowledge levels, and acceptance of environmental problems and their solutions across respondent groups, Kruskal-Wallis nonparametric tests were applied (Table 1).

The results revealed several statistically significant distinctions, particularly in relation to gender and job position. In terms of gender, statistically significant differences were identified in two areas. Women reported a significantly higher interest in environmental topics ($p = 0.0096$) and a greater acceptance of proposed environmental solutions ($p = 0.0006$). However, no significant differences were found between men and women in terms of knowledge level ($p = 0.3111$) or acceptance of environmental problems ($p = 0.7502$).

Age was not a significant factor across any of the examined dimensions. Although the lowest p-value was observed in the knowledge domain ($p = 0.0842$), it did not reach the threshold of statistical significance, indicating only a potential trend.

Notably, job position was one of the strongest predictors of difference. Kindergarten teachers demonstrated significantly higher interest ($p = 0.0166$), greater acceptance of environmental problems ($p = 0.0083$), and a higher willingness to accept solutions ($p = 0.0013$) compared to teachers at other

educational levels. Knowledge levels, however, did not significantly differ between job positions (p = 0.3493).

Regarding teaching experience, no statistically significant differences were observed in any of the dimensions, with all p-values exceeding 0.16. Similarly, the level of education did not significantly influence the results. While respondents with doctoral degrees exhibited slightly higher knowledge levels, the difference was not statistically significant (p = 0.8585).

Place of residence—urban or rural—also did not significantly affect interest, knowledge, or acceptance levels. The findings suggest that living environment does not play a determining role in teachers' environmental attitudes or awareness.

The type of school in which the respondents work (public, private, or religious) did not result in statistically significant differences. Although teachers in public schools showed slightly higher knowledge and acceptance of environmental issues, these differences remained below the threshold of significance (e.g., p = 0.2558).

Likewise, the location of the school (urban vs. rural) did not lead to significant differences in any dimension. Respondents from urban schools showed marginally higher knowledge levels, but again, without statistical relevance (p = 0.1219)

Finally, the level of a school's involvement in environmental projects also showed no statistically significant impact. While slightly higher scores were observed among respondents from schools actively engaged in environmental initiatives, these differences did not reach statistical significance (e.g., p = 0.1327 in the case of solution acceptance).

Table 1. Results of the Kruskal-Wallis H test for differences in environmental attitudes and knowledge across respondent characteristics

Variable	Interest	Knowledge	Problem Acceptance	Solution Acceptance
Gender	0.0096 **	0.3111	0.7502	0.0006 ***
Age	0.1353	0.0842	0.5635	0.1558
Job position	0.0166 *	0.3493	0.0083 **	0.0013 **
Teaching experience	0.3626	0.9328	0.8789	0.1618
Education	0.8878	0.8585	0.6187	0.7368
Place of residence	0.9167	0.5341	0.6308	0.7376
Type of school	0.9264	0.4499	0.2558	0.1367
School location	0.5069	0.1219	0.3129	0.3181
Project involvement	0.2471	0.7343	0.7005	0.1327

Note: Asterisks indicate the level of statistical significance: $p \leq 0.05$ is considered statistically significant (*), $p \leq 0.01$ is highly significant (**), and $p \leq 0.001$ is very highly significant (***).

3.2 Correlations between dimensions of interest, knowledge, and acceptance of environmental issues

To identify the relationships between the dimensions of interest in environmental topics, level of knowledge, acceptance of environmental problems, and acceptance of proposed solutions, Spearman's rank-order correlation analysis was used, as the data did not follow a normal distribution.

The results showed that most correlations between the examined variables were weak and statistically insignificant, suggesting a relative independence of the individual dimensions. The only exception was the relationship between interest and acceptance of solutions, where a low but statistically significant positive correlation was found (R = 0.219; p = 0.003). This result suggests that teachers who express greater personal interest in environmental issues are also more willing to accept specific solutions to these problems. In practice, this points to the importance of motivation and emotional engagement as prerequisites for pro-environmental behavior.

In contrast, no significant association was found between interest and knowledge level (R = 0.022; p = 0.777), indicating that a higher level of interest in the topic does not automatically imply a higher level of factual understanding. Similarly, the correlation between interest and problem acceptance was insignificant and slightly negative (R = –0.122; p = 0.107), which may indicate that being engaged with the topic does not always translate into recognizing the seriousness of the problem.

The level of knowledge also showed no significant relationship with either problem acceptance (R = 0.003; p = 0.968) or solution acceptance (R = 0.047; p = 0.536). This finding supports the conclusion that knowledge may not be the main factor influencing attitudes or willingness to act. In other words, knowing does not necessarily mean agreeing or taking action.

A mildly negative correlation between problem acceptance and solution acceptance (R = –0.139; p = 0.065) was on the borderline of statistical significance. It may suggest that while respondents perceive environmental problems as serious, they remain skeptical of the proposed solutions, potentially considering them insufficient, burdensome, or impractical.

An overview of the relationships is presented in Fig. 1, which visualizes the Spearman correlation coefficients between all four dimensions.

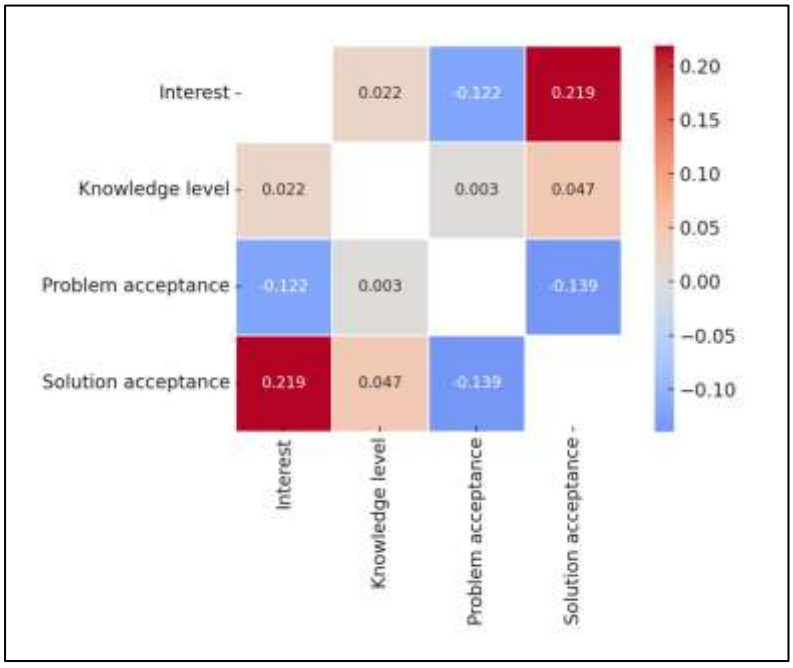

Figure 1: Correlation matrix of environmental attitude dimensions (Spearman correlation coefficients)

4. DISCUSSION

The results of our study indicate that pre-primary and primary education teachers generally exhibit positive attitudes toward environmental topics and recognize their importance in educational practice. These findings are in line with previous research conducted in Slovakia, which shows that a large proportion of teachers perceive climate change as a serious global issue and believe in their ability to influence the state of the environment through their teaching (Piscová, Lehotayová & Hreško, 2023). Similarly, Andrea and Petkou (2022) found that teachers support the integration of climate change education into school curricula but often feel unprepared and lack sufficient pedagogical tools.

Our results also confirm that gender plays a significant role in shaping environmental attitudes. Female teachers in our sample showed a significantly higher interest in environmental topics and greater acceptance of proposed environmental solutions compared to their male counterparts. This trend aligns with previous findings by Gyurián Nagy (2025), who reported that women generally demonstrate stronger ecological orientation and greater sensitivity to environmental issues. The consistency of these gender-

based differences across cultural and geographic contexts suggests that gender remains a relevant factor in environmental engagement.

According to the Swedish curriculum, all teachers in all subjects should integrate a holistic perspective on sustainable development, including the economic, ecological and social dimensions. This study shows that teachers differ in their understanding of this concept, mainly according to their subject traditions. Social science teachers emphasize the social dimensions and science teachers emphasize the ecological dimensions. Teachers are aware of the relevance of these three dimensions to varying degrees, but they generally do not have a holistic understanding. The greatest uncertainty in teachers' understanding concerns the economic dimension. Science and social science teachers are critical of the inclusion of economic growth in the concept of sustainable development, while language, vocational and aesthetic-practical teachers are not (Borga et al., 2014).

Another key finding from our research is the positive effect of targeted environmental education training. Teachers who had completed such training reported more favorable attitudes and higher levels of engagement. This supports the conclusions of Tran (2024), who demonstrated that systematic training in environmental education enhances teachers' confidence and encourages the use of active, participatory teaching methods. These results highlight the importance of high-quality teacher preparation and ongoing professional development for the successful integration of environmental education into daily teaching practice.

On the other hand, variables such as age, years of teaching experience, level of education, type of school, and place of residence did not show statistically significant influence on teachers' environmental attitudes in our study. This corresponds with findings by Gore et al. (2024), who observed no significant differences in teaching quality between novice and experienced teachers. The authors argue that the quality of professional learning and ongoing development is more important than teaching tenure.

Overall, our results resonate with broader research trends in Central and Eastern Europe, which suggest that teachers often value environmental education but face practical obstacles such as insufficient training, lack of materials and poor integration into the curriculum. The development of teachers' competences in the region is less diverse than in other parts of Europe, which may be related to historical reasons and the political context (post-socialism) (Dlouhá, Mally & Dlouhý, 2017). The need for stronger institutional support is further emphasized in studies highlighting the importance of embedding environmental themes into teacher preparation programs and fostering cooperation between schools and environmental organizations (Bladow, 2023). Furthermore, the variation in teachers' understanding of sustainability, ranging from holistic to vague or absent interpretations, revealed in Zhukova et al. (2020), echoes the diversity of teacher preparedness and highlights the necessity of clear conceptual grounding in teacher education. Similarly, international comparative studies, such as those by Nyberg et al. (2020), reveal how cultural context influences environmental attitudes, with national trends in ecocentrism versus anthropocentrism shaping how teachers perceive their role in environmental education.

Taken together, these findings underscore that while Slovak teachers, particularly those in pre-primary education and with training in environmental education, are inclined toward pro-environmental attitudes, systemic challenges continue to hinder the full integration of environmental themes into formal education. Addressing these barriers through targeted support, improved teacher training, and curriculum development is essential for advancing the goals of environmental and sustainability education.

5. CONCLUSION

The findings of this study emphasize that personal interest in environmental topics is more closely linked to the acceptance of environmental solutions than to factual knowledge. While gender and teaching level (pre-primary vs. primary) were found to influence attitudes, other factors such as age, educational background, school type, and school location showed no statistically significant effects. The weak correlations between knowledge and pro-environmental attitudes suggest that cognitive understanding alone may not drive environmentally responsible behavior.

This highlights the importance of affective and motivational components in environmental education, particularly in early educational contexts where teachers' attitudes can significantly shape children's perceptions.

Despite these contributions, the study has several limitations. The sample size, although adequate, was limited to Slovak teachers, which may affect the generalizability of findings. The use of self-reported questionnaires may also introduce social desirability bias. Furthermore, the cross-sectional design prevents causal interpretations.

Future research should explore longitudinal approaches, qualitative methods (e.g., interviews or focus groups), and include broader international comparisons. Investigating the role of institutional support, teacher training programs, and school-wide environmental initiatives could further clarify the mechanisms influencing teachers' engagement.

Practical implications include the need to strengthen teachers' intrinsic motivation and emotional connection to environmental issues, not just their knowledge base. Professional development programs should integrate experiential and reflective components to support teachers as role models of pro-environmental behavior.

REFERENCES

1. Andrea, V., & Petkou, D. (2022). Exploring the attitudes and views of pre-primary and primary school teachers for climate change education. Journal for International Business and Entrepreneurship Development, 14(3), pp. 287–303.
2. Baptista, M., Pinho, A. S., & Alves, A. R. (2025). Students' Learning for Action Through Inquiry-Based Science Education on a Local Environmental Problem. Sustainability, 17(9), 3907.
3. Barrable, A., & Lakin, L. (2020). Nature relatedness in student teachers, perceived competence and willingness to teach outdoors: An empirical study. Journal of Adventure Education and Outdoor Learning, 20(3), pp. 189–201.
4. Bilčík, A., Bilčíková, J., Lajčin, D., & Barnová, S. (2023). Information and Material Support to Environmental Education in Slovakia in the Times of Crisis. Acta Educationis Generalis, 13(3), pp. 29–41.
5. Bladow, J. (2023). Integrating environmental education into teacher preparation programs. Ph.D. thesis, The University of North Dakota, Grand Forks, ND.
6. Borg, C., Gericke, N., Höglund, H. O., & Bergman, E. (2014). Subject-and experience-bound differences in teachers' conceptual understanding of sustainable development. Environmental Education Research, 20(4), pp. 526–551.
7. Činčera, J., & Štěpánek, P. (2007). Výzkum ekologické gramotnosti studentů středních odborných škol. Envigogika, 2(1).
8. Dlouhá, J., Vintar Mally, K., & Dlouhý, J. (2017). ESD principles in higher education from a perspective of Central and Eastern European countries. International Journal of Sustainability in Higher Education, 18(6), pp. 822–840.
9. Ernst, J. (2007). Factors associated with K-12 teachers' use of environment-based education. The Journal of Environmental Education, 38(3), pp. 15–32.
10. Ernst, J. (2009). Influences on US middle school teachers' use of environment-based education. Environmental Education Research, 15(1), pp. 71–92.
11. Gore, J., Rosser, B., Jaremus, F., Miller, A., & Harris, J. (2024). Fresh evidence on the relationship between years of experience and teaching quality. The Australian Educational Researcher, 51(2), pp. 547–570.
12. Gyurián Nagy, N. (2025). Gender differences in environmental attitudes: An analysis using the NEP Scale. Gender Issues, 42(1), 5.
13. Hák, T., & Práger, A. (2012). Environmentálna výchova v praxi. Bratislava: Slovenské pedagogické nakladateľstvo, 168 s. ISBN 978-80-08-00958-6.

14. Hunter, R. H., & Jordan, R. C. (2010). The effects of educators' level of environmental literacy on their view of student environmental literacy and perceived barriers. Education, 2010.
15. Chawla, L., & Cushing, D. F. (2007). Education for strategic environmental behavior. Environmental Education Research, 13(4), pp. 437–452.
16. Kahn Jr, P. H., & Kellert, S. R. (Eds.). (2002). Children and nature: Psychological, sociocultural, and evolutionary investigations. MIT Press.
17. Kola-Olusanya, A., Adewale, P. S., Yusuf, F., & Odekeye, O. T. (2025). Environmental education for nurturing nature: Assessment of environmental education in nature protection in Nigeria. Social Sciences & Humanities Open, 12, 101755.
18. Kroufek, R. (2013). Environmentální postoje studentů učitelství pro 1. stupeň ZŠ. In Sborník příspěvků: XXI. celostátní konference ČAPV Efektivita vzdělávání v proměnách společnosti, pp. 431–435.
19. Leech, D. J., Leech, N. L., McClintock, E., & Haug, C. A. (2023). Rural teachers' and non-rural teachers' motivations to teach: Differences and similarities. The Rural Educator, 44(4), pp. 15–28.
20. Li, Y., Zhao, Y., Huang, Q., Deng, J., Deng, X., & Li, J. (2024). Empathy with nature promotes pro-environmental attitudes in preschool children. PsyCh Journal, 13(4), pp. 598–607.
21. Neal, P., & Palmer, J. (2003). The handbook of environmental education. Routledge.
22. Nyberg, E., Castéra, J., Ewen, B. M., Gericke, N., & Clément, P. (2020). Teachers' and student teachers' attitudes towards nature and the environment—A comparative study between Sweden and France. Scandinavian Journal of Educational Research, 64(7), pp. 1090–1104.
23. Palmer, J. A. (1995). Environmental thinking in the early years: Understanding and misunderstanding of concepts related to waste management. Environmental Education Research, 1, pp. 35–40. https://doi.org/10.1080/1350462950010103
24. Piscová, V., Lehotayová, J., & Hreško, J. (2023). Environmental education in the school system at elementary schools in Slovakia. European Journal of Science and Mathematics Education, 11(4), pp. 650–671.
25. Pooley, J. A., & O'Connor, M. (2000). Environmental Education and Attitudes: Emotions and Beliefs Are What Is Needed. Environment and Behavior, 32, pp. 711–723. https://doi.org/10.1177/0013916500325007
26. Reese, R. F. (2019). A qualitative exploration of the barriers and bridges to accessing community-based K-12 outdoor environmental education programming. Journal of Outdoor and Environmental Education, 22(1), pp. 21–37.
27. Rickinson, M. (2001). Learners and learning in environmental education: A critical review of the evidence. Environmental Education Research, 7(3), pp. 207–320.
28. Ruether, S. (2018). Barriers to Teachers' use of environmentally-based education in outdoor classrooms. Ph.D. thesis, Walden University.
29. Şama, E. (2003). Öğretmen adaylarının çevre sorunlarına yönelik tutumları. Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi, 23(2).
30. Small, R. M., Larson, L. R., Green, G. T., & Shenk, A. M. (2012). Effects of an environmental educator training workshop on environmental knowledge, awareness, and teaching self-efficacy. Illuminare, 10.
31. Stevenson, R. B. (2007). Schooling and environmental education: Contradictions in purpose and practice. Environmental Education Research, 13(2), pp. 139–153.
32. Tilbury, D. (1995). Environmental education for sustainability: Defining the new focus of environmental education in the 1990s. Environmental Education Research, 1(2), pp. 195–212.
33. Tran, H. U. (2024). Environmental education in preschool teacher training program: A systematic review. Natural Sciences Education, 53(2), e20154.
34. UNESCO. (2017). Education for Sustainable Development Goals: Learning Objectives. Paris: UNESCO Publishing. ISBN 978-92-3-100209-0.

35. Van De Wetering, J., Leijten, P., Spitzer, J., & Thomaes, S. (2022). Does environmental education benefit environmental outcomes in children and adolescents? A meta-analysis. Journal of Environmental Psychology, 81, 101782.
36. Zelezny, L. C., Chua, P. P., & Aldrich, C. (2000). New ways of thinking about environmentalism: Elaborating on gender differences in environmentalism. Journal of Social Issues, 56(3), pp. 443–457.
37. Zhukova, O., Fjodorova, I., & Iliško, D. (2020). Novice teachers' beliefs and knowledge about education for sustainable development. Acta Paedagogica Vilnensia, 44, pp. 34–44.