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Pupils' Attitudes as an Indicator of Environmental Education in Preschool Education

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Abstract

Environmental education represents an important component of education aimed at fostering a responsible relationship with the environment, gaining particular significance already in early childhood, when basic attitudes and value orientations are formed. The presented paper focuses on the environmental awareness and environmental attitudes of preschool children and highlights their importance as an analytical starting point for evaluating the impact of environmental education in different educational settings. The research was designed as a quantitative descriptive study with a screening design, methodologically based on the study by Biber et al. (2023) [1]. The research sample consisted of 154 children aged 4 to 6 years attending public kindergartens and forest clubs. Data collection was conducted in two public kindergartens and seven forest clubs in March 2025 using a picture-based scale aimed at assessing environmental awareness and environmental attitudes. The applied instrument was a localized and methodologically adapted version of the scale developed by Büyüktaşkapu Soydan and Öztürk Samur (2017) [2]. Children evaluated selected environmental situations using a three-point colour scale. Due to the non-normal distribution of the data, the Mann–Whitney U test was used to compare groups. The results suggest that preschool children are able to distinguish between environmentally friendly and environmentally unfriendly situations and to adopt an evaluative stance towards them through simple symbolic tools. No statistically significant differences were found between the examined groups and institutions, with sibling status emerging as the only more influential factor in the context of forest clubs. The findings provide a basis for further research focused on comparing different educational approaches to environmental education in early childhood education.

Keywords: *environmental education; preschool education; environmental awareness; environmental attitudes; forest kindergartens*

1. Introduction

Contemporary society faces environmental challenges arising from the long-term unsustainable use of natural resources, increasing urbanisation, and rising levels of consumption. These processes have not only environmental but also social and value-related consequences, as they affect the quality of life of both present and future generations. Responding to these challenges requires systematic and long-term action, in which education aimed at fostering a responsible relationship between humans and the natural environment plays a crucial role. Environmental education represents an important tool for promoting environmental awareness, value orientation, and responsible behaviour. Its significance becomes particularly pronounced in childhood, when fundamental attitudes, habits, and behavioural patterns are formed. Pre-primary and primary education provide a space for developing sensitivity towards the environment, the ability to perceive relationships between humans and nature, and the acquisition of basic environmental values that may persist into later developmental stages [3,4].
Contemporary pedagogy emphasises not only the transmission of knowledge but also the development of relational thinking, the formation of value orientations, and the promotion of responsible action. In this context, environmental education is applied as a cross-curricular area of

education that integrates the cognitive, emotional, and conative components of children's attitudes towards the environment. Its aim is to support understanding of natural processes, to foster a conscious relationship with nature, and to guide children towards reflecting on the consequences of human activities for the environment [5,6]. An important aspect of environmental education is the choice of educational settings and methodological approaches through which it is implemented. In addition to traditional school environments, alternative forms of education have increasingly emerged that emphasise direct experience in natural settings. An example of such an approach is forest kindergartens, in which the educational process takes place predominantly outdoors and learning is based on everyday contact with nature. This type of educational environment creates conditions for experiential, situational, and inquiry-oriented learning, allowing children to gain experience through direct observation and interaction with their surroundings [7,8].

However, the extent and nature of the influence of these approaches on the formation of children's environmental attitudes remain a subject of empirical investigation. The development of environmental attitudes in children occurs through the interaction of multiple factors, including the family environment, school, the broader social context, and educational experiences. It is a long-term process in which knowledge, values, and experiences acquired in everyday life are interconnected. Examining children's attitudes towards environmental situations thus enables a deeper understanding of how children interpret environmental phenomena and how they evaluate human behaviour in relation to nature. The aim of this paper is to highlight the importance of children's environmental attitudes as an analytical starting point for evaluating the impact of environmental education and to provide a framework for their empirical investigation in different educational settings.

2. Methodology

The empirical research was designed as a quantitative descriptive study with a screening design, aimed at capturing the current state of environmental awareness and environmental attitudes of preschool children. The methodological framework of the study was based on the research conducted by Biber et al. [1], with the research design adapted to the conditions of the Slovak educational context. The study focused on children aged 5 to 6 years and examined their ability to interpret selected environmental situations and to distinguish between environmentally friendly and environmentally unfriendly behaviour. Attention was paid to the level of children's environmental awareness and attitudinal orientation towards the environment, as well as to differences between respondent groups according to selected demographic variables.

The research sample consisted of 154 children aged 4 to 6 years attending two public kindergartens in the city of Trnava (100 children), administratively affiliated with one primary school, and seven forest clubs located in the cities of Bratislava–Devínska Nová Ves, Námestovo, Trenčín, Stupava, Bratislava–Petržalka, Sabinov, and Žilina (54 children). The sample size was determined with regard to comparability with the original study, in which the authors worked with a similar number of respondents. Participant selection was conducted purposively in cooperation with classroom teachers in order to ensure balanced representation of age groups and gender.

Data collection was carried out using a scale designed to assess children's environmental awareness and environmental attitudes, based on the interpretation of pictorial situations. The instrument used was a localised and methodologically adapted version of the scale developed by Büyüktaşkapu Soydan and Öztürk Samur [2], which was also applied in the study by Biber et al. [1]. Respondents expressed their evaluations using coloured cards representing a three-point rating scale (green – 2 points, yellow – 1 point, red – 0 points). Each of the monitored dimensions consisted of ten items, with a maximum possible score of 20 points per dimension and 40 points in total.

The research was conducted in March 2025 in public kindergartens and forest clubs. Data collection was divided into two consecutive days in order to maintain an adequate level of children's attention and cooperation. The pictorial stimuli were presented in digital form, and children's responses were recorded by the researcher. Subsequent statistical analysis focused on identifying differences in the level of environmental awareness and environmental attitudes of children in relation to selected demographic variables.

3. Results

For greater clarity, the results are organised according to the examined demographic and social variables. Each subsection presents comparisons for children attending public kindergartens and forest clubs. A final subsection provides a direct comparison between these two types of institutions.

The normality of the data distribution was tested using the Shapiro–Wilk test, which indicated a statistically significant deviation from normal distribution. For this reason, non-parametric procedures were used to analyse differences between groups, specifically the Mann–Whitney U test.

3.1 Public Kindergartens

No statistically significant differences were found between boys and girls in either the dimension of environmental awareness ($p = 0.564$) or environmental attitudes ($p = 0.852$). Similarly, no significant differences were observed between children from urban and rural environments (awareness: $p = 0.488$; attitudes: $p = 0.819$), nor between children living in apartments and those living in houses (awareness: $p = 0.885$; attitudes: $p = 0.780$).
The presence of pets did not show a statistically significant effect on environmental awareness ($p = 0.092$) or environmental attitudes ($p = 0.693$). Likewise, sibling status did not emerge as a significant factor, as differences between children with siblings and only children were not statistically significant (awareness: $p = 0.186$; attitudes: $p = 0.946$). This finding was further confirmed by a more detailed analysis based on the age of siblings (awareness: $p = 0.665$; attitudes: $p = 0.720$).
Overall, it can be concluded that none of the examined demographic characteristics appeared as a significant factor influencing children's environmental awareness or environmental attitudes in public kindergartens.

3.2 Forest Clubs

In forest clubs, the Mann–Whitney U test was also applied due to the non-normal distribution of the data. Comparisons between boys and girls did not reveal statistically significant differences in either environmental awareness ($p = 0.971$) or environmental attitudes ($p = 0.052$). Likewise, no significant differences were identified between children from urban and rural areas (awareness: $p = 0.647$; attitudes: $p = 0.177$), nor between children living in apartments and those living in houses (awareness: $p = 0.051$; attitudes: $p = 0.279$).
The presence of pets did not affect the level of environmental awareness ($p = 0.595$) or environmental attitudes ($p = 0.407$).
In contrast to public kindergartens, sibling status emerged as a statistically significant factor in forest clubs. Children with siblings achieved higher levels of environmental awareness ($p = 0.038$) as well as environmental attitudes ($p = 0.001$) compared to only children. However, a more detailed categorisation according to the age of siblings did not confirm this effect (awareness: $p = 0.592$; attitudes: $p = 0.557$).
These findings suggest that in forest clubs, the mere presence of siblings plays a significant role, whereas the age of siblings does not have a relevant influence.

3.3 Summary Comparison

To compare the dimensions of environmental awareness and environmental attitudes between children attending forest clubs and those attending public kindergartens, the Mann–Whitney U test was applied due to the non-normal distribution of the data.
In the dimension of environmental awareness, no statistically significant difference was found between the two groups ($p = 0.866$), indicating that the level of awareness is comparable among children from forest clubs and public kindergartens (Figure 1). Thus, the type of preschool institution did not emerge as a factor influencing the level of environmental awareness of the respondents.

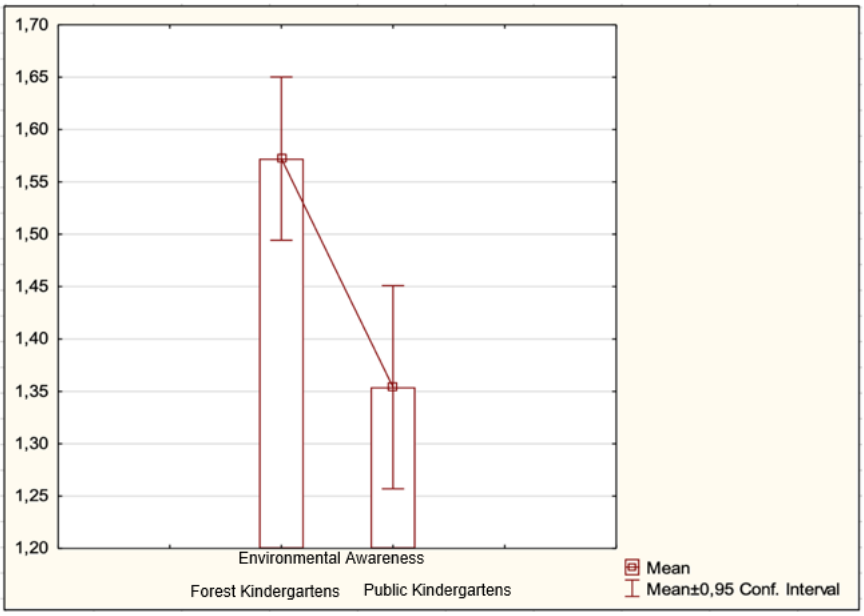

Fig. 1. Comparison of Environmental Awareness between Forest Kindergartens and Public Kindergartens

Similarly, no statistically significant difference was found between the two groups in the dimension of environmental attitudes ($p = 0.066$) (Figure 2). Although children attending forest clubs exhibited slightly higher attitude scores, this difference did not reach the level of statistical significance. The results therefore suggest that environmental attitudes of children are comparable between the two types of kindergartens.

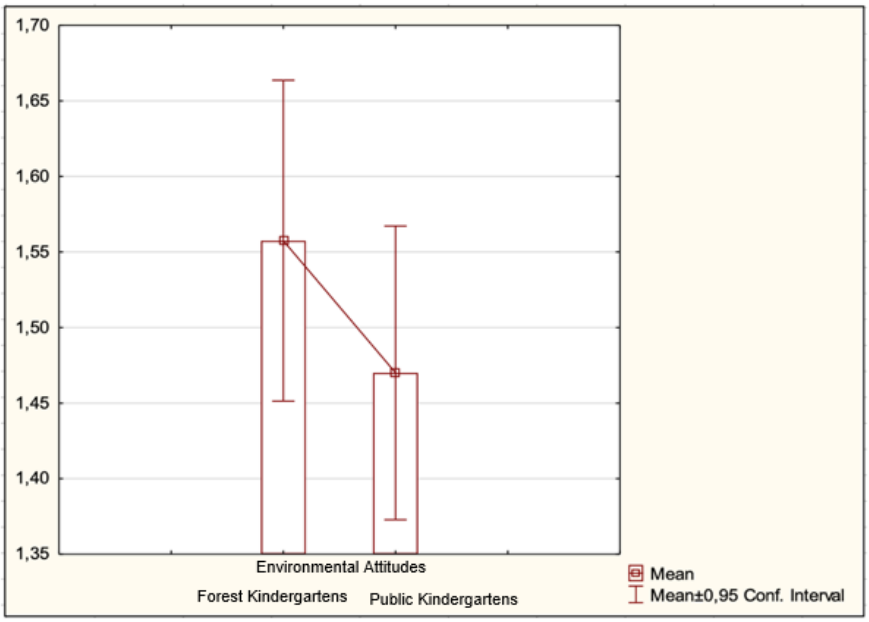

Fig. 2. Comparison of Environmental Attitudes between Forest Kindergartens and Public Kindergartens

4. Discussion

The results of the study showed that neither in public kindergartens nor in forest clubs did children's gender emerge as a statistically significant factor influencing environmental awareness or environmental attitudes. This finding is consistent with several studies indicating that, in preschool age, gender differences in environmental attitudes and orientations do not yet tend to manifest systematically. Musser and Diamond report that environmental attitudes of children aged 5 to 6 years are predominantly universal in nature and are not markedly differentiated by gender, supporting the interpretation of gender-independent environmental perception at this developmental stage [9].

Similarly, Larson et al. did not identify significant differences in basic environmental orientations between boys and girls in their quantitative study, with no differences observed even after participation in an environmental education programme [10].

With regard to the social environment, no statistically significant differences in children's environmental awareness or environmental attitudes were found in either type of preschool institution based on the type of residential environment (urban vs. rural) or housing type (apartment vs. family house). These findings suggest that spatial and residential characteristics of the family environment alone may not constitute a decisive factor in shaping children's environmental awareness at preschool age. The results are consistent with arguments presented by several authors who emphasise that, in early childhood, the quality of mediated experiences plays a more important role than objective environmental conditions themselves [11]. Similarly, the presence of pets did not emerge as a statistically significant variable in any of the examined dimensions, either in public kindergartens or in forest clubs. Although some studies point to a potential positive effect of direct contact with animals on the development of children's environmental sensitivity, such relationships may not be clearly reflected in quantitative cross-sectional research, particularly when they are not accompanied by intentionally reflected educational activities [12]. In this context, it can be assumed that the mere presence of an animal in the household is insufficient to systematically influence children's environmental attitudes.

More pronounced differences were observed in the analysis of sibling status. In public kindergartens, the presence of siblings did not emerge as a significant factor, whereas in forest clubs, children with siblings achieved statistically significantly higher levels of environmental awareness and environmental attitudes compared to only children. This difference suggests that, in the context of forest clubs, a more intensive interaction between the family background and the educational environment may occur. Kroufek et al. point to a significant relationship between parents' environmental attitudes and those of their children, which allows sibling status to be interpreted as an indicator of a broader social and value-related family context [11]. The fact that the age of siblings did not emerge as a significant factor in further analysis suggests that the decisive element is the mere presence of sibling interactions rather than their age structure.

The overall comparison of children attending public kindergartens and forest clubs did not reveal statistically significant differences in either environmental awareness or environmental attitudes. Although children from forest clubs exhibited slightly higher levels of environmental attitudes, this difference did not reach statistical significance. This finding is particularly important in the context of literature that often attributes nature-oriented educational environments an inherently higher potential for developing environmental competencies. Studies conducted in Montessori and nature-based settings indicate that positive effects of the environment may manifest selectively and not across all dimensions simultaneously. For example, Yates found that children's age in a nature-based Montessori school influenced environmental sensitivity and certain aspects of awareness, but not environmental preferences [13]. Similarly, the study by Ahi and Kahriman-Pamuk shows that children attending forest kindergartens tend to associate the concept of "environment" primarily with nature and biotic and abiotic elements, while human-made components are only marginally represented in their interpretations [14]. These findings suggest that differences between children from various types of preschool institutions may be reflected more in the content of environmental concepts than in the level of quantitatively measured environmental awareness.

The foundations of nature-oriented and Montessori-inspired education highlight the importance of a prepared environment, child autonomy, and learning through direct experience as factors that may create favourable conditions for environmental learning in preschool age [15]. At the same time, Montessori pedagogy emphasises that, although these principles support the development of environmental learning, they do not necessarily lead to measurable differences in quantitative indicators of environmental awareness and attitudes on their own [16]. The results can also be interpreted in the context of the research design. Several studies that have demonstrated more pronounced differences in children's environmental attitudes have employed intervention-based or longitudinal approaches, often involving intensive educational programmes focused on environmental behaviour [10]. In this context, the absence of significant differences between types of preschool institutions appears methodologically consistent, as exposure to a natural environment alone, without targeted intervention, may not lead to measurable differences in the examined dimensions.

In conclusion, the results of the study point to a relative homogeneity of environmental awareness and environmental attitudes among preschool children, regardless of the type of institution attended. At the same time, the findings emphasise the importance of the social and family context, particularly in nature-oriented educational environments, and indicate the need for further research focused on the processes of environmental learning rather than exclusively on its outcome scores.

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