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В науковому електронному періодичному виданні «Спортивна наука та здоров'я людини» публікуються результати наукових досліджень актуальних напрямків спорту, фізичного виховання, фізичної культури, спортивної медицини, фізичної терапії, ерготерапії, сучасних рекреаційно-оздоровчих технологій, а також досліджень, що стосуються здоров'я людини та є важливими для забезпечення інноваційного розвитку України.

Наукове видання призначено для науково-педагогічних працівників закладів вищої освіти галузі фізичної культури і спорту, здобувачів освітнього-наукового рівня «доктор філософії», здобувачів освіти, науковців, тренерів, спортсменів, а також фахівців з охорони здоров'я, фізичної терапії, ерготерапії.

Наказом МОН України № 886 від 02.07.2020 р. видання додано до Переліку наукових фахових видань України категорії «Б», в яких можуть публікуватися результати дисертаційних робіт на здобуття наукових ступенів доктора наук і доктора філософії зі спеціальності А7 – Фізична культура і спорт.

Наукове електронне періодичне видання «Спортивна наука та здоров'я людини / Sport Science and Human Health» включено до наукометричних баз даних і бібліотек: IndexCopernicus, CrossRef, BASE, Google Scholar, WorldCat–OCLC, ResearchBib, Наукова періодика України.

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CORRELATION BETWEEN ECOLOGICAL EDUCATION IN FAMILY, KINDERGARTEN, AND SCHOOL AND ECOLOGICAL AWARENESS AND BEHAVIOR

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Author's contribution:

A – Study design; B – Data collection;
C – Statistical analysis; D – Manuscript preparation;
E – Manuscript editing; F – Final approval of manuscript

Abstract

Introduction. Environmental education plays a fundamental role in shaping ecological awareness and fostering responsible behavior towards the environment. It must be effectively integrated into family life, kindergarten, and school to guide children and young people towards a sustainable lifestyle. This study examines the influence of environmental education on awareness and behavior, emphasizing the role of parents, educators, and teachers in this process.

This study *aimed* to analyze the impact of environmental education from the family, kindergarten, and school on the ecological behavior of children and young people, using statistical data and comparative studies.

Material and methods. Document analysis; statistical analysis; comparison of educational strategies; data presentation in tables and graphs. The data were collected from official sources such as UNESCO, Ministries of Education in various countries, reports of environmental organizations, and academic studies conducted between 2015 and 2024.

Results. The research presents statistical data on ecological awareness levels across different age groups and evaluates the impact of education received in various environments. Findings indicate that early involvement from family and educational institutions fosters greater ecological responsibility and a stronger inclination towards adopting sustainable practices. Additionally, the study highlights the importance of hands-on activities, such as recycling, resource conservation, and participation in environmental actions, in reinforcing responsible behavior.

Conclusions. The study suggests the necessity of an integrated approach that combines formal and non-formal education to enhance ecological awareness. Through close collaboration between families, kindergartens, and schools, a more environmentally responsible generation can be nurtured.

Key words: environmental education, awareness, sustainability, family, kindergarten, school, environment.

КОРЕЛЯЦІЯ МІЖ ЕКОЛОГІЧНОЮ ОСВІТОЮ В СІМ'Ї, ЗАКЛАДАХ ДОШКІЛЬНОЇ Й ЗАГАЛЬНОЇ СЕРЕДНЬОЇ ОСВІТИ ТА ЕКОЛОГІЧНОЮ СВІДОМІСТЮ І ПОВЕДІНКОЮ

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Внесок автора:
A — концепція та дизайн дослідження; B — збір даних;
C — аналіз та інтерпретація даних; D — написання статті;
E — редагування статті; F — остаточне затвердження статті

Анотація

Вступ. Екологічна освіта відіграє фундаментальну роль у формуванні екологічної свідомості та розвитку відповідальної поведінки щодо навколишнього середовища. Вона має бути ефективно інтегрована у сім'ю, дошкільний заклад і школу для формування у дітей та молоді ставлення до сталого способу життя. Дослідження аналізує вплив екологічної освіти на усвідомлення та екологічну поведінку, підкреслюючи роль батьків, вихователів і вчителів у цьому процесі.

Мета дослідження – проаналізувати вплив екологічної освіти, що надається в сім'ї, закладах дошкільної й загальної середньої освіти, на екологічну поведінку дітей та молоді, використовуючи статистичні дані та порівняльні дослідження.

Матеріали та методи. Аналіз документів; статистичний аналіз; порівняння освітніх стратегій; представлення даних у таблицях і графіках. Дані були зібрані з офіційних джерел, таких як ЮНЕСКО, міністерства освіти різних країн, звіти екологічних організацій та наукові дослідження, проведені в період з 2015 по 2024 рік.

Результати. У роботі наведено статистичні дані щодо рівня екологічної свідомості серед різних вікових груп та розглянуто вплив освіти, отриманої у різних середовищах. Результати показують, що раннє залучення сім'ї та навчальних закладів сприяє більшій екологічній відповідальності та схильності до впровадження сталого способу життя. Крім того, дослідження акцентує увагу на важливості практичних заходів, таких як переробка, економія ресурсів і участь у екологічних акціях, для формування відповідальної поведінки.

Висновки. Дослідження вказує на необхідність комплексного підходу, що включає формальну та неформальну освіту, для підвищення рівня екологічної свідомості. Завдяки тісній співпраці між сім'єю, дошкільним закладом і школою можна сприяти формуванню більш відповідального до навколишнього середовища покоління.

Ключові слова: екологічна освіта, усвідомлення, сталий розвиток, сім'я, заклад дошкільної освіти, заклад загальної середньої освіти, навколишнє середовище.

Introduction

Global environmental issues such as climate change, pollution, and biodiversity loss represent major challenges for contemporary society. These phenomena have a significant impact on human health, ecosystems, and the global economy (IPCC, 2021). For instance, greenhouse gas emissions have caused global temperatures to rise by approximately 1.1°C above pre-industrial levels, resulting in extreme weather events such as heatwaves and floods (NASA, 2022).

In response to these challenges, environmental education plays a crucial role in developing ecological awareness and fostering responsible environmental behavior. According to Tilbury (1995), environmental education is not limited to the transmission of theoretical knowledge about the environment but aims to cultivate values, attitudes, and competencies that lead to concrete actions for environmental protection. Therefore, it should be a continuous process that begins in the family, is reinforced in kindergarten, and further developed in school.

The role of the family in environmental education. The family is the first environment where children learn about the surrounding world and form their initial ecological habits (Bronfenbrenner, 1979). Studies show that parents who adopt a sustainable lifestyle and actively involve their children in activities such as recycling, energy saving, and reducing plastic consumption contribute to the development of sustainable ecological behaviors (Palmer, 1998). For example, a study by Stevenson et al. (2013) highlighted that students from families with a high level of ecological awareness are more likely to adopt long-term responsible environmental behaviors.

Beyond modeling behavior, parents also have the responsibility to stimulate their children's curiosity about nature. Louv (2005) introduced the concept of the "nature deficit," emphasizing that a lack of interaction with the natural environment can have negative effects on children's cognitive and emotional development. Therefore, exposure to outdoor activities such as hiking, gardening, and biodiversity exploration is essential for fostering a genuine connection with nature.

Environmental education in kindergarten. Kindergarten represents the first institutionalized stage of environmental education and plays a crucial role in the initial formation of ecological awareness. According to Hedefalk, Almqvist, and Östman (2015), environmental education at this stage should focus on experiential learning and games that stimulate understanding of the relationships between humans and nature.

An effective approach is the Montessori method, which promotes practical environmental activities such as planting flowers, caring for animals, and creative recycling (Montessori, 1912). Studies show that these activities not only improve children's environmental knowledge but also develop skills such as empathy, responsibility, and critical thinking (Elliot & Davis, 2009).

Environmental education in school. Schools play an essential role in deepening environmental education by providing students with scientific knowledge about the environment and developing their capacity to critically analyze ecological issues. UNESCO (2017) recommends integrating environmental education across all school subjects, not only natural sciences, to create an

interdisciplinary and holistic approach.

A successful educational program example is "Eco-Schools," implemented in over 70 countries, which encourages students to actively participate in environmental projects and propose sustainable solutions for community problems (Barratt Hacking, Scott & Lee, 2010). Research by Rickinson (2001) indicates that such programs contribute to increased ecological awareness and foster a sense of environmental responsibility.

Besides theoretical lessons, schools should provide students with practical learning opportunities. A study by Ernst and Monroe (2004) demonstrated that students who participate in extracurricular environmental activities, such as nature trips or ecological projects, show a more positive attitude towards environmental protection and are more engaged in ecological actions in adulthood.

Research hypothesis. Environmental education received from the family, kindergarten, and school significantly contributes to the development of ecological awareness and the adoption of environmentally responsible behavior.

Aim of the study

This study aimed to analyze the impact of environmental education from the family, kindergarten, and school on the ecological behavior of children and young people, using statistical data and comparative studies.

Material and methods

Research methods:

1) Document analysis – reviewing reports and studies on environmental education.
2) Statistical analysis – evaluating data on ecological awareness and behavior.
3) Comparison of educational strategies – analyzing methods used in various educational systems.
4) Data presentation in tables and graphs – illustrating trends regarding the impact of environmental education.

Research organization. The data were collected from official sources such as UNESCO, Ministries of Education in various countries, reports of environmental organizations, and academic studies conducted between 2015 and 2024.

Results

To further develop our research, we analyzed the educational programs implemented in various countries and their effects on ecological awareness. The results have been classified into the following aspects, as outlined below:

Aspect No. 1.
The level of ecological awareness based on the source of education

1.1. Environmental education from family and school has the greatest impact on ecological awareness. Studies by Tilbury (1995) and Palmer (1998) emphasize that both family and school play a crucial role in shaping ecological consciousness. These institutions are the primary influencers of environmental attitudes and behaviors among children and youth. The family is often the setting where initial environmental values are formed. For example, parents who are actively involved in ecological activities—such as recycling, conserving energy, or planting trees—transmit these values to their children, significantly influencing their behavior in adulthood (Palmer, 1998).

A study conducted by Stevenson et al. (2013) revealed that families who embrace a sustainable lifestyle contribute greatly to the development of environmentally responsible behavior in children. This is due to the fact that

children are directly exposed to ecological practices at home, which shapes their long-term environmental beliefs. Moreover, parents who are actively engaged in ecological education pass on this responsibility to their children, and research shows a positive correlation between environmental education in the family and adolescents' pro-environmental actions (Ernst & Monroe, 2004).

As for the school's role, research by Hedefalk, Almqvist, and Östman (2015) shows that environmental education in schools significantly enhances students' ecological knowledge and attitudes. For instance, educational programs such as *Eco-Schools*, implemented in various countries, are considered highly effective. These programs integrate environmental protection activities and projects into the curriculum, helping students understand the link between their daily activities and the environmental impact (Barratt Hacking, Scott & Lee, 2010).

Furthermore, a study by Rickinson (2001) highlighted that when environmental education is integrated across multiple disciplines—not just within natural sciences—students are better prepared to adopt sustainable behaviors. Therefore, the school can have a significant impact on ecological awareness, not only through theoretical teaching but also by providing active learning experiences and encouraging student involvement in environmental protection projects.

1.2. Mass media plays a secondary but influential role in shaping environmental attitudes. Although not as influential as family and school education, mass media still plays an important role in forming and shaping environmental attitudes. According to Stevenson et al. (2013), mass media can broaden knowledge and raise public awareness of global environmental issues. Through films, documentaries, and public campaigns, mass media contributes to ecological education and helps shift attitudes toward environmental protection.

Case studies by Barratt Hacking et al. (2010), in the context of the Eco-Schools program, suggest that media has a positive impact when collaborating with educational institutions to convey environmental messages and encourage youth to adopt responsible ecological behavior. A relevant example is the environmental awareness campaigns broadcast on television, which have been proven to influence young people's behavior, especially when these campaigns are supported by educational platforms.

Moreover, research by Louv (2005), in Last Child in the Woods, shows that while media has a major impact on public perception of nature and environmental protection, its influence is less direct compared to family and school education. Media can reinforce ecological messages introduced in the family and school environments, but meaningful behavioral change among younger generations requires cooperation among all sources of environmental education.

Aspect No. 2.

The impact of environmental education on ecological behavior

2.1. Water and energy conservation is the most frequently adopted ecological behavior. Studies show that conserving water and energy is among the most common ecological behaviors adopted by young people as a result of environmental education. According to a study conducted by Barratt

Hacking et al. (2010), children who are educated in the spirit of conserving natural resources—through educational campaigns or school activities—are more likely to adopt responsible behaviors in their daily lives. For example, saving water by using it moderately in daily activities or turning off electrical devices when not in use are behaviors frequently observed among students attending schools that have implemented environmental education programs.

In a study by Ernst and Monroe (2004), it was found that environmental education received in schools contributes to raising students' awareness regarding the importance of conserving energy and water. These behaviors are often learned through concrete examples, such as collecting rainwater or using energy-efficient light bulbs. In this context, environmental education significantly contributes to the development of responsible behavior toward natural resources.

Furthermore, research conducted by Louv (2005) suggests that environmental education can influence young people's behavior from an early age. These behaviors are intended to become long-term habits, and conserving water and energy represents an easy-to-adopt behavior, especially considering that it is simple and often rewarded through financial savings. Additionally, educational programs that promote energy efficiency—such as those encouraging the use of energy-efficient appliances—have had a significant impact on young people's awareness and behavior.

2.2. Ecological transportation and recycling require further promotion among youth.

Despite the progress made in water and energy conservation, ecological behaviors related to sustainable transportation and recycling still require more promotion, particularly among younger generations. According to a study by Hedefalk, Almqvist, and Östman (2015), many young people do not adopt ecological behaviors related to transportation (e.g., biking, using public transport, or carpooling), as more conventional alternatives such as using a personal car remain predominantly popular. This phenomenon is largely due to the lack of effective environmental education in this area and insufficient infrastructure for ecological transport in many regions.

Another ecological behavior that requires greater promotion is recycling. Studies by Palmer (1998) and Stevenson et al. (2013) suggest that although many young people are aware of the importance of recycling, recycling habits are not always properly implemented in daily life. This is often due to the lack of adequate infrastructure for selective waste collection and insufficient education regarding proper recycling processes. Educational projects that include demonstrations of correct recycling practices and active youth involvement in the process are essential for promoting responsible ecological behavior in this domain.

Moreover, a study by Tilbury (1995) highlighted that, although many schools integrate environmental education into their curricula, this alone is not sufficient to encourage long-term ecological behaviors among youth. Educational programs that promote ecological transportation and recycling—such as organizing recycling competitions or car-free days—can contribute to the formation of proper ecological habits. These activities can encourage young

people to become more aware of their environmental impact and to adopt more responsible behaviors related to sustainable transportation and recycling.

Aspect No. 3.

Comparison of environmental education methods in schools

3.1. Practical activities and ecological field trips are the most effective in reinforcing knowledge. An essential aspect of environmental education in schools is the use of practical methods to reinforce the theoretical knowledge acquired by students. Practical activities such as tree planting, cleaning green areas, conducting recycling projects, and organizing ecological field trips are recognized as some of the most effective educational techniques for promoting environmental awareness. According to research conducted by Palmer and Suggate (2011), experiential learning and direct engagement with nature significantly contribute to the development of a responsible attitude toward the environment.

Practical activities involving direct interaction with the environment are effective in transforming theoretical knowledge into concrete behaviors. A study by Tilbury (1995) found that students who participated in hands-on ecological activities during environmental education lessons demonstrated a deeper understanding of environmental protection concepts compared to those who received only theoretical instruction. Activities such as recycling, waste collection, and planting encourage critical thinking and problem-solving in real-life contexts, helping students apply the knowledge they have acquired in a practical manner.

Regarding ecological field trips, these are extremely valuable for reinforcing students' ecological knowledge, as they provide opportunities to learn directly from the natural environment. Studies conducted by Rickinson (2001) and Hedefalk et al. (2015) suggest that ecological field trips have a significant impact on the development of practical understanding of environmental issues and the formation of pro-environmental attitudes. They allow students to grasp ecological problems from a personal and direct perspective, which can encourage more responsible behavior toward the environment.

Field trips and practical activities also promote collaborative learning and stimulate social interactions, contributing to a collective sense of responsibility for environmental protection. Furthermore, engaging students in real ecological activities can motivate them to adopt more sustainable lifestyles and to implement what they have learned in their daily lives.

Practical activities and ecological field trips represent the most effective methods of environmental education in schools, as they not only strengthen theoretical knowledge but also create an emotional and cognitive connection between students and the natural environment. These methods offer active learning opportunities, develop critical thinking, and encourage the adoption of environmentally responsible behavior. In this context, environmental education becomes a crucial tool for building a more sustainable and responsible future.

Practical and methodological recommendations

Active involvement of parents – creating joint environmental education programs for both parents and children.

Expanding practical activities in kindergartens and schools – recycling

projects, tree planting, visits to ecological centers.

Using interactive digital resources – educational applications and platforms focused on ecology.

Integrating ecological content into all school subjects – e.g., Mathematics (calculating water consumption), Biology (studies on biodiversity).

Organizing awareness campaigns – ecological workshops and competitions for children and youth.

Conclusions

The conclusion of this study highlights the importance of environmental education as a key factor in developing responsible behavior towards the environment. The research found that the influence of the family environment, kindergarten, and school on children's ecological awareness is significant, but a more diversified approach to educational methods is needed to enhance their effectiveness. It is evident that theoretical methods, although important, are not sufficient to transform the behaviors and attitudes of younger generations.

Therefore, it is essential that environmental education be combined with practical activities that allow students to apply the acquired knowledge in a concrete way and to directly understand the impact of their actions on the environment. Recycling projects, ecological field trips, and tree planting activities are just a few examples of methods that have shown a significant impact on learning and the development of responsible ecological behavior. These activities not only help develop practical skills but also encourage a deeper perspective on the necessity of environmental protection.

In this context, the integration of such methods into the educational framework, along with the active involvement of parents and the community, represents important steps toward shaping future generations that are both environmentally conscious and responsible.

Consequently, environmental education must become an essential component of the educational curriculum, and integrated educational strategies – which include both theory and practice – are the key to successfully fostering sustainable long-term behavior.

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