

FORMATION OF ECOLOGICAL WORLDVIEW AMONG STUDENTS: THEORETICAL APPROACHES AND PRACTICAL ASPECTS

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ABSTRACT

This article examines the critical issue of cultivating environmental awareness among students as a fundamental component of sustainable societal development. Considering escalating environmental crises, the study highlights the imperative to reevaluate contemporary approaches to environmental education in higher learning institutions. The authors provide a conceptual framework for understanding the development of environmental awareness in students and identify three core pedagogical conditions essential for its effective cultivation: the integration of environmental components into professional disciplines to foster ecological knowledge, values, and perspectives; the systematic motivation of students to apply environmental principles in practical contexts of natural resource conservation and sustainable management; and the expansion of extracurricular initiatives with ecological orientations to facilitate direct experiential engagement with natural systems. The research underscores the pivotal role of comprehensive environmental education in preparing future professionals to address sustainability challenges and contribute meaningfully to global sustainable development objectives.

Keywords: environmental awareness, sustainable development, environmental education, pedagogical conditions, natural resources.

INTRODUCTION

The intensification of ecological problems in recent decades has necessitated a thorough examination of the content, forms, and methods of environmental education. This education comprises a body of knowledge, skills, and competencies that foster a clear understanding of the relationship between humans and nature in specific contexts (Kazankapova et al., 2024; Mahdy et al., 2025). Among the numerous theoretical and methodological challenges in environmental education, particular attention is paid not only to expanding and deepening comprehensive ecological

knowledge, skills, and value orientations among future professionals but also to developing their ability to consciously apply this knowledge in professional practice (Kuandykova et al., 2024). In this context, we may posit that the formation of ecological worldview among students serves as both an objective and outcome of environmental and professional education, thereby enhancing their competitiveness in the labor market (Alekseev et al., 2025).

Literature Review

The problem of ecological worldview - particularly approaches to defining its essence and components, as well as pathways for its formation and development - has been examined in philosophical, socio-ecological, eco-psychological, and psychological-pedagogical research. In philosophical studies (Rubanova, 2007; Ivashchenko et al., 2008), the problem of ecological worldview is connected with environmental education for sustainable development of human civilization, conceptualized as a unifying idea and philosophical foundation of environmental education. A central focus of these works is identifying solutions to the current ecological crisis (Shahbaz et al., 2024), with scholars advocating a shift from anthropocentric to ecocentric worldviews. Socio-ecological research (Poleshchuk, 2013) examines ecological worldview at both societal and individual levels, analyzing its relationship with the ecologization of public consciousness, the promotion of ecological thinking, and the development of creative potential within socio-natural and sociocultural environments.

Eco-psychological and eco-pedagogical studies focus on ecological consciousness (Chuikova, 2012; Akbar et al., 2024), considering ecological worldview as its conscious, philosophical component. These works explore methods for developing ecological knowledge, fostering responsible attitudes toward nature, and cultivating practical skills for ethical human-nature interactions (Halibiyati et al., 2024), particularly through specially organized eco-oriented activities. Smirnov (2015) defines ecological worldview as a comprehensive system of principles, perspectives, knowledge, values, assessments, beliefs, and practical orientations. This system holistically reflects the unity of natural and social existence, their co-evolution, and the need to harmonize their relationship. Ecological worldview forms a conscious position that motivates conservation efforts and contributes to maintaining biosphere stability (Rozelin et al., 2025). According to Bushueva and Bushuev (2018), ecological worldview retains the structure and characteristics of a worldview (integrity, systematicity, subjectivity) and constitutes a system of ecological knowledge, perceptions, perspectives, beliefs, and ideals. These elements synthesize into consciously developed philosophical ideas, moral evaluations, experiences, and attitudes toward nature that integrate into a personally meaningful system of ecological values guiding human life and activity (Katkova & Mekka, 2024).

Yatsevich (2020) describes ecological worldview as a synthesis of human experience encompassing scientific, non-scientific, and extra-scientific knowledge about society's relationship with nature. This knowledge is expressed through the subjective features of ecological consciousness that reflect both social environment and natural living conditions. Rybalko (2013) offers a similar definition, viewing ecological worldview as an accumulation of human experience and various forms of knowledge about society-nature relations. These manifest in subjectively contextualized features of ecological consciousness that reflect specific social and natural environments. Levchenko (2016) and Tarasenko (2013) define ecological worldview as a product of environmental education that elevates consciousness to address philosophical problems related to identifying, understanding, and overcoming global ecological challenges. After analyzing various approaches, we propose the following conceptualization: Ecological worldview represents a generalized indicator of the effectiveness of environmental education and upbringing. It constitutes an integrative personal quality characterized by a complex of ecological values, established internal motivations, perspectives, and beliefs grounded in an understanding of nature's intrinsic worth. This manifests as a conscious ability to apply ecological knowledge, skills, and competencies to solve environmental problems. Within the framework of environmental education, N.A. Morozova (2008) understands ecological worldview as a personal formation that develops under the influence of contemporary environmental problems and reveals potential solutions to these problems through harmonizing human-nature interactions. S.M. Eshenko (2017) emphasizes that the formation of an ecological worldview is not limited to merely assimilating scientific facts and laws. This process involves developing students' own internal position towards the surrounding world. A.Yu. Lukyanov (2023) suggests that the formation of an ecological worldview should occur as a process of acquiring environmental values while developing ecological competence through engaging individuals in eco-oriented activities.

The formation of ecological worldview among students across various fields of study represents a subject of scientific interest for many researchers (Seliverstova & Knyazeva, 2008; Badina & Shirshov, 2018; Kovalevich, 2022). Scholars view this process as the conscious transformation of ecological knowledge into stable convictions (Garyagdyev, 2022), as well as the formation of value orientations that promote harmonious interaction with the environment during cognitive and transformative economic activities (Galkieva, 2013; Fedorov, 2022).

According to E.S. Styazhkina (2000), the development of ecological worldview today proceeds along four main directions: the scientific direction, which manifests in striving to implement existing theoretical and practical knowledge about natural connections in practice and to avoid disrupting them during human production activities (Kovalev, 2022); the economic direction, expressed in recognizing the economic disadvantages of production activities that destroy the natural environment (Ilyushin & Afanaseva, 2020; Silchenkov et al., 2024); the cultural direction, which appears in the desire to preserve the natural environment as an element of cultural environment; and the political direction - manifested in people's striving to create conditions worthy of human existence (Polovchenko, 2024b). However, in many countries education, the methodological foundations for forming ecological worldview among students remain insufficiently developed. This necessitates the development of new approaches to determining the content, forms and methods of forming ecological worldview in future specialists during their university education. The aim of this work is to identify and substantiate the pedagogical conditions for forming ecological worldview among students. To achieve this goal, it is necessary to solve the following tasks:

- conduct an analysis of existing research to determine the pedagogical conditions for forming ecological worldview among students and possibilities for their implementation;
- carry out an expert survey to determine the significance of various pedagogical conditions for forming ecological worldview among students.

MATERIAL AND METHODS

Methods

To address the research objectives, a combination of complementary methods was employed.

Theoretical methods included an analysis of scholarly literature on the research problem, which allowed for clarifying the essence of the concept of "formation of ecological worldview among students," as well as identifying pedagogical conditions for its development and potential implementation strategies.

Empirical methods involved an expert survey.

Statistical methods encompassed mathematical statistics techniques for quantitative and qualitative analysis of the expert survey results.

The search for scholarly sources on the research problem was conducted using international databases via the Google Scholar tool. Additionally, web resources were explored using global search engines.

To assess the significance of pedagogical conditions for forming ecological worldview among students, an expert survey method was employed with a sample of 39 experts. The selection criterion for the expert pool was having at least three publications on the research topic in peer-reviewed journals. Through email correspondence, 36 respondents agreed to participate in the survey. Based on their evaluations, the rankings and weight coefficients of the pedagogical conditions for forming ecological worldview among students were determined.

RESULTS

The analysis of scholarly sources and practical approaches to fostering ecological worldview among university students has enabled the identification of the following pedagogical conditions (Table 1).

Table 1. Pedagogical Conditions for Developing Ecological Worldview in Students and Their Implementation Strategies.

Pedagogical Conditions	Implementation Strategies	Rank	Weight
Integration of ecological content into professional disciplines to develop components of ecological worldview (ecological knowledge, perspectives, and convictions).	1) Establishing connections between ecological content and professional disciplines; 2) Developing methodological approaches for studying ecological content within professional disciplines from the perspective of ecological worldview formation.	1	0.43

Systematic motivation of students to acquire ecological values for practical application of ecological knowledge, skills, and competencies in the protection, conservation, and sustainable use of natural resources.	1) Designing and implementing task modules focused on ecological worldview development within the teaching and learning process; 2) Incorporating cutting-edge technologies for studying ecological content in professional disciplines.	2	0.32
Enhancement of extracurricular eco-oriented educational activities aimed at gaining hands-on experience in interacting with the natural environment.	1) Collaborative development of eco-oriented research projects by instructors and students; 2) Application of innovative methods in the educational process (business simulations, case studies, project-based learning, etc.).	3	0.25

Source: Original research and expert survey results; Kendall's coefficient of concordance $W = 0.74$ ($p < 0.01$), indicating strong consensus among expert evaluations.

Discussion

The pedagogical conditions presented in this study (Table 1) should be viewed as interconnected components of a unified framework – a comprehensive system of interrelated measures aimed at effectively fostering ecological worldview among students.

According to expert assessments, the most significant pedagogical condition for developing students' ecological worldview is the integration of ecological content into professional disciplines to cultivate its fundamental components (ecological knowledge, attitudes, perspectives, beliefs, and orientations).

The implementation of this pedagogical condition focuses on the selection and systematization of educational materials (both professional and ecological) that facilitate the formation of ecological worldview in students.

Key challenges in curriculum design lie in the "differentiation-integration" continuum: 1) the challenge of differentiating disciplinary content while considering each discipline's unique potential and characteristics for fostering ecological worldview; 2) the challenge of integrating cross-disciplinary content while accounting for the specific requirements of the gradual, holistic process of developing ecological worldview in future professionals.

Researchers emphasize that when cultivating ecological worldview, the educational process should incorporate various elements of ecological knowledge, including concepts of natural objects and phenomena, notions reflecting diverse properties and aspects of the environment, ecological patterns, laws, and factors (Kovalevich, 2022).

This comprehensive approach ensures students develop not only factual knowledge but also the conceptual frameworks necessary for understanding complex ecological systems and their interrelationships with professional practice. The integration of these knowledge components across the curriculum creates a robust foundation for ecological consciousness that informs both professional decision-making and personal environmental ethics.

Thus, the process of developing students' ecological worldview should be grounded in the integration of ecological and professional knowledge. The academic and pedagogical literature identifies three levels of curriculum integration: interdisciplinary connections; didactic synthesis (shared conceptual frameworks); holistic integration (creating new interdisciplinary fields). In our view, interdisciplinary connections represent the most appropriate level of integration for fostering ecological worldview in future professionals. Consequently, the development of ecological worldview among students can be achieved through coordinated alignment of academic programs, guided by the pedagogical objectives of professional disciplines. Such interconnectedness and mutual permeation of knowledge and methodologies across different subjects creates optimal conditions for cultivating students' ecological worldview. The second most significant pedagogical condition involves systematically motivating students to adopt ecological values for practical application of their ecological knowledge, skills, and competencies in protecting, conserving, and sustainably managing natural resources.

Ecological worldview constitutes a systemic characteristic of future professionals' personal development, which can be cultivated through specially designed environmental education when implementing the following axiological optimization conditions:

- 1) Organizing diverse forms of eco-oriented activities with ethical, humanistic, aesthetic, and socio-productive dimensions, aimed at facilitating students' acquisition of various ecological values.
- 2) Implementing a purposeful, comprehensive axiological process for gradual development of ecological worldview in future professionals.
- 3) Establishing axiological support systems for ecological worldview formation.

The axiological framework for developing ecological worldview in future specialists should primarily align with progressive professional activities that maximally facilitate both personal and career development (Bobkov & Shichkin, 2024; Vavilov et al., 2024). Experience in creating such axiological systems demonstrates that this component only becomes effective when alignment is achieved between the initial and ultimate goals of professional development regarding the formation of ecological worldview (Badina & Shirshov, 2018).

The formation of students' ecological worldview fundamentally requires the incorporation of innovative technologies into the educational process. Several key challenges persist in this regard: 1) the development and coordination of pedagogical technologies for fostering ecological worldview in students; 2) the creation of a comprehensive set of pedagogical tools appropriate for the structure and characteristics of the multi-stage process of developing and stimulating individual experience in addressing environmental issues; 3) the design of pedagogical tools and conditions for establishing a worldview-shaping environment for future professionals (Galkieva, 2013).

This situation necessitates thorough research into the potential of pedagogical technologies, the development of integrated pedagogical tools, and their adaptation to the new objectives of cultivating ecological worldview in future specialists.

High-quality preparation of students for their professional futures is unattainable without their mastery of modern information technologies (Kirillova et al., 2023). The application of contemporary computer technologies in developing ecological worldview enables students to acquire specific knowledge and skills related to information process organization, enhanced capacity for professional activity development, improved social and professional competencies. The use of computer technologies fundamentally transforms the nature of monitoring student activities, opportunities for fostering student self-reflection. Consequently, these innovations create favorable conditions for eco-oriented activities and the development of environmental competencies in future professionals. Of particular importance is the creation of a specially designed eco-oriented educational environment as part of the sociocultural context that influences the development of students' cognitive capacities, value systems and practical skills. Such an environment features: maximally diverse forms of eco-oriented activities with varied organizational structures and objectives, multiple levels and conditions of organization, direct interaction with nature as a core component. This environment serves as a fundamental condition for shaping students' ecological worldview.

This context creates a need to model and accordingly organize various forms of eco-oriented activities (Vaslavskaya et al., 2025), while analyzing their objectives, essential content, functional aspects, and prerequisites for successfully achieving the ecological-educational goals set by instructors. This comprehensive approach requires the implementation of appropriate interactive technologies aimed at ecological expansion, formation and development of self-awareness, consciousness, and personal worldview (including communicative, training-based, reflective and similar methodologies). The third pedagogical condition involves intensifying extracurricular educational work with an eco-oriented focus to facilitate students' acquisition of practical experience in interacting with the natural environment. This condition entails engaging students in eco-oriented activities that pursue ecological-practical, conservation-oriented, and environmental objectives, representing educational, labor, and professional activities conducted from the standpoint of ecological feasibility (Hasbi et al., 2025).

Eco-oriented activities serve as the fundamental (system-forming) factor in environmental education, enabling full utilization of ecological, pedagogical, psychological, and integrative principles and patterns in shaping ecological worldview. The distinctive features of eco-oriented activities in developing students' ecological worldview lie in their focus on forming ecological cognitive, practical and creative skills; developing students' volitional qualities; fostering a desire to understand nature in unity with moral-aesthetic experiences; establishing ecological behavioral norms that prevent harm, pollution or destruction of nature; and facilitating direct interaction between students and their natural surroundings. The development of stable moral qualities depends not only on the types of activities but primarily on how students become involved in them (Ansabayeva et al., 2023). Engaging students in humanistic eco-oriented activities implies establishing an organic humanistic interaction with nature through maximizing opportunities for independent creative work and productive self-realization that serves as a source of positive development, self-development and self-improvement driven by personal motivations.

Involving students in aesthetically-oriented activities cultivates their eco-aesthetic culture, awareness of themselves as part of universal natural unity, and ability to perceive, appreciate and protect nature's beauty as both a value and essential condition for human life (Ybyraimzhanov et al., 2019; Serova, 2023). Such activities facilitate a value-based reorientation of personal attitudes (Sergeeva and Pitul'ko, 2023) toward the natural world through ethical-aesthetic harmonization, shifting from aggressive-consumptive to value-creative levels, while also introducing students to the aesthetic dimensions and ecological-cultural interconnections (Mikhailov, 2023). Moreover, aesthetically-focused eco-oriented activities encourage students to develop an expanded perception of the natural world, of which human existence forms an integral part.

The third pedagogical condition also requires optimal combination of extracurricular forms and methods of teaching and education in higher institutions, with careful consideration of their specific applications. Knowledge formation represents one of the primary objectives of student learning, making the selection of appropriate teaching methods crucial. Employing diverse developmental methods contributes to forming deeper and more robust ecological knowledge. For developing ecological skills, particular emphasis should be placed on business simulations and case-

study methods (Ahmed et al., 2025). Other active methods for ecological skill development include: environmental problem investigation; interactive modeling of professional situations; creative problem-solving; discussion methods; project-based learning, etc. These methods stimulate students' independent and creative activity (Polovchenko, 2024a). The third condition involves implementing an activity-based approach to ecological worldview formation through direct pedagogical interaction between instructors and students in the university educational process: during conservation activities and students' independent work. The effectiveness of the activity-based approach depends on various factors in the educational process: the instructor's pedagogical mastery; the student's cognitive-intellectual characteristics; and the development of their motivational-value orientation toward active participation in eco-oriented activities (Hernández, 2022).

CONCLUSIONS

The investigation into the formation of students' ecological worldview yields the following key findings:

- The study establishes that students' ecological worldview represents a generalized indicator of the effectiveness of environmental education and upbringing. This integrative personal quality is characterized by a complex of ecological values, internal motivations, perspectives, convictions, and nature-centered behavioral responses, all grounded in a profound understanding of nature's intrinsic worth.
- The development of ecological worldview in students constitutes a holistic, integrative process involving their gradual engagement in educational activities that foster the evolution of their environmental perspectives, value orientations and convictions regarding nature-human harmony. This process specifically addresses the imperative to resolve contemporary ecological challenges through future professional practice.
- The research identifies three fundamental pedagogical conditions for cultivating ecological worldview: enriching professional disciplines with ecological content to develop worldview components (ecological knowledge, attitudes, relationships, perspectives, convictions, and orientations); systematically motivating students to adopt ecological values for practical application of environmental knowledge and skills in natural resource conservation and sustainable management; enhancing extracurricular eco-oriented educational activities to facilitate direct experiential learning in natural environments.

Future research directions will focus on experimental validation of the proposed framework's effectiveness in fostering ecological worldview development among students.

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