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Educational Approaches to Cultivating Environmental Consciousness among Higher Education Students in Ukraine

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Abstract

In the face of escalating environmental challenges such as climate change, resource depletion, and biodiversity loss, higher education institutions (HEIs) play a critical role in fostering environmental consciousness among future professionals. The research aims to analyze current pedagogical strategies, examine innovative development and digitalization factors, and explore how higher education can promote sustainable environmental consciousness among graduates. A combination of complementary methods, including analysis, synthesis and abstraction were used. The essential structural elements of the system of ecological consciousness, as well as the criteria and indicators of its formation, are also defined. Results revealed that the main prerequisites for low environmental awareness among students of higher education institutions in Ukraine are the insufficient development of civil society institutions, lack of motivation to comply with environmental legislation, and an inadequate level of public awareness of sustainable development and environmental stewardship priorities. Environmental education in higher education is often delivered in a traditionally minimalist format, with a narrow sectorial focus that fails to adequately foster environmental awareness development among future professionals. An innovative vision of the pedagogical strategy for forming environmental awareness of students of higher education institutions through fundamental life values, attitudes towards the intrinsic value of nature, and society's responsibility for their conservation and sustainable development is proposed.

Keywords

Environmental awareness; Environmental communication; Emotional intelligence; Communication ethics; Methods of forming

Introduction

Current trends in the transformation of educational practice lead to growing contradictions between society's need for highly qualified specialists and the diminishing emphasis on fostering the importance of forming an ecological worldview within higher education. As the world faces escalating environmental challenges such as climate change, resource depletion, and biodiversity loss, fostering environmental consciousness has become more pressing. Higher education institutions (HEIs) are critical in shaping future professionals' knowledge, values, and skills. As global trends increasingly integrate social and natural environments, there is an urgent need to cultivate environmental awareness among students within higher education institutions (Acosta Castellanos and Queiruga-Dios, 2022). This awareness should enable future professionals across various fields to harmoniously align their activities with ecological principles, contributing to society's broader goals of sustainable development. In this context, it is particularly important to develop the latest pedagogical strategies, which are the foundation of the formation of environmental consciousness among students of higher education institutions.

There is a need to highlight the conceptual foundations of the formation of environmental awareness among students of higher educational institutions, to highlight the stages and principles, and to select pedagogical tools (Hadjichambis and Paraskeva-Hadjichambi, 2020). In the scientific and pedagogical literature, this issue has been explored only partially and given the rapid progress of innovative pedagogical technologies, it requires updating and alignment with the requirements of a modern information society (Iakuba, 2022). This highlights the need for a more in-depth examination of educational technologies to foster environmental awareness among students in higher education institutions. In Ukraine, the development of environmental consciousness among students is essential for addressing global ecological issues and vital for the country's sustainable development, especially in the context of its recovery from war-related environmental damage (Dillon and Herman, 2023).

The increasing recognition of the need to integrate environmental awareness into the systems of professional competencies for higher education students has sparked a growing interest in the scientific community. Koval and Volokhata (2022), Khryk, Povlin and Mozul (2023), Tkachuk and Kravchenko (2024), Nesterenko (2021), and Tomchuk and Tomchuk (2022) have explored the complex interrelationship between economic development and environmental safety. These scholars argue that environmental degradation exacerbates economic crises while poor economic conditions harm the environment. Scientists are convinced that the destructive state of the environment deepens the economic crisis, while the depressed state of the economy significantly worsens the state of the environment.

Research on sustainable development in Ukraine has highlighted the crucial role of environmental awareness in achieving the country’s European integration goals. Studies by Iakuba (2022), and Kalenskyi, Herliand and Nahaiev (2022) underscore environmental consciousness as essential for the success of Ukraine’s alignment with European sustainability standards. Hadjichambis and Paraskeva-Hadjichambi (2020) and Uralovich *et al.* (2023) studied the formation of environmental competence of future

specialists in higher education. They emphasise that modern environmental thinking as a system of values, views and orientations to various forms of environmental protection and activities should be nurtured through a value-based education system, which encourages students to engage in various forms of environmental protection activities as a core outcome of environmental awareness. In addition, Dillon and Herman (2023) have focused on the theoretical and methodological foundations of training future specialists in higher education institutions, determining the specifics of the psychological, pedagogical, and didactic conditions for forming a worldview of sustainable interaction between society and the environment. However, despite these valuable contributions, many studies still address the formation of environmental awareness for future professionals in a fragmented manner.

Today, among innovative pedagogical strategies, the potential of immersive learning, based on virtual and mixed reality, demonstrates the highest effectiveness. This method of digitalising targeted higher education can significantly transform the system for developing environmental consciousness, providing an entirely new level of visualisation. Motivated and environmentally conscious graduates of higher education institutions, regardless of their chosen field, have the potential to change the functioning of various industries towards environmental awareness, contributing to Ukraine's steady progress in sustainable development. This issue is seen as a gap within the scope of existing research in this field.

This study aims to identify and evaluate pedagogical strategies for fostering environmental consciousness among students of higher education institutions in Ukraine, considering digitalization and the country's needs in post-war recovery. To achieve this aim, the following objectives were addressed:

- To conduct a comprehensive analysis of current pedagogical strategies for developing students' environmental consciousness in the context of higher education.
- To examine factors related to innovative development and digitalization in higher education, as well as potential challenges and risks.
- To analyze how higher education can be directed toward the formation of sustainable environmental consciousness among graduates, regardless of their field of study.

Research Methodology

This study employed a combination of theoretical and analytical methods to investigate pedagogical approaches to cultivating environmental consciousness among higher education students. The methodology was designed to ensure a systematic and objective analysis of educational practices, integrating multiple scientific techniques to address the research objectives effectively.

Research Design: The study adopted a qualitative research design, focusing on the analysis of existing educational strategies, frameworks, and theoretical concepts. A critical review of literature, publications in academic journals, and analytical reports was conducted to identify key trends, challenges, and innovative practices in fostering environmental awareness.

Publications indexed in leading academic databases such as Scopus and Web of Science were used. The search employed keywords such as "Environmental awareness," "Environmental communication," "Emotional intelligence," "Communication ethics," and "Methods of forming." The inclusion and exclusion criteria for publications were based on spatial-temporal indicators and the level of information reliability. Preference was given to publications from the period 2019–2024. Among the methods used to assess the risk of bias in the included studies were brainstorming and cause-and-effect analysis. The geographical scope was limited to the European region.

The analysis enabled the clarification of definitions and conceptual categories. This process helped distinguish essential elements from non-essential ones and allowed the classification of priority innovative solutions in educational approaches to developing environmental awareness among students in higher education institutions in Ukraine.
Unlike the analysis, synthesis combined separate components and properties identified through analysis into a unified whole. This process involved meaningful integration, moving from identical and essential aspects to differentiation and diversity, uniting both general and specific elements into a single concept of developing environmental awareness among students in higher education institutions in Ukraine. Through the method of generalization, proposals were formulated to address existing needs in the studied area, the main research findings were theoretically substantiated, conclusions were drawn, and questions requiring further study were identified.

Analytical Methods: The analysis method was used to deconstruct the education system into its core components, allowing for an in-depth exploration of its structure and identifying the essential elements that contribute to environmental awareness. Synthesis was then applied to integrate these components, constructing a comprehensive framework that combines general principles with specific educational strategies. This dual approach facilitated the development of a unified concept for cultivating environmental consciousness among students. The abstraction method was used to derive theoretical generalizations, define key concepts, and draw conclusions about the priority vectors of innovative development of environmental competence in higher education in the digital national post-war space.

Criteria for Data Inclusion: To ensure the reliability and relevance of the data, specific inclusion and exclusion criteria were established 1) Spatial-temporal relevance - Only studies published within a defined timeframe and geographically pertinent to the research context were included; 2)Reliability - Priority was given to peer-reviewed journal articles, authoritative reports, and other credible sources.

Results and Discussion

Modern approaches to the formation of an ecological worldview

Prerequisites and Challenges:

The main prerequisites for low environmental awareness among students of higher education institutions in Ukraine are the insufficient development of civil society institutions in this context, the lack of motivation to comply with environmental

legislation and inadequate public awareness of sustainable development and environmental stewardship priorities. Solving current global environmental problems requires, among other things, raising the level of environmental values among the younger generation. Existing environmental legislation in Ukraine does not meet the personal needs of young people, and environmental knowledge remains primitive. Environmental education in higher education is often delivered in a traditionally minimalist format, and narrow sectoral specificity cannot ensure the formation of environmental awareness at the appropriate level among future professionals. A new educational paradigm is needed and should synergize the processes of mastering modern students' professional, social and environmental competence. The positive progress in the relationship between the economy and the environment is primarily determined by the educational environment for the development of professional competence, which should form a sustainable environmental awareness in students based on the moral and ethical norms of human interaction with nature in the format of eco-partnership. Such an approach will allow the student to develop the ability to counteract the environmental crisis and empower them to become proactive environmental stewards. The ecological worldview has been described as a product of environmental education, which is an inevitable transformation of consciousness in the context of worldview problems in terms of formulating, understanding and finding ways to mitigate global environmental problems (Mialkovska *et al.*, 2024; Martyniuk *et al.*, 2023). The foundation of the ecological worldview is ecological knowledge, which is a systematic body of scientific understanding regarding the interaction between society and nature and rational environmental management.

Indicators and Methods of Effective Environmental Education:

The ecological outlook of students of higher education institutions serves as a general indicator of the effectiveness of environmental education and training. It reflects an individual's integrated environmental values, internal motivations, beliefs, and nature-oriented reactions. The latter should be based on an understanding of the value of the natural environment and manifested in practice in the context of a conscious ability to use environmental knowledge and skills to solve and prevent environmental problems (Koval and Volokhata, 2022; Tomchuk and Tomchuk, 2022). The structure of environmental awareness includes cognitive, emotional and behavioural elements. It is worth noting that the definition of environmental awareness has the essence of a state, not a process, and consists of a system of individual knowledge, perceptions, judgements and emotions that determine the level of readiness of an individual to act or not to act to influence the state of the environment.

The definition of environmental awareness has acquired the status of an interdisciplinary category with a high level of generality. The process of forming students' environmental awareness involves the development of scientific, theoretical, normative, evaluative and practical concepts (Nesterenko, 2021). In general, the awareness of higher education students of the functionality of their co-creation in the context of solving environmental problems is positioned to be effective if several pedagogical prerequisites are met, including:

1) the content of the process of forming students' environmental awareness, which is based on the interdisciplinary integration of scientific knowledge, is implemented in practice at the level of scientific material, academic disciplines and pedagogical practice;
2) mastery of the system of basic environmental knowledge by higher education students in assimilation with moral and ethical norms that determine the potential boundaries of interaction between society and nature;
3) formation of students' value-evaluation positioning of the environmental knowledge system;
4) the process of understanding environmental issues should bring students to a worldview level of perception;
5) the formation of students' environmental awareness should be carried out in the context of the principles of ecocentric consciousness, which is the interaction between society's perception of nature and society's nature.

Among the innovative educational methods of today are learning through argumentation, research-intensive learning methods, immersive projects, cross-learning, and practical learning. Specifically, the methodology of learning through argumentation helps in mastering the skills of discussing a wide range of topics with the practical application of theoretical subject skills. This improves the learners' critical thinking, teaches them the methodology of argument differentiation and persuasive communication, and enhances language and grammatical skills. A vital component of the argumentation process is the ability to listen, which also contributes to the development of universal valuable skills for personal and professional growth. Additionally, active discussion of current issues significantly increases motivation to learn (Hadjichambis and Paraskeva-Hadjichambi, 2020). The research-intensive learning method involves acquiring knowledge, skills, and competencies through developing targeted scientific projects or implementing research. In doing so, valuable data analysis, presentation, critical thinking, communication, and teamwork skills are gained (Bovill, 2020). The method of cross-learning in modern educational programmes is a comprehensive pedagogical approach that combines elements of formal and informal education. This method helps develop the ability to engage in constructive discussion, encourages learners to form open questions, and develops an individual language-communicative model of argumentation (Kukulska-Hulme *et al.*, 2024). The practical learning method is considered potentially effective. It promotes maximum interaction between learners and the surrounding environment and actively motivates them to apply the knowledge, skills, and competencies acquired during learning in real-life situations (Oliveira and De Souza, 2022).

Integrating various interactive technologies and digital methods can significantly improve learning outcomes. Innovative digital educational platforms, online resources, and mobile applications are seen as promising. Immersive technologies should be involved in creating a learning environment that is as close as possible to real-world conditions. These are identified as a way to integrate virtual content into the physical environment, creating conditions for effective interaction.

Theoretical and methodological foundations for the formation of environmental consciousness in students of higher educational institutions

The formation of environmental awareness in students of higher education institutions involves the acquisition of environmental knowledge, mastering the skills of environmentally responsible behaviours, and developing environmental culture through the implementation of active learning methods (Koval and Volokhata, 2022; Tomchuk and Tomchuk, 2022). The formation of students' environmental outlook should contribute to acquiring motivations and guidelines for interaction with the natural environment, increasing environmental literacy, progressive development of environmental thinking and active environmental protection, and forming sustainable environmental beliefs and worldviews.

It is essential to form environmental awareness among the younger generation during a full-scale war. Ukrainians understand the importance of environmental issues during the war: none of the proposed environmental problems received less than 26% support in a sociological survey (Figure 1). Integrating environmental competence becomes a critical priority for optimizing educational strategies in this context.

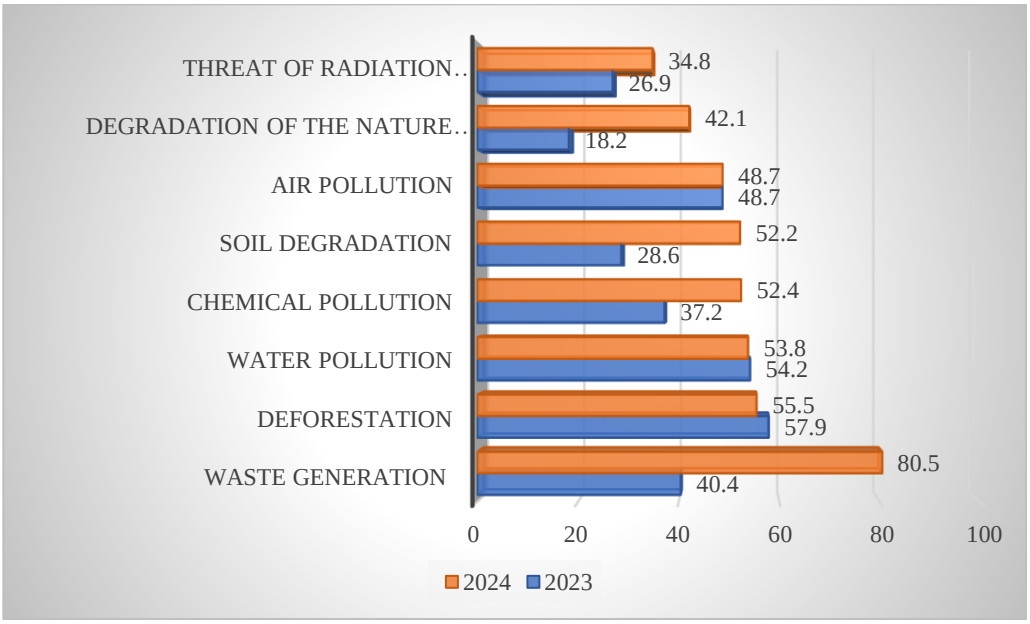

Figure 1: Key Environmental Issues in Ukrainian Public Perception, %
Source: DiXi Group (2024)

It should be noted that the formation of students' environmental outlook in the context of developing a modern integrated learning environment of higher education has specific features. In particular, this process is characterized by the preventive nature of knowledge, which involves forecasting and modelling environmental impacts to prevent destructive effects. In the mind of a future specialist, there should be a constant assessment of potential environmental consequences (Kalenskyi, Herliand and Nahaiev, 2022; Yakuba, 2022). In addition, the modern requirements of integrated education provide for the multi-functionality of a modern specialist, who is not only a narrow specialist in a particular field

but a competent personality with a systematic vision of environmental problems and the variability of their avoidance in his or her practical activities, able to make competent decisions to prevent environmental damage (Dillon and Herman, 2023). To successfully form an ecological outlook, the higher education system today should focus on solving the main tasks: forming a system of relevant ecological ideas, forming a subjective attitude to the natural environment, forming a system of skills and abilities to interact with the environment in the context of targeted technologies and strategies. In general, forming an ecological outlook involves a specific component: ecological self-awareness, ecological worldview, the ideal relationship between humans and nature, and strategic ways to approach it (Koval and Volokhata, 2022).

Active, intensive, and problem-based approaches are traditionally used in teaching methods to increase the environmental awareness of higher education students. At the same time, providing psychological and pedagogical conditions is of particular importance in that the student can take an active personal position and maximize his or her potential as a subject of learning activities. Such pedagogical conditions include:

1) integration of environmental context into the content of professional disciplines to form a system of environmental views, knowledge, beliefs, orientation and prejudices;
2) systematic motivation of higher education students to master fundamental environmental values for further practical application of environmental knowledge and skills in their future professional activities;
3) stimulating active extracurricular, environmentally oriented educational work to gain positive interaction and experience with the environment (Dillon and Herman, 2023; Hadjichambis and Paraskeva-Hadjichambi, 2020).

Stages of implementation of pedagogical conditions for the formation of students' environmental awareness

The outlined pedagogical conditions are components of a single general educational structure that forms students' environmental outlook in higher education institutions. They are implemented in a particular stage: theoretical (orientation), practical (mastering), and independent work (transformation).

The first stage is theoretical (orientation) pedagogical activity, which aims to create conditions for the effective formation of students' environmental outlook and positive orientation towards environmentally oriented professional activities in the future (Khryk, Povlin and Mozul, 2023; Tkachuk and Kravchenko, 2024). In particular, students can be asked to create a chip to position the connection between ecology and the profession and choose the correct terminology. The role of the teacher is, in this case, to assess the level of sufficiency of the use of appropriate methods: creativity, critical thinking, analysis, cognition, identification, and modelling, as well as the student's ability to choose the best options for behaviour, to isolate the essential from the global, to determine the strategy and tactics of behavioural response (Iakuba, 2022; Kalenskyi, Herliand and Nahaiev, 2022). At this stage, it is advisable to actively use a rating system to assess higher education students' knowledge level, which motivates and encourages them to do further research.

The second stage is *a practical (mastering)* phase, emphasizing the application of higher education students' environmental ideals, positions, and values. During this stage, students t-test the acquired knowledge, skills and abilities in a simulated professional environment. To this end, the innovative pedagogical strategy involves using such methods as a dialogue between students and teachers, problem-solving, microteaching, business and simulation games, and other active teaching and learning methods. These methods engage students in hands-on experiences, fostering a deeper understanding of environmental concepts in real-world contexts. It is worth noting that the formation of students' environmental outlook in the second stage is based on the synergy of environmental theoretical knowledge and practical experience. Creating a microclimate of creativity is particularly influential among the pedagogical technologies of the innovation strategy. For this purpose, the formats of a seminar or training as a group discussion and comprehension of the material in an environmentally oriented context are optimally suited (Hadjichambis and Paraskeva-Hadjichambi, 2020; Uralovich *et al.*, 2023).

Finally, the third stage of the pedagogical strategy for forming environmental awareness of students of higher educational institutions is *independent work (transformation)*. In this concept, it is appropriate to perform a problem task, which is carried out in a specific algorithmic sequence: first, students independently summarize theoretical and scientific materials and research results during seminars and practical classes; identify the vector, content and volume of the workload; introduce a unique course that synergizes environmental determinants and professional context; and then, independent work (transformation), which aims to develop an individual's self-development of an environmental outlook (Khryk, Povlin and Mozul, 2023; Tkachuk and Kravchenko, 2024). It is worth noting that to influence the formation of environmental awareness actively, an innovative pedagogical strategy involves the implementation of learning activities that allow students not only to receive ready-made information but also to stimulate them to expand and deepen their knowledge, to search for original solutions creatively, and to think critically and prognostically. Students mastering professional disciplines should further develop their acquired knowledge and skills.

Scientific novelty and recommendations for optimisation

Given the limitations of traditional pedagogical tools, it is appropriate to integrate elements of innovative solutions regarding teaching methodology, particularly in the context of interactivity, immersive technologies, and personalisation of learning. Based on current innovative pedagogical approaches highlighted in several publications (Bizami, Tasir and Kew, 2023; Bovill, 2020; Iakuba, 2022; Pihkala, 2020), the following practical solutions have been developed to enhance the effectiveness of environmental education in higher education:

1) Audiovisual method: with its help, students' perception of the semantic value of ecologically oriented educational material, which is implemented with the help of visual non-verbal clarity, in particular, filmstrips, motion pictures, videos, podcasts and other content, is ensured;
2) The case method: by using real-world cases, this method provides the accumulation and organisation of educational and practical experience by allowing the integration of elements of environmental education into the professional training of any profession;

3) Socio-cultural methodology: the emphasis in educational programs shifts to the content-communicative essence, often on an intuitive level, which is implemented in the direction of forming students' skills of critical ecological thinking and the way of action depending on the situation, deep integration of ecological consciousness into everyday activities;
4) Project methodology that forms practical skills in ecologically oriented professional activity;
5) Thematic studies, the pedagogical essence of which consists in the formation of a discussion to discuss real situations in an artificially created environment;
6) Problem-research method that motivates students to cognitive activity, self-education, and creative thinking, forming students' interest in the process and result of education;
7) Immersive technologies: integration of elements of virtual and mixed reality for visualisation of educational material;
8) Reproductive methods that ensure a more accurate and faster flow of the cognitive component of the educational process and easier identification of typical errors, which is considered particularly effective in the case of informative and complex content of the educational process;
9) Practice-oriented training, which promotes the maximum interaction of students with the environment and actively stimulates them to apply theoretical skills in real situations;
10) Embodied learning gives the educational process a playful character, motivating students' interest and increasing the effectiveness of learning. It also creates a comfortable atmosphere in the educational environment.

Analysis and discussion in the thematic scientific field

Despite numerous interdisciplinary studies, the understanding of the formation of an individual's ecological worldview — its definition, essence, components, and methods of development—remains fragmented. In particular, philosophical studies (Ardoin, Bowers and Gaillard, 2020; González-Salamanca, Agudelo and Salinas, 2020) regard the issue of the ecological worldview of the individual synergizes with environmental education in the format of the worldview basis of sustainable development of society. On the conviction of Ardoin, Bowers and Gaillard (2020), environmental education fosters connections between effective research and field practices, creating synergistic spaces where stakeholders collaborate to address dynamic environmental challenges over time. At the same time, González-Salamanca, Agudelo and Salinas (2020) study the principles of integrating environmental skills into the curriculum, find possible ways of teaching and evaluating them, and explore how this process can be personalized with the help of information and communication technologies.

Kukulska-Hulme *et al.* (2024) highlight the reorientation of the traditional anthropocentric worldview to an ecocentric worldview as one of the main conditions for the effectiveness of ecological education of youths. According to scientists, it is primarily about forming an ecologically oriented worldview as a central, motivational and meaningful component of environmental consciousness and individual behaviour.

The report gives context to the pedagogy of effective climate change and integrating environmental topics into educational programs. For example, outdoor activities and sustainable development projects that foster environmental responsibility and awareness have proven effective. At the same time, a method of creating student advocacy and expanding the boundaries of its powers is proposed, which encourages students to deal with local environmental problems, propose solutions and advocate for changes in local environmental policy. Reflective practices, such as journals and multimedia projects, allow educators to cultivate environmentally conscious professionals ready to tackle climate change and other environmental issues, promoting responsibility and sustainability for future actions.

In several studies, such as Alam (2022) and Pocol *et al.* (2022), the problem of the ecological consciousness of the individual is considered in the context of the relationship with the social promotion of ecological thinking. A systematic review by Alam (2022) provides a better understanding of how the concepts and mechanisms of transformative learning theory are implemented in sustainable development research. At the same time, Pocol *et al.* (2022) argue that the co-creation of knowledge strengthens the link between university and business, where modern universities seek to adapt their curricula to the demands of the labour market. Environmental consciousness should include emotional, cognitive, and behavioural elements and be formed from personal perceptions, knowledge, emotions, and judgments about a person's willingness to influence the environment. The research question is also thoroughly developed in the field of environmental psychology in a foreign scientific field, particularly within the ecology of creativity vector (Glavič, 2020), which focuses on the interaction of psychological and situational factors in the development of individual abilities. The subject of ecological-psychological-pedagogical research by several authors (Bizami, Tasir and Kew, 2023; Bovill, 2020; Pihkala, 2020) highlighted ecological consciousness or the worldview component of consciousness. In addition, modern scientists are investigating the methods of forming ecological knowledge and practical skills of ethical interaction of the individual with the environment, particularly during specially organized ecologically oriented activities.

The vector of the development of the environmental competence of the individual was studied by the authors (Maurer and Bogner, 2020; Oliveira and De Souza, 2022), who positioned it in the context of awareness of the integrity of the natural environment, its aesthetic and socio-economic significance. In particular, Oliveira and De Souza (2022) presented the development and experimental approbation of a method of digital transformation in education, aimed at achieving the goals of Education 4.0, to increase students' understanding of climate change through the development of projects to mitigate environmental problems caused by anthropogenic activities. Some researchers (Zidny, Sjöström and Eilks, 2020) position the process of forming future specialists' ecological consciousness as mastering the system of ecological values in a practice-oriented educational environment. The system's main component is values and beliefs regarding society's responsibility for preserving natural potential.

Conclusion

The study found that the concept of forming environmental awareness among students of higher education institutions is rapidly developing from innovation to the practical range of tools used. Its implementation in the paradigm of educational policy is positioned as a promising necessity and a factor in intensifying the quality of education in the higher education environment. The environmental awareness of future specialists in various vectors of activity should provide for a harmonious combination of human activity goals with environmental trends complementary to the general principles of sustainable development of society.

The structure of the environmental awareness system includes emotional, cognitive, and behavioural elements. Environmental awareness is measurable at different levels and is formed from personal perceptions, knowledge, emotions, and judgements about a person's readiness to influence the environment. Ecological self-awareness, ecological worldview, and an understanding of strategic ways of approaching the ideal of the relationship between nature and society form an innovative pedagogical strategy for shaping the ecological consciousness of higher education students through active, intensive and problem-based learning approaches. In addition, the formation of students' ecological outlook in higher education institutions is implemented in a particular stage, which includes theoretical (orientation), practical (mastering) and independent work (transformation). To actively influence the formation of environmental awareness, an innovative pedagogical strategy should include the implementation of learning activities that allow students not only to receive ready-made information but also stimulate them to expand and deepen their own, to search for original solutions creatively, and to think critically and prognostically. Students mastering professional disciplines should further develop their acquired knowledge and skills.

Among the optimal practical pedagogical tools and approaches for the formation of environmental competence of students in an innovative format, it is worth offering the audiovisual method, case method, socio-cultural method, project methodology, case studies, problem-research method, immersive technologies, reproductive methods, practice-oriented learning, embodied learning. The prospect of further development of scientific research is to study the potential of innovative pedagogical technologies and digitalization of the educational process to form the environmental awareness of students of higher education institutions.

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Authors' Declarations and Essential Ethical Compliances

Authors' Contributions (in accordance with ICMJE criteria for authorship)

Contribution	*Author 1*	*Author 2*	*Author 3*	*Author 4*	*Author 5*	*Author 6*
Conceived and designed the research or analysis	Yes	No	Yes	No	Yes	No
Collected the data	No	No	Yes	No	No	No
Contributed to data analysis & interpretation	Yes	Yes	No	No	Yes	Yes
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Critical revision of the article/paper	No	Yes	Yes	Yes	No	No
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