

INNOVATIONS IN PROFESSIONAL TRAINING OF ENVIRONMENTAL EDUCATION SPECIALISTS

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Abstract

This article analyzes the process of updating the theoretical foundations for designing environmental education at various stages. Greening education is viewed as a system-forming element of environmental education, which will enable the full use of environmental, pedagogical, and psychological principles and patterns of developing environmental competence and environmental culture in modern schoolchildren, consistent with sustainable development goals.

Keywords: Innovation, method, technology, training, principles, norms, and foundations of innovation.

Introduction

In the age of scientific and technological progress, human impact on the natural environment has grown disproportionately. The consequences of ill-considered, hasty technological decisions pose the question of what nature will be like for future generations. In this regard, environmental education is becoming increasingly relevant. In a non-technical form, "environmental education" was already practiced in ancient civilizations of the West and East. The environmental component was part of the overall worldview of the founders of philosophy: Confucius, Lao Tzu, Democritus, and Aristotle. In the modern era, non-technical environmental education accompanied the emergence and development of environmental science. Pestalozzi, Montaigne, and Rousseau argued that the goal of education is to develop empathy for others and a love of nature. In the 21st century, the need for universal education in environmental protection is linked to the fact that overcoming the environmental crisis by technical means alone has proven problematic. It is impossible to maintain a state of equilibrium if society does not transform itself, its morality, and mentality, but relies solely on technical knowledge and solutions. Humanity faces a long and arduous process of co-transforming nature and society, and the formation of a civilization that meets new human needs, aligned with the new realities of the natural world, will be crucial in this process. Environmental education is an integral and prioritized part of the entire educational system, imparting a new quality to it and fostering a different attitude not only toward nature but also toward society and humanity (Eco-humanism).



Methodology:

Greening education means developing a new worldview and a new approach to action based on the development of noospheric, humanities, and environmental values. Innovations in the professional training of environmental education specialists and the essence of innovative methods lie in organizing the learning process in the form of dialogue, which helps students learn to express their thoughts, analyze problematic situations, and find effective solutions. Such methods improve the level of education, develop students, and develop skills and abilities that will be used in their future professional activities¹. Thus, lectures are conducted in the form of a lecture-conversation with elements of discussion, exchange of opinions, and brainstorming, which allows students to engage in conversation, collective problem-solving, and exchange of opinions. The method of educational discussions is effective when studying complex and extensive material. Students can be divided into small subgroups (5-7 people) and presented with specific economic situations for consideration. The advantages of the educational discussion method include not only the consolidation of material, the use of students' own experience, and the ability to transfer knowledge from one area to another, but also the development of communication skills, team spirit, and independent thinking. The basic concept of the following method is the case. A case is a description of a complex situation with accompanying facts, the understanding of which requires dividing it into separate, relatively independent parts, followed by an analysis of each part and combining the conclusions to obtain a holistic picture. The case study method allows for the solution of specific tasks: identifying a set of problems in a specific situation; determining its structure, the factors that caused this situation, and modeling it; developing a system of assessments; predicting the future state, and developing recommendations and an action plan to resolve the situation. A young person's environmental culture presupposes certain knowledge and beliefs, a willingness to engage in activity, and practical actions consistent with the requirements of a careful attitude towards the natural environment. Environmental culture becomes an important indicator of the social activity and consciousness of a young person. The formation and development of environmental culture is a complex process. It is ensured by the coordinated influence of politics, law, science, industry, art, and education. Mastering ecological culture leads to a change in the individual needs of the student, because by "thinking ecologically," a person will also act ecologically.

Literary review:

Innovative technologies in education allow us to regulate learning and direct it in the right direction. People have always been afraid of everything unknown and new, and they have a negative attitude towards any change. Stereotypes that exist in the public consciousness and affect the usual way of life lead to painful phenomena and hinder the renewal of all types of education. The reason for people's reluctance to embrace innovation in modern education lies in the blocking of vital needs for comfort, security, and self-affirmation. Innovative behavior does not imply adaptation; it implies the development of one's own individuality and self-development. Teachers must understand that innovative education is a way to cultivate a harmonious personality. "Ready-made templates" are not suitable for this; it is important to

¹ Zhumaboev B., Sulonov Sh. Sayimova D. "Greening of University Education" XII International Scientific and Methodological Conference Innovative Technologies in the Educational Process.



constantly improve one's own intellectual level. A teacher who has freed themselves from "complexes" and psychological barriers is ready to become a full-fledged participant in innovation². Teachers must understand that innovative education is a way to cultivate a harmonious personality. Ready-made templates are not suitable for this; it is important to constantly improve their own intellectual level. The greening of the education system, as N. M. Mamedov notes, is characterized by the trends of environmental ideas, concepts, and principles penetrating into other disciplines, as well as the training of environmentally literate specialists in a wide range of fields. It is precisely today that the greening of the entire education and upbringing system is required.³ The ultimate goal of this transformation is to infuse modern environmental ideas and values into all areas of society. Information on environmental issues is introduced into core curricula, taking into account the specifics of each subject. This can be accomplished through theoretical and practical lessons, at the end of a topic (section), and at the end of the entire course. Environmental content should be clearly defined within each section. It is also important to integrate the environmental, nature conservation, and educational aspects of the material being studied, and the methodology for presenting the material should be carefully considered. The specific nature of environmental education, in accordance with this concept, manifests itself in structuring the entire educational process from the perspective of developing a specific system of values and behavioral skills in students, enabling them to make individual and collective decisions of a local and global nature to improve the quality of life without threatening the future of the planet. Important considerations are given to organizing classroom, school, and group life so that everyday actions correspond to a model of environmentally sound behavior. The best option for such education is its implementation not as a separate course, but as a 335-step approach to the design and implementation of this method. Innovations are characteristic of any professional activity and therefore naturally become the subject⁴ of study, analysis, and implementation. Innovations do not arise spontaneously; they are the result of scientific research and the advanced pedagogical experience of individual teachers and entire teams. S. I. Ozhegov's Dictionary provides the following definition of "new": new—created or made for the first time, appearing or arising recently, replacing something previous, newly discovered, relating to the recent past or the present, insufficiently familiar, little known. It should be noted that the definition of the term makes no mention of progressiveness or the effectiveness of the new.

As applied to the pedagogical process, innovation means the introduction of something new into the goals, content, methods, and forms of teaching and education, and the organization of joint activities between teacher and student. Pedagogical innovation is a new approach to teaching, a change in the content and technology of teaching and education, aimed at increasing their effectiveness. The introduction of ICT into the educational process implies the integration of various subject areas with computer science, which leads to the computerization of students' consciousness and their understanding of the processes of computerization in modern society (in

² [Gabbasova, L. Z. Innovative Technologies in the Educational Process / L. Z. Gabbasova. Text: direct // Innovative Pedagogical Technologies: Proc. of the V International Scientific Conf. (Kazan, October 2016). Kazan: Buk, 2016. pp. 61-63. URL: <https://moluch.ru/conf/ped/archive/207/11108/> (date of access: March 25, 2021).]

³ Mamedov N. M. Theoretical Foundations of Environmental Education // Environmental Education and Sustainable Development

⁴ Ozhegov S. I., Shvedova N. Yu. Explanatory Dictionary of the Russian Language. Az Publishing House, 1992.



its professional aspect). Recognizing the emerging trend of the computerization of schools is essential: from students mastering basic information about computer science to the use of computer software in studying general education subjects, and then to the infusion of computer science elements into the structure and content of education, and the implementation of a fundamental restructuring of the entire educational and upbringing process based on the use of information technology. As a result, new information technologies are emerging in the school methodological system, and school graduates are prepared to master these technologies in their future careers.

This approach is being implemented through the inclusion of new subjects focused on computer science and ICT in the curriculum. Experience with ICT in schools has shown that: a) an open-school information environment, including various forms of distance learning, significantly increases student motivation to study subject-specific disciplines, especially through the use of project-based learning; b) the use of computerized learning is attractive to students because it relieves the psychological stress of school interactions by shifting from subjective "teacher-student" relationships to more objective "student-computer-teacher" relationships. This increases student productivity, the proportion of creative work increases, opportunities for additional education in the subject within the school are expanded, and in the future, teachers are encouraged to make a purposeful choice of university or prestigious job; c) the use of computerized teaching is attractive to teachers because it increases their productivity and enhances their overall information literacy.⁵

Analysis:

Today's environmental situation is shaping new standards of cultural awareness and education, which should serve as guidelines for developing environmental competence and an environmental culture in modern schoolchildren, in line with sustainable development goals.

Today, many teachers are using modern technologies and innovative teaching methods in schools to achieve effective learning. These methods include active and interactive learning approaches. Active learning methods encourage students to engage proactively with the teacher and those studying alongside them. During lessons, these methods utilize textbooks, notebooks, and computers—in other words, individual learning tools. Interactive methods facilitate effective learning through collaboration with other students. These methods are part of collaborative learning, where a group of students works on the material being studied, with each student taking responsibility for their work.

Conclusions:

Innovations in the professional training of environmental education specialists include the integration of digital and interactive technologies, practice-oriented approaches, and the development of competencies in sustainable development. These methods aim to improve the effectiveness of training and equip future ecologists with the skills necessary to address contemporary environmental challenges.

⁵ Selevko, G. Ya. Mastering the Technology of Self-Education of Schoolchildren: How to Become an Experimental Platform / G. Ya. Selevko // Public Education. - 2015. - No. 1. - p. 181. Zagvyazinsky, V. I. Innovative Processes in Education and Pedagogical Science / V. I. Zagvyazinsky // Innovative Processes in Education: Collection of Scientific Papers. - Tyumen, 2013. - p. 8.



Key innovation areas:

Digital technologies and online learning: Using digital systems for environmental monitoring, machine learning for data analysis, and video analytics to predict emergencies (e.g., forest fires). Online courses and platforms increase accessibility, making education more interactive and effective.

Interactive teaching methods: The active use of project-based activities, business games, case studies, and interactive lectures fosters critical thinking and independent research skills.

Practice-oriented and competency-based approaches: The focus is on developing specific professional competencies through solving real-world industrial and environmental problems. This includes working with professional software (e.g., programs for calculating emission standards) and participating in environmental design.

Interdisciplinary approach: Integrating environmental education into the training of specialists in various fields (e.g., engineers, geologists, educators) to ensure a comprehensive approach to solving environmental problems.

Education for sustainable development: Integrating principles of sustainable development and the circular economy into the curriculum to prepare specialists capable of working in the context of modern global challenges.

Use of VR/AR and simulations: The use of virtual and augmented reality technologies allows for the modeling of various environmental situations and the conduct of virtual tours of industrial facilities or protected natural areas without physical presence, which improves the safety and effectiveness of training.

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