



PEDAGOGICAL CONDITIONS FOR THE DEVELOPMENT OF ECOLOGICAL CULTURE OF FUTURE SPECIALISTS OF MARITIME AND RIVER TRANSPORT IN COLLEGES

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Abstract.

Relevance: solving the problem of environmental pollution is possible through a number of measures, among which an important place is the formation of environmental culture of future professionals in maritime and river transport.

Aim: to substantiate pedagogical conditions of development of ecological culture of future specialists of sea and river transport in colleges.

Methods: theoretical – analysis, synthesis, deduction, comparison, generalization (for the analysis of scientific sources on the research problem); empirical - oral and written survey, the method of independent expert assessments (to determine the pedagogical conditions for the development of environmental culture of future specialists in maritime and river transport in colleges).

Results: analysis of legislative documents in the field of environmental protection; attention is focused on the problem of environmental pollution due to the operation of sea and river transport; the importance of ecological culture of future specialists of sea and river transport in the system of ecological education is clarified; the pedagogical conditions of development of ecological culture of future specialists of sea and river transport in colleges are substantiated.

Conclusions: it is substantiated that the effectiveness of the development of environmental culture of future specialists in maritime and river transport in colleges will increase due to the formation of positive motivation to acquire environmental knowledge; holistic greening of the content of vocational training; application of innovative technologies, in particular cooperative learning; providing environmentally-oriented educational and methodological support for the training of future specialists in maritime and river transport in colleges.

Keywords: *professional education, ecological culture; sea and river transport, pedagogical conditions, professional training, innovations.*

Introduction. Environmental issues are a priority in the public policy of each country. Now, the level of environmental pollution is constantly growing, natural disasters caused by climate change irreparable harm on human life and society as a whole. Some United Nations reports developed by the Intergovernmental Panel on Biodiversity and Ecosystems (IP-BES) have highlighted the impact of human activities on the environment. Considering the topic of our study, we will focus on the following: as of 2014,

only 3% of the world's oceans are free from human influence; over the last 300 years, the number of wetlands has decreased by 87%; compared to 1980, the level of plastic pollution has increased 10 times; yearly 300-400 million tons of heavy metals, solvents, toxic materials, etc. are dumped into the water bodies of the planet (BBC News, 2019).

These and other facts indicate the need for the formation and development of ecological culture of specialists in almost all sectors of the economy, because

without a conscious attitude to nature and the rational use of natural resources it is impossible to build a civilized society. An important place among the diversity of natural resources is occupied by water resources. As you know, the World Ocean occupies 2/3 of the Earth's surface, in Ukraine water bodies occupy 4% of its territory (Ukraine National Library named after Vernadsky V. I., 2021). This means that the need for highly qualified specialists in maritime and river transport is unquestionable, and the development of their ecological culture is one of the urgent pedagogical problems.

Sources. In Ukraine, the legal framework in the field of nature management and environmental protection is regulated by a number of legislative documents. The dominant role among them is played by the Law of Ukraine "On Environmental Protection" (1991), which defines the "legal, economic and social foundations of the organization of environmental protection in the interests of present and future generations" and ensures the implementation of ecological policy in Ukraine aimed at preserving a safe environment for the existence of animate and inanimate nature, protection of life and health from the negative impact of environmental pollution, achieving harmonious interaction of society and nature, protection, rational use and reproduction of natural resources (Verkhovna Rada of Ukraine. Legislation of Ukraine, 1991). Important documents on nature management and environmental protection are also: the Laws of Ukraine «On atmospheric air protection» (1992), «On basic principles (strategy) of state environmental policy of Ukraine until 2030» (2019), «On strategic environmental assessment» (2018), Water Code of Ukraine (1995), etc.

In addition, the problem of rational nature management, formation and development of ecological culture is the subject of research by many scientists, namely: M. Bilyanskaya, S. Boychenko, N. Velychko, L. Lukyanova, V. Lyubarets, O. Mudraka, V. Onoprienko, O. Osipenko, T. Sayenko, A. Slepchenko, Y. Shapran and others. It should be noted that the works of domestic researchers highlighted some theoretical and applied aspects of environmental education of future water transport specialists, namely: environmental education in maritime higher education institutions (Bayramova, 2017), environmental education of cadets of maritime educational institutions (Dulya, 2016), environmental competence of future water transport specialists (Gurenkova, 2011), which indicates the need for further research.

The article aims is to substantiate the pedagogical conditions for the development of environmental

culture of future specialists in maritime and river transport in colleges.

Methods. To achieve this goal we used theoretical and empirical research methods, namely: theoretical – analysis, synthesis, deduction, comparison, generalization – to analyze scientific sources on the research problem; empirical – surveys (oral and written), as well as the method of independent expert assessments – to determine the pedagogical conditions for the development of environmental culture of future specialists in maritime and river transport in colleges.

Results and discussion. The analysis of scientific sources showed that in modern science there is currently no single approach to the definition of «pedagogical conditions». On the one hand, according to scholars, these are «necessary circumstances, features of reality that enable the realization, creation, formation of something or contribute to something» (Great explanatory dictionary of the modern ukrainian language, 2001, p. 1295), on the other hand, - a set of external and internal environmental factors that are likely to affect the development of a particular mental phenomenon (Maslak, 2010). Considering the research of E. Khrykov (2013, p. 13), who notes that «conditions are created by teachers, and factors exist objectively, regardless of activity», we will adhere to the position that pedagogical conditions are circumstances that determine a certain direction in the development of the pedagogical process.

To determine the pedagogical conditions for the development of the environmental culture of future specialists in maritime and river transport in colleges, the method of independent expert assessments was used, the essence of which is indirect observation and questioning with the involvement of competent specialists to assess the phenomena (Sysoieva and Krystopchuk, 2013), in our case, lecturers of water transport colleges, researchers of the Institute of VET of the NAES of Ukraine, as well as stakeholders who interested in high-quality training of maritime and river transport specialists. The experts were asked to assess the significance of the specified pedagogical conditions by their rating. Based on the results of an expert assessment and taking into account the results of the analysis of scientific sources on the definition of the concept of «pedagogical conditions», we have determined the following pedagogical conditions for the development of the ecological culture of future specialists in maritime and river transport in colleges: the formation of positive motivation to acquire ecological knowledge; holistic greening of the content of vocational training; appli-

cation of innovative technologies, in particular, cooperative learning; providing ecologically-oriented educational and methodological support for the professional training of future specialists in maritime and river transport in colleges.

As you can see, the first pedagogical condition is *the formation of positive motivation to acquire ecological knowledge*. It is well known that motivation plays a crucial role in any activity. A number of scientists consider motivation as «a set of psychological processes that guide human behavior» (Stoliarenko, 2012, pp. 106–107). There are many criteria by which motivation methods are classified. Among all types of motivation, in our opinion, it is worth distinguishing between internal and external motivation, positive and negative. If we talk about the development of ecological culture of future maritime and river transport specialists, this process is holistic, it includes student learning activities, extracurricular activities and personal life (being at home, in the dormitory, with friends, parents, etc.).

Related to the concept of "motivation" is "motive". Psychologists say that motives are primarily related to needs, in particular, needs are the lack of something, motivation - awareness of needs, motives - the reasoning for a certain decision. The hierarchical system of human needs is reflected in the pyramid of A. Maslow (1943), the primary levels of which are the physiological level and the level of security. It should be noted that the awareness of careful attitude to natural resources, environmental protection is primarily associated with these levels. After all, the consequences of human activities, including professional, affect the level of satisfaction of physiological needs, and determine a safe life of present and future generations.

As noted above, motivation is divided into internal and external. External motivation is related to external circumstances, incentives, internal – comes from the person himself. For the development of the ecological culture of future specialists in maritime and river transport in colleges, both types of motivation are effective and at the same time interconnected. Of course, college teachers have a significant impact on the development of students' environmental culture. The level of awareness the responsibility of future sea and river transport specialists for their own future and the future of next generations depends on the correct organization the process of formation and further development of ecological culture. Thus, we can state that external motives have a direct impact on the formation of internal one.

We have already noted that the development of ecological culture of students of the marine and river

fleet colleges largely occurs during the classes. The educational lesson has its goal, which is triune and at the same time contains the following components: educational, developmental and upbringing. As practice shows, each of these components, in accordance with the theme of the lesson, can and should be aimed at developing the environmental culture of students.

The main principle of modern pedagogy is its humanism. In this aspect, it should be noted that the acquisition of environmental knowledge should take place only under the influence of call motives. However, the awareness of the catastrophic consequences of neglect of the environment, the technogenic impact on the ecosystem should also be one of the motives for the development of the ecological culture of future specialists in maritime and river transport.

The second pedagogical condition is *the holistic greening of the content of vocational training*. The Concept of Secondary School Reform identifies 10 key competencies of the New Ukrainian school, among which are ecological literacy and a healthy life, including «the ability to reasonably and rationally use natural resources within the framework of sustainable development, awareness of the role of the environment for human life and health» (Conceptual principles of Secondary School Reform, 2016, p.12). The educational process, as we know, to combine the process of learning, education and development. These areas are reflected in the purpose of each lesson. Today, the philosophy of education is based on the formation of value relations and judgments, education of responsibility for the welfare of the country and all mankind. In this sense, it is important to implement the cross-cutting content line «Ecological safety and sustainable development», which assumes «the formation of students' social activity, responsibility and environmental consciousness, as a result of which they will carefully and responsibly treat the environment, recognizing the importance of sustainable development for the environmental conservation and development of society» (Ministry of education and science. Cross-cutting content lines, 2018). Official documents state that cross-cutting lines are cross-curricular, socially significant topics aimed at the formation and development of social and personal values. The implementation of such lines should be a priority of every employee of the educational institution. Ensuring the implementation of the content line «Ecological safety and sustainable development» can be done by solving problems of environmental content, selection of texts of environmental orientation in the study

of philological disciplines, thematic extracurricular activities etc.

One of the general competencies defined by the standard of higher education in specialty N 271 «River and sea transport» for the first (bachelor's) level of higher education – «the ability to preserve and increase moral, cultural, scientific values and achievements of society based on an understanding of the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, techniques and technologies, to use different types and forms of physical activity for active recreation and maintaining healthy lifestyle» (2018, p.8). The natural environment, water resources, the atmosphere are values that require enrichment and multiplication. Therefore, the educational process of future specialists in maritime and river transport in colleges should be directed towards the greening of the content of vocational training.

Regarding to use of *innovative technologies*, in particular, *the cooperative learning*, as the third pedagogical condition, it should be noted that the implementation of innovative technologies is an effective factor in improving the quality of the educational process, as well as one of the motives for the formation of relevant competencies. Innovations in education are related with novelty. They replaced traditional technologies, which are based on the reproduction of acquired knowledge and methods of activity according to the algorithm provided by the teacher. Experience has shown that such teaching method is not effective, and it is difficult for graduates to apply the acquired knowledge and skills in practical (life and professional) situations. It is worth noting that the competence approach in education, on which modern learning is based, is already an innovation.

An innovative technology that has found wide application in the modern educational process is cooperative learning, which is understood as learning in small groups with simultaneous research, discussion of a specific problem, search for ways to solve it with contemporaneously argumentation of decision-making. American researchers D. Johnson and R. Johnson (1999) identify 5 criteria for cooperative learning. These are positive dependence, direct support, responsibility, social competence, own assessment. It is not enough to form ecological consciousness on a personal level, it is important to consider the problems of ecology through the prism of interpersonal relations with the possibility of joint discussion, coverage of all aspects of this topic. Therefore, the use of innovative technologies, in particular

cooperative learning, is defined as one of the pedagogical conditions for the development of ecological culture of future specialists in maritime and river transport in colleges.

The next pedagogical condition is *the provision of ecologically-oriented educational and methodical maintenance for the preparation of future specialists in maritime and river transport in colleges*. Educational and methodical maintenance for the professional training of future specialists in maritime and river transport combines educational and methodical maintenance for all participants in the educational process and is aimed at creating conditions for the implementation of the requirements of state standards of higher education for the successful training of water transport specialists through the provision of education applicants with a complete package of educational and methodical materials of the appropriate directions. Unlike students who are the subject of educational support, methodical support is primarily aimed at pedagogical staff of the educational institution. The quality of the educational process largely depends on the dynamics of professional development of teachers. The teacher's professional development should primarily be aimed at constant updating of knowledge and skills of pedagogical activity (development not only of ecological culture, but also a legal (Radkevych, 2020), digital (Bazeliuk, 2020; Yershov, 2019), self-educational (Rezvan and Kyrianova, 2020) etc. An important role in this process is played by the methodological maintenance provided by the methodologist of the educational institution and includes collective and individual forms of work with teachers (Kovalchuk and Maslich, 2020, p. 31). Ecologically-oriented educational and methodical maintenance involves the creation and further use in the educational process of educational and methodical materials of ecological orientation. It should be noted here that this pedagogical condition - the provision of ecologically-oriented educational and methodical maintenance involves the creation and further use in the educational process of educational and for the professional training of future specialists in maritime and river transport in colleges - is closely related to the second condition – the holistic ecologization of the content of vocational education. It is impossible to ensure the greening of the vocational training content without the development of appropriate educational and methodological providing, and, consequently, proper ecologically-oriented educational and methodical maintenance.

Conclusions. Ecological education is an important component of professional training of specialists in any field. The development of ecological culture plays a special role in the training of future specialists in maritime and river transport. The effectiveness of the development of ecological culture of future specialists in maritime and river transport in colleges will depend on the implementation of the following pedagogical conditions: the formation of positive motivation to acquire ecological knowledge; holistic greening of the content of vocational education; application of innovative technologies, in particular cooperative learning;

providing ecologically-oriented educational and methodical maintenance for the training of future maritime and river transport specialists in colleges. However, the result of the implementation of these pedagogical conditions - the development of ecological culture of future maritime and river transport specialists in colleges - depends on the qualitative interaction of all participants in the educational process.

We see prospects for further research in the development, testing and implementation of methods the development an ecological culture of future maritime and river transport specialists in colleges.

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ПЕДАГОГІЧНІ УМОВИ РОЗВИТКУ ЕКОЛОГІЧНОЇ КУЛЬТУРИ МАЙБУТНІХ ФАХІВЦІВ МОРСЬКОГО І РІЧКОВОГО ТРАНСПОРТУ У КОЛЕДЖАХ

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Реферат.

Актуальність: вирішення проблеми забруднення навколишнього середовища можливе через проведення низки заходів, серед яких важливе місце займає формування екологічної культури майбутніх фахівців морського і річкового транспорту.

Мета: обґрунтувати педагогічні умови розвитку екологічної культури майбутніх фахівців морського і річкового транспорту у коледжах.

Методи: теоретичні – аналіз, синтез, дедукція, порівняння, узагальнення (для аналізу наукових джерел із проблеми дослідження); емпіричні – усне та письмове опитування, метод незалежних експертних оцінок (для визначення педагогічних умов розвитку екологічної культури майбутніх фахівців морського і річкового транспорту у коледжах).

Результати: здійснено аналіз законодавчих документів у сфері охорони навколишнього середовища; акцентовано увагу на проблемі забруднення довкілля внаслідок експлуатації морського та річкового транспорту; з'ясовано значення екологічної культури майбутніх фахівців морського та річкового транспорту в системі екологічної освіти; обґрунтовано педагогічні умови розвитку екологічної культури майбутніх фахівців морського та річкового транспорту у коледжах.

Висновки: обґрунтовано, що ефективність розвитку екологічної культури майбутніх фахівців морського і річкового транспорту у коледжах буде зростати завдяки формуванню позитивної мотивації до набуття екологічних знань; цілісної екологізації змісту професійного навчання; застосуванню інноваційних технологій, зокрема кооперативного навчання; забезпеченню еколого-орієнтованого навчально-методичного супроводу професійної підготовки майбутніх фахівців морського і річкового транспорту у коледжах.

Ключові слова: професійна освіта, екологічна культура; морський і річковий транспорт, педагогічні умови, професійне навчання, інновації.

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