



**SCIENTIFIC BASIS OF DEVELOPING INNOVATIVE-ECOLOGICAL
COMPETENCE OF STUDENTS IN THE EDUCATIONAL
ENVIRONMENT OF SUSTAINABLE DEVELOPMENT**

SAPAROV KALANDAR ABDULLAYEVICH

Doctor of Biological Sciences,
Faculty of Natural Sciences,
Nizami National Pedagogical University
of Uzbekistan, Professor.

SANAYEVA MUNISA ILAMONOVNA

Teacher of Biological Sciences,
Academic Lyceum of the Tashkent
Pharmaceutical Institute,
Doctor of Philosophy (PhD) in
Pedagogical Sciences.

Annotation. It is also worth noting that the updated Constitution of the Republic of Uzbekistan, a number of laws and by-laws stipulate the necessary legal norms that serve to ensure environmental sustainability. Also, the issues of developing innovative-ecological competence of students in all educational institutions of our republic, including academic lyceums, are becoming relevant. This article is devoted to the scientific foundations of developing innovative-ecological competence of students in academic lyceums, and highlights the relevance of environmental education, important tasks in developing innovative-ecological competence in



students, and the basic qualities of ecological knowledge and innovative-ecological competence.

Keywords: biology education, innovative-ecological competence, environmental education, ecologically clean society, ecological literacy, responsible attitude to the environment, pedagogical approach, continuity between nature and society, pedagogical opportunities.

Introduction. Globalization in the world and the development of innovative and ecological competence of students make it possible to achieve sustainable development of nature, society, culture and human consciousness. The development of innovative and ecological competence of students in biology education in academic lyceums is recognized as an important factor in building an ecologically clean society. In modern programs for the modernization of the education system, the transformation of training sessions into productive teaching also affects biology lessons, and on this basis, the comprehensive development of students is reflected in the “Education for Sustainable Development Strategy” of the European Commission.

At the current stage of social development, the promotion of health among the population, the formation of innovative and ecological competence of young people, through the realization of important potential opportunities of ecological education, is of urgent importance in the scientific and practical solution of environmental problems facing humanity. In our republic, reforms are being implemented to modernize the education system, introduce advanced technologies into educational processes, as well as develop the ecological awareness, level of ecological literacy and innovative-ecological competence of students, and academic lyceums have wide opportunities to ensure the implementation of these tasks in biology education. After



all, our esteemed President, touching upon this issue, noted that “the incredibly rich and diverse culture of the Uzbek people has been formed and flourished for thousands of years in a series of bright historical events, as a result of the unique nature of our country and the inspiring influence of different cultures on each other” [1].

Main part. Research on the issues of ecological education and environmental education programs is covered in the studies of foreign scientists J.B. Zedler [3], W.O. Dwer, B.E. Porter, M.C. Cobern [4].

Also, in foreign countries, scientific hypotheses have been created around ecological culture, ecological competence, scientific research based on a pedagogical approach to the issues of their formation, as well as studies that fully cover the problems of forming ecological competence in educational institutions, especially in Russian scientific circles. In particular, the scientific research works of N.F. Vinokurova [5], S.N. Glazachev [6], G.S. Kamerilova [7], V.V. Nikolina [8], O.N. Ponomaryova [9] are aimed at the formation and development of ecological competence, ecological literacy of students. They further explore the functional aspects of innovative-ecological competence, and emphasize that the concept of "innovative-ecological competence" is associated not only with the need for students to master multifaceted environmental knowledge, to be in constant contact with nature, but also with direct participation in the movement to protect nature, and the vital importance of ecological knowledge is noted.

In the research of A. Zakhlebny [10], the basic rules for determining the content of environmental education were identified, its structure was developed, including cognitive, value, normative, activity components, the foundations of implementing environmental content in modular education were highlighted. I. Zverev noted that



“a responsible attitude to the environment is inextricably linked with the achievement of a high level of general social and spiritual culture of the individual himself, his culture of social relations to nature, society, values, other individuals and himself as a social being” [11]. In the research of L. Pechko [12], the leading place was given to the problems of forming a person’s moral and aesthetic attitude to nature and its impact on the individual. He proposed a new approach to environmental education based on the development of the beauty and expressiveness of natural phenomena, the formation of aesthetic perception, assessment, judgment, taste through the understanding of their value, uniqueness.

Innovative-ecological competence is knowledge about nature, consciousness, perception, literacy, intellectual potential and the ability to apply it in practice, a high level of activity in relation to the environment, a conscious and responsible approach. The basic qualities of ecological knowledge and innovative-ecological competence are:

- 1) Moral and ecological awareness is an important cultural quality of a person, which implies that the process of his emotional cognition of the environment should include the perception, perception, imagination of objects and phenomena in the environment, and the acquisition of practical skills in nature protection based on intelligence and depth;
- 2) Ecological responsibility is manifested in the upbringing of an individual's attitude and responsibility, such an attitude is formed only as a result of the individual's awareness of the consequences of his unknowingly and thoughtlessly negative impact on nature and the desire to eliminate such impact;



3) Ecological volition is the assessment and control of the individual's own and others' actions in the environment, associated with determination, thrift, neatness and cleanliness in the individual.

In the formation of innovative and ecological competence of students, ecological values are of particular importance, including the desire to preserve nature, initiative, consistency, hard work, and conscious activity. For example, one type of ecological value, namely, knowledge of global, regional, and local environmental problems, is closely related to concepts such as land, water, energy problems, rational use of natural resources, preservation of biodiversity, desertification, and air pollution.

Discussion and results. Environmental problems have become one of the most important priority areas of our country's policy, and in recent years, special attention has been paid to environmental protection, conservation of natural resources, rational attitude to natural resources, increasing the innovative and ecological competence of the population, environmental education and upbringing among young people, and environmental enlightenment.

The relevance of environmental education is determined by the need to protect our country's nature, ecosystems, and the environment from instability and degradation, to increase the innovative and ecological competence of the population, and to ensure the contribution of all segments of the population, especially young people, to these extremely serious and vital issues. In this regard, the further development of the environmental education system through the successful implementation of the Concept for the Development of Environmental Education in the Republic of Uzbekistan, which provides for specific goals, objectives, and directions, is of particular importance [2]. This Concept stipulates the implementation of environmental education at all stages of continuous education.



In particular, a number of tasks have been set for the implementation of environmental education. In this regard, it is determined that knowledge, skills and qualifications that serve to form innovative and ecological competence in students should be widely incorporated into the content of education, that environmental knowledge should be organized on the basis of differentiation at the level of classes, taking into account the age, physical capabilities and psychological characteristics of students, that the provision of knowledge should be based on pedagogical principles such as “from simple to complex”, “organicity and continuity”, that the combination of theoretical and practical knowledge should become a targeted system that ensures the gradual formation of innovative and ecological competence and education in students, that knowledge on the theoretical foundations of ecology and knowledge, skills and qualifications aimed at forming innovative and ecological competence should be provided on a consistent basis in the content of existing academic subjects and expressed in a comprehensive way.

As a result, it is emphasized that a person who graduates from an educational institution should have at least a minimum level of knowledge about environmental concepts and rules of behavior (innovative-ecological competence). It is worth noting that it is necessary to develop the ecological worldview of students in academic lyceums not only in their students, but also in students studying in all directions.

As we know, determinants are environmental conditions, causes, factors associated with the development of a person. In the literature on pedagogy and psychology, determinants are considered to be a special quality of a person acquired in the process of interaction and communication in the socio-cultural environment. The



determinants of ecological education aimed at developing mechanisms of ecological education include the following:

- ecological education – a process aimed at increasing knowledge and intellectual potential about nature, aimed at educating in the spirit of love for mother nature and its blessings;
- ecological education – a purposeful pedagogical process of organizing and stimulating active educational and cognitive activities of students in mastering knowledge, skills and competencies, developing creative abilities and ecological views;
- ecological consciousness – purposeful practical activities of all citizens, including young people, in the field of nature protection are a necessary condition for the formation of individual ecological consciousness.

Ecological consciousness embodies knowledge and beliefs in the field of human interaction with nature;

- innovative-ecological competence – a person’s conscious attitude to nature and its benefits, the formation of an active life perspective on nature protection for the sake of the motherland. This activity, aimed at forming the population’s innovative-ecological competence and a careful attitude to the environment, is a guarantee of the security of the future of all mankind;
- ecological competence – the acquisition of theoretical ecological knowledge in the formation of ecological awareness and culture, the ability to understand and communicate about nature, land, water, flora and fauna, natural resources, respect for nature, the ability to use natural resources rationally, the ability to widely use all effective forms and methods of cultural and educational work in the field of



environmental education and environmental education, including the media, oral, visual and technical means;

– ecological safety – a state of activity aimed at eliminating the occurrence of environmental hazards with a certain probability. The state of protection of the natural environment and vital interests of man from the possible negative impact of natural and man-made emergencies and their consequences [13].

Conclusion. The fastest way to increase the innovative and ecological competence of society is to improve the ecological knowledge and skills of future specialists in academic lyceums, as well as to improve the mechanisms of ecological education. After all, today's student will occupy the honorable and responsible profession of educating and educating the younger generation as the leading intellectual stratum of society tomorrow.

REFERENCES

1. Mirziyoyev Sh.M. Niyati ulug‘ xalqning ishi ham ulug‘, hayoti ulug‘ va kelajagi farovon bo‘ladi. - Toshkent: O‘zbekiston, 3-jild. 2019. B. 276.
2. Vazirlar Mahkamasining 2019-yil 27-maydagi “O‘zbekiston Respublikasida ekologik ta’limni rivojlantirish konsepsiyasini tasdiqlash to‘g‘risida” gi 434-sonli Qarori <https://lex.uz/docs/4354743>.
3. Zedler J.B., Callaway J.C. Restoration ecology. Combining the teachin of principles with group experiments and native plant restoration on the SDSU campus. // ESA Bulletin. 1997. -v. 78. -p. 67-69.
4. Dwyer W.O., Porter B.E., Cobern M.K. Outcome research in environmental education. a critical review. // J. Col. Sci. Teach. 1993. 24 (4). - p. 8-21.
5. Винокурова Н.Ф. Культурно-экологический подход в модернизации географического образования: теоретико-методологические основы и



методика реализации // Теория и методика обучения географии: история и современные направления развития. - СПб., 2004. - С. 18-25.

6. Глазачаев С.Н. Глобальные вызовы современности и миссия образования // Вестник Международной Академии Наук (Русская секция). - № 1.-2010.-С. 29-32.

7. Камерилова Г.С. Теоретические основы урбоэкологии как вариативной школьной дисциплины школьного географического образования: Автореф. дисс... докт. пед. наук / Г.С. Камерилова. - СПб, 2001. - 43 с.

8. Николина В.В. Культурологические смыслы школьного географического образования // Актуальные проблемы современной географии: сборник статей. - Н. Новгород: Деловая полиграфия, 2010. - С. 216 - 222.

9. Пономарёва О.Н. Методическая система обучения экологии в средней школе: Автореф. дисс... докт. пед. наук - Пенза, 2000.

10. Захлебный А.Н. Содержание экологического образования в средней общеобразовательной школе: теоретическое обоснование и пути реализации: Автореф. дисс. докт. пед. наук - М., 1986. -32 с.

11. Зверев И.Д. Приоритеты экологического образования // Экологическое образование: проблемы и перспективы: Межвузовский сборник научных трудов. - Н. Новгород, 1998. – Б. 11-13.

12. Печко Л.П. Эстетическое освоение природы в процессе формирования личности: Автореф. дисс... докт. филос. наук - М, 1994. - 50 с.

13. Mamajonov.Sh.A. Determinants of environmental education aimed at the development of mechanisms of environmental education in higher education // International Scientific and Practical Conference: “The role of science and Innovation in themodern world”. London, United Kingdom. 2022. P. 38-46.