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## **THE IMPORTANCE OF ENVIRONMENTAL PROTECTION AND THE FORMATION OF ECOLOGICAL THINKING AMONG STUDENTS**

**Abstract.** Currently, one of the urgent problems is the development of ecological thinking and the formation of ecological culture of students. A purposeful system of environmental education is the main means of environmental culture, and requires students to be environmentally responsible. Environmental responsibility is associated with self-control of the individual, the ability to see immediate and long-term results in the natural environment, as well as a critical attitude towards oneself and others. Currently, the concern about environmental issues is extremely high. These problems directly affect the foundations of civilization and determine the possibilities of the existence of humanity. One of the effective means of forming the ecological culture of students is their purposeful environmental education. Their correct attitude to nature and the environment arises on the basis of ecological knowledge. The ecological attitude of students forms and develops their sense of environmental responsibility. Environmental education is carried out in two directions: fundamental (in natural sciences) and applied (technical). Here the main thing is the fundamental direction and this is not unreasonable. The fundamental direction arose on the basis of the integration of various subjects. Ecological education and upbringing, mastering ecological culture is a way that binds and connects a person, including students of secondary schools, with nature. In this sense, environmental education, environmental thinking, environmental teaching and environmental culture serve as an indicator of environmental awareness and the level of environmental thinking. The development of ecological thinking and the formation of ecological culture among students is an urgent problem for biology teachers in secondary schools. The article also notes that the knowledge gained during

environmental education and enlightenment and the experience gained constitute ecological thinking. Environmental education refers to the process of continuous education, upbringing and development aimed at finding a common environmental culture and responsibility. The goal of environmental education of students is to develop a sense of responsibility towards nature. The ecological culture of students is characterized by three main features: attraction to nature from a psychological aspect; subjective nature of perception of objects of nature; attempts to establish non-pragmatic interaction with nature. The formation of ecological thinking among students of secondary schools should become an important goal of pedagogical collectives, educational institutions, parents, as well as the public and general organizations.

**Keywords:** environmental education; environmental pedagogy; environmental knowledge; ecological culture; environmental awareness; methodology.

## **INTRODUCTION / ВСТУП**

**Formulation of the problem.** At the end of the 20 th century, biology and the methodology of its teaching rapidly developed. This problem began to develop more actively after our republic gained independence. Thus, fundamental changes have taken place in the field of education and training of personnel in secondary schools and higher educational institutions. On June 15, 1999, the national leader Heydar Aliyev approved Decree No.168 on the “Program of Reforms in the Sphere of Education of the Republic of Azerbaijan”.

At the same time, on October 30, 2006, by the decision of the Cabinet of Ministers of the Republic of Azerbaijan, the Concept of General Education (National Curriculum) was adopted as the most important state document. After the implementation of this concept, the quality of teaching in all areas of education in general education institutions, schools, the content of textbooks, programs, teaching materials were adapted to new teaching methods. Thus, it is better integrated into world education. Solving the problem posed new challenges for methodologists, educators and teachers of secondary schools. The subject "Biology", taught in general education schools, is taught in the mode of active learning based on the curriculum. A new approach to teaching leads to a better formation and development of knowledge and skills of schoolchildren. All this is done on the basis of new teaching principles.

Currently, education in our republic is carried out in accordance with the national curriculum. Today, an important and main task of education is the

comprehensive development of the younger generation, schoolchildren, the formation of a perfect personality in relation to life and nature.

In the modern period, the content of the subject of biology taught in secondary schools (grades VI–XI) is mainly devoted to biological processes. Little space is given to environmental protection and training in ecological processes. However, the study of the problem of the environment and ecology as a whole is one of the most important problems facing humanity at the present time. In our republic, much attention is paid to the protection of flora and fauna, as well as the atmosphere, soil and hydrosphere. Because the rapid development of modern industry and agriculture has a bad effect on the environment.

Therefore, special attention is paid to the protection of the environment and ecology. To date, many laws on the protection of nature have been adopted. Nature conservation is taught to students and pupils in higher and secondary educational institutions. This problem is far behind. Nature protection is the duty of all people, every citizen.

Environmental education and upbringing, mastery of environmental thinking is a way that close ties bind and connect a person, including students, with nature. In this sense, environmental education, environmental thinking, environmental education and environmental culture serve as an indicator of environmental awareness and the level of environmental thinking. The development of ecological thinking and the formation of ecological culture among students is an urgent problem for teachers. For the first time in 1858 D. Toro. The German biologist Professor Ernest Haeckel defined ecology in 1866, and thanks to him this concept became widespread. The knowledge gained during environmental education and enlightenment and the experience gained constitute ecological thinking. Environmental education refers to the process of continuous education, upbringing and development aimed at finding a common environmental culture and responsibility. The goal of environmental education of students is to develop a sense of responsibility towards nature. The ecological culture of students is characterized by three main features: attraction to nature from a psychological aspect; subjective nature of the perception of objects of nature; attempts to establish a non-pragmatic interaction with nature.

The formation of ecological thinking should become an integral part of the entire system of continuous education. This is possible under a number of conditions. First of all, the following elements should be included in the content of education:

- a system of knowledge about the relationship between society and nature;
- system of norms and rules of attitude to nature;

- valuable ecological orientation;
- skills and abilities to study and protect it.

One of the fundamental ideas in the content of environmental education is the idea of development of perfection, the integrity of nature. This idea is put forward and developed both in the classroom and in extracurricular activities.

The formation of ecological thinking among students provides for the following provisions:

1. Take into account as much as possible the natural need for communication with nature in the formation of such volitional qualities as purposefulness, self-control, the ability to foresee the near and far results of one's activity (actions) in the environment.

2. Use of existing opportunities for the formation of environmental thinking and environmental culture among students in the process of studying nature.

3. When communicating with nature, the student must learn the rules of behavior in nature, not harm wildlife and not violate the usual daily routine of the inhabitants of the natural environment.

4. Excursions should take into account concrete examples of the positive and negative impact of people on nature.

5. To strengthen the acquired knowledge, various methods of verification should be used. Students, using cognitive and practical tasks, in emerging environmental situations, must achieve theoretical and practical problem solving.

6. Influence the student, taking into account his sensitivity and emotional significance.

**Analysis of the latest relevant research and publications.** In our time, the task of education is to, along with instilling scientific knowledge and skills in students, to teach students to protect health, people and nature. Scientists-biologists, academicians related to the protection of nature, environment and ecology, such as A. Agaev [5], B. Akhmedov [7], A. Alizade [8], A. Huseynov [18], I. Ismailov [26] and other prominent scientists have written papers and devoted many articles to this problem. However, at present, students in schools are given very superficial knowledge about environmental protection. Therefore, in secondary and higher education, the younger generation should be instilled with broad, deep knowledge and skills related to the protection of ecology and the environment. In this regard, the solution of the problem is very relevant.

## **AIM AND TASKS / МЕТА ТА ЗАВДАННЯ**

The *purpose* of the study is to determine the content of the problem of environmental protection, which must be taught in a general education school,

effective ways of teaching it and creating a system of work. Determining the importance of environmental protection, which should be taught in general education schools, improving the knowledge and skills of students in this area, instilling in them an education related to nature protection.

Based on the purpose of the study, the following **tasks** were identified:

- 1) find out the level of development of the problem in the scientific, methodological and pedagogical literature;
- 2) determine the content of biology textbooks for secondary schools on environmental protection;
- 3) clarify educational activities related to environmental protection in extracurricular activities;
- 4) substantiate the educational value of environmental protection in teaching biology;
- 5) analyze programs and textbooks in terms of the problem;
- 6) identify the learning feature of the study, give practical recommendations.

## **THE THEORETICAL BACKGROUNDS / ТЕОРЕТИЧНІ ОСНОВИ ДОСЛІДЖЕННЯ**

In our country, one of the important directions of state policy in the field of environmental protection is environmental education, enlightenment and environmental education of citizens, including students. It is impossible to imagine the existence of our modern world without ecology.

Students of general education schools should consistently study relevant environmental knowledge materials and express their critical creative attitude. Studying the history of the development of ecology, students understand that this science is of great importance for the fruitful enrichment of mankind at the expense of nature. It is a fact that there are no natural resources outside of ecological systems. The effective use of ecological systems is the economic power of the state, which is necessary for future economic and social development and improvement of the material well-being of the population.

At present, an important task facing us is to deepen and expand the environmental knowledge of students in general education schools. Environmental education manifests itself as a complex pedagogical process. Knowledge of the basics of ecology is the most important component of the development of ecological thinking of students. Taking into account the urgency of the problem, back in 2002, the Law of the Republic of Azerbaijan “On environmental education and enlightenment of the population” was signed in our republic. The law defines the legal, economic and organizational foundations



of state policy in the field of environmental education and enlightenment of citizens, and regulates relations in this direction.

The fourth article of the Law of the Republic of Azerbaijan "On environmental education and enlightenment of the population", adopted in 2002, sets out the main principles of state policy. These principles include:

“4.2.1 creating equal conditions for everyone to master general environmental knowledge;

4.2.2 mandatory teaching of environmental knowledge in the system of secondary education;

4.2.3 continuity of the process of environmental education and training;

4.2.4 ensuring publicity in the field of environmental education and enlightenment;

4.2.5 creation of conditions for the participation of the population and non-governmental organizations in the implementation of state policy in the field of environmental education and enlightenment”.

The President of the Republic of Azerbaijan, Mr. Ilham Aliyev, considering the improvement of the ecological environment as one of the main directions of his activity, is taking the necessary measures in this direction. A comprehensive action plan to improve the environmental situation in the Republic of Azerbaijan for 2006–2010 was approved and implemented on September 28, 2006.

In order to improve the quality of environmental education and upbringing at school, it is necessary to conduct a historical and pedagogical analysis of its formation and development. In this case, of course, it is necessary to determine the main conditions for its occurrence, identify its main contradictions and acquire the necessary knowledge about ways to further improve environmental education, environmental thinking and environmental upbringing. At present, it is extremely important to determine a strategy for the modernization of environmental education and upbringing at school.

In the new programs and textbooks "Biology", which are currently taught in secondary schools, the idea of providing theoretical knowledge on environmental protection, environmental protection and improving textbooks was put forward. This will provide an opportunity to improve the program and textbooks. Our study shows that the use of complex material when teaching in a general education school is not justified in practice. At the same time, it is not easy to assimilate, in other words, bringing simple material to teaching, it is impossible to violate the systematic, consistent and scientific nature of the educational material. “Scientific research conducted in the field of environmental education contributes to the formation of the entire scientific

picture of the world; creation of the foundations of a system of environmental knowledge, development of succession programs, scientific and methodological support of legal and other documents; aimed at creating educational institutions and their governing bodies. The education of our country, focused on the world, should be replaced by a newly oriented education based on the event paradigm of Nature and Man (example, sample) instead of the old views on humanitarian problems, politicized and ideologized in recent times, the last decades" [6], [10].

Learning is a step by step process. For example, materials science in the 6th grade Biology program becomes possible when students are given information about the cell about the cellular structure of a plant in advance. But practice shows that information about the cell does not correspond to the level of this age category. However, it is impossible to do without this information. A student who does not know the structure of the cell will not understand the process of growth, fertilization, and the existence of plants in general. Therefore, many materials that are important in the system of teaching biology are difficult for students to understand. The school is not only an educational institution, but also a social environment where students of different nature, interacting with each other, can conduct joint experiments and learn science and master environmental education materials. Every teacher should be able to create the right learning and teaching environment.

This allows students to study environmental education materials in a more convenient and understandable way. Creating an educational environment suitable for talented students depends on the communicative and constructive abilities of the teacher. The great Czech scientist Jan Amos Comenius used the principle of visualization as the basis for teaching material. In the context of the pandemic in which we now live, the content of biological science and genetics is determined by its relevance to the current level of development of science. However, the content of school biology changed and developed in different periods in connection with the development of the flora and fauna of society. For example, in the program of the 1930s and 1940s, "The Cell" and "Cellular Structure of Organisms" were covered very poorly, instead, preference was given to morphological and systematic materials" [1, p. 40].

The choice of an appropriate concept in education depends on the prevailing worldview of society as a whole [2, p. 11]. Awareness of the importance of environmental education was formed in our country in the 80s of the last century. It is noted that, "The main goal of the ecological education of society is the formation of an ecological and cultural personality, that is, who fully adheres to the principles of ecocentric thinking (as opposed to

anthropocentric), who deeply understands the interconnection of natural phenomena, which has meaning. responsibility for their environmental behavior towards current and future generations and clearly understands the consequences of all their actions. It lies in the formation of an understanding personality” [3], [4]. The system of formation of ecological culture and ecological knowledge of individual students, the formation of ideas about the natural world as a set of specific natural objects, understanding the multifaceted values of nature as a source of material and spiritual strength of society, as well as the formation of a correct ecological attitude towards nature, awareness of the interaction of ecology and technology with nature, mastering their strategy, analysis of natural objects and activities in nature, ecological culture, ecological thinking, alternativeness and the creation of a healthy educational environment in the context of the development of predictive thinking plays a key role in the education of environmental protection and the formation of ecological consciousness of students.

Ecological consciousness: As a complex psychological process, it is the awareness in human thinking of the inextricable connection between man and nature. Ecological thinking, being a form of social consciousness, has the same status as its other forms. Ecological thinking, scientific and practical analysis of the relationship between the past, present, future of the environment and society, understanding the foundations of modern ecology, which should involve each student in actively participating in solving environmental problems. Forming the right ecological consciousness is not such an easy process! Because people who cannot understand the "philosophy" of ecological morality can shout out selfish slogans like "Taming nature" around them. "Victory over nature" are concepts that we need to change in the thinking of students. The human factor is of particular importance in the context of the democratization of public life. The roots of the concept of human factors are undoubtedly as old as humanity itself. According to some experts, the history of mankind actually begins with the creation of this concept. Unfortunately, the role of the human factor was not understood in the same way in all periods. Based on this idea, we can say that a person must always learn and develop. Students should learn about the impact of man on ecology, and ecology on man through environmental protection.

## **RESEARCH METHODS / МЕТОДИ ДОСЛІДЖЕННЯ**

The following methods were used during the study.

1) dialectical and philosophical methods: analysis, induction, deduction, abstraction, etc.



2) observation, interviews, demonstration experiments, search methods (heuristic interviews, problem interpretation), practical work, pedagogical experiment.

The methodological basis of the research is the application of factual data, principles, theoretical positions and new methods of teaching the study of events and processes.

With the help of biology research methods, students were taught the ability to observe nature, identify objects, recognize them and draw conclusions. Using the method of pedagogical observation, the practical knowledge and skills of teachers and students in the environment were revealed. Using the pedagogical experiment method, we first developed survey questions. The scientific novelty of the study lies in the fact that the possibilities and ways of studying the environment for the formation of ecological thinking in secondary schools are determined, scientific and methodological recommendations on environmental protection, protection of plants and animals are prepared.

### **RESULTS OF THE RESEARCH / РЕЗУЛЬТАТИ ДОСЛІДЖЕННЯ**

Thus, based on the foregoing, it can be concluded that there is currently a great need for environmental education. Therefore, it is important to provide the population with knowledge about ecology, to form an ecological worldview in them, to conduct a targeted and systematic organization of environmental education, as well as environmental education among students.

1. The problems of ecology and nature protection are not given due attention in the teaching of biology in secondary schools.

2. The content of textbooks on environmental protection does not meet modern requirements.

3. The content and structure of textbooks should be written in a logical sequence in accordance with the age and level of knowledge of students on the basis of intra-subject and inter-subject communication.

4. Regarding the protection of the environment, plants and animals, teachers should teach students additional knowledge and skills, organize excursions to the environment related to nature protection, organize biological evenings and circles, pay attention to teaching them about environmental protection and environmental issues.

### **CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH / ВИСНОВКИ ТА ПЕРСПЕКТИВИ ПОДАЛЬШИХ ДОСЛІДЖЕНЬ**

Speaking about environmental protection, it would be appropriate to mention the development of ecotourism. All communities around the world

must learn to prioritize the social benefits of each ecotourism in addition to the income it generates. To improve the level of mastery, it is important for the student to find answers to some questions in the team. Today's student expects a dynamic and completely new learning environment. Therefore, she must find answers to the following questions:

1. What should be taught in biology lessons (curriculum).
2. How environmental protection should be taught (pedagogy).
3. When and where to teach (educational technology and the real world).
4. Who should be trained (involvement in training).

Environmental pedagogy is a field of pedagogical science that characterizes environmental education, environmental outlook, environmental consciousness, environmental thinking, environmental culture, studying the patterns of formation of an environmental personality.

The object of environmental pedagogy is the process of environmental education. The subject of environmental pedagogy is the formation, patterns, mechanisms and facts of the formation of an environmental personality with environmental knowledge, skills and attitudes based on the laws and patterns of environmental education, including the law of parallel evolutionary development as the optimal interaction of students and the natural environment changed by them.

**Prospects for further research in this direction.** The effectiveness of environmental education and environmental education of students largely depends on the proper organization of this work. The competence of the organizers in this area allows students to acquire environmental education, environmental thinking, environmental behavior and, ultimately, master the environmental culture. It is important that an authoritarian model of learning is not allowed in the educational work carried out with students, and the pedagogical process is based on cooperation, mutual creativity, mutual respect and understanding of teachers and students. Classes should be organized taking into account realistic-visual and visual-figurative perception, aimed at mastering environmental knowledge and information (environmental safety, the world of plants and animals), there should be a correct attitude (from an environmental point of view) to natural phenomena and objects.

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### **ВАЖЛИВІСТЬ ОХОРОНИ НАВКОЛИШНЬОГО СЕРЕДОВИЩА ТА ФОРМУВАННЯ ЕКОЛОГІЧНОГО МИСЛЕННЯ УЧНІВ**

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**Анотація.** На даний час однією з актуальних проблем є розвиток екологічного мислення та формування екологічної культури учнів. Цілеспрямована система екологічного виховання є основним засобом формування екологічної культури, вимагає від учнів екологічної відповідальності. Екологічна відповідальність пов'язана із самоконтролем особистості, здатністю бачити миттєві та віддалені результати у природному середовищі, а також критичним ставленням до себе та інших. На даний час стурбованість екологічними проблемами є надзвичайно високою. Ці проблеми безпосередньо торкаються цивілізаційних основ і визначають можливості існування людства. Одним із ефективних засобів формування екологічної культури учнів є їх цілеспрямоване екологічне виховання. Їхнє правильне ставлення до природи і навколишнього середовища виникає на основі екологічних знань. Екологічне ставлення учнів формує і розвиває в них почуття екологічної відповідальності. Екологічна освіта здійснюється за двома напрямками: фундаментальним (з природничих наук) і прикладним (технічним). Тут головне – фундаментальний напрям, і це не даремно. Фундаментальний напрям виник на основі інтеграції різних предметів. Екологічна освіта і виховання, оволодіння

екологічною культурою є способом зв'язку людини і учнів закладів загальної освіти з природою. У цьому сенсі екологічна освіта, екологічне мислення, екологічне навчання та екологічна культура є показником екологічної свідомості та рівня екологічного мислення. Розвиток екологічного мислення та формування екологічної культури в учнів є актуальною проблемою для вчителів біології закладів загальної освіти. У статті також зазначається, що знання, отримані під час екологічної освіти, та набутий досвід становлять екологічне мислення. Екологічна освіта – це процес безперервної освіти, виховання та розвитку, спрямований на пошук спільної екологічної культури та відповідальності. Метою екологічного виховання учнів є формування почуття відповідальності за природу. Екологічна культура студентів характеризується трьома основними ознаками: потягом до природи з психологічного аспекту; суб'єктивний характер сприйняття об'єктів природи; спроби налагодити непрагматичну взаємодію з природою. Формування екологічного мислення в учнів закладів загальної світи має стати важливою метою педагогічних колективів, навчальних закладів, батьків, а також громадських організацій.

**Ключові слова:** екологічна освіта; екологічна педагогіка; екологічні знання; екологічна культура; екологічна свідомість; методологія.

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