

ECOLOGICAL EDUCATION AND UPBRINGING IN TEACHING OF PHYSICS

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Abstract. *In this article, the objectives of the science of ecology and its departments are explained, and ecological education is an integral part of the general education system, which serves to improve the ecological culture of pupils. It is revealed because it is important. Along with conducting the classes, it was shown that the tasks of environmental education and upbringing are clarified and on this basis, the inter-subject connection, the educational process that complements each other and brings harmony between the subjects.*

Keywords: *ecology, departments of ecology, ecological education, ecological education, development of personality, tasks, society and nature, pupils, physics education, ecological knowledge in physics teaching.*

Currently, scientific and technical progress has created new ecological problems in life, and the relationship between society and nature has changed radically. Also, it has become more urgent to pay great attention to the efficient use of natural resources, protection of land, water, air, natural resources, fauna and flora. Even in order to fully study and solve the existing environmental problems, a new branch of environmental science, the science of communal or urban ecology, was formed.

Now, ecology is in close contact with other disciplines, and in turn, they can be seen using ecological research methods to successfully solve existing problems.

Ecology itself is divided into a number of departments: general ecology, bioecology, geoecology, human ecology, social ecology, ecological economics of nature use, applied ecology, and others. Each department, in turn, consists of sub-departments and communicates with other disciplines and other departments of ecology according to their directions.

It is clear from this that we believe that in the education system, not only environmental science, but all sciences should contribute to the elimination of environmental problems in one way or another. Environmental education and upbringing is especially important in the process of education and upbringing.

Inculcation of ecological education from childhood is of particular importance today. In order for the young generation to grow up healthy and pass on the beauty of nature to the next generation, it is necessary to teach them how to protect nature, to use its resources economically, and to choose methods that do not harm the natural environment before planning any activities for the benefit of people and the development of society. Experiences of respecting nature in children of up to school age, awakening an aesthetic feeling towards it, taking into account the age and scope of knowledge of children, holding interesting and interesting conversations about nature, about the world of plants, about the animal world, sprouts, Broadcasting of special programs on television on how to transfer and care for vegetable and flower samples also gives positive results. Older people should set an example and teach the younger generation by their actions.

At the moment, ecological education, which serves to raise the ecological legal consciousness and culture of our youth, is an integral part of the general education system and embodies its main ideas.

The processes of environmental education and upbringing cannot be separated from each other. They constantly develop in interaction. A person's relationship with nature is formed through environmental education in the family and at school. From this point of view, the tasks of ecological education and upbringing are as follows:

to form pupils who can analyze the laws of development of society and nature, their relationships, and who can think deeply and in line with the times;

to educate pupils in such a way as to preserve their "wealths" throughout their lives with the environment they live in;

to develop pupils' social, cultural, religious views and traditions, to continuously educate them about the beauty of the place where they live, valleys, districts, groves, hills, streams, mountains, their importance in human life and health, as well as instilling in them love for nature [1].

Therefore, it is necessary to carry out such tasks in teaching physics, to provide pupils with environmental education. In this case: teacher - pupil - the nature around us - environmental education, ecological education and its interaction with other subjects are considered urgent issues.

In these works, not only the science of ecology, but also the science of physics has a great role. In this regard, it is important to study the laws of physics to highlight its ecological aspects. We present the following table [2] on the formation of some environmental knowledge in the content of physics education.

Physics course materials	Physical formulas	Ecological direction of physical knowledge
Laws of conservation and circulation of energy in mechanics	$E_n = mgh$ $N = \frac{A}{t} = \frac{\nu\rho gh}{t}$ $E_k = \frac{mv^2}{2}$ $N = \frac{A}{t} = \frac{s\nu\rho}{2}$	Water and wind energy are sources that do not pollute the environment
Properties of solids, liquids and gases	$h = \frac{2\sigma}{r\rho g}$	Data on preservation of capillary properties in soil
Electrostatics	$F = \frac{q_1 \cdot q_2}{4\pi\epsilon_0\epsilon r^2}$	Industrial waste, toxic chemical waste and ways to reduce their harm
The work of electricity	$A = J^2 \cdot R \cdot t$	Prospects for the use of electric motors in various areas of production
Electric current in semiconductors	$j = en_e u_e + en_n u_n$ $j = je \frac{-\Delta W}{2kT}$	Use of manipulators and semiconductors in automation of production processes

Mechanical wave. Sound	$J = J_0 e^{-\mu d}$	Anti-noise
Laws of reflection and refraction of light	$\frac{\sin \alpha}{\sin \beta} = \frac{n_2}{n_1}$	Use of solar energy in industry and household service
Quantum physics	$h\nu = A + \frac{m\nu^2}{2}$	Use of photocells, photoresistors and photogenerators in automation
Photosynthesis	$6CO_2 + 6H_2O \xrightarrow[\text{chlorophyll}]{\text{light}} C_6H_{12}O_6 + 6O_2$	Extraction of organic matter. Life in an ecosystem
Atomic and nuclear physics	${}_{92}U^{239} \rightarrow {}_{93}U^{239} + e^0$ ${}_1H^2 + {}_1H^3 + {}_2H^4 + n^1$	Fight against contamination of the environment with radioactive substances

It is recommended to use the knowledge of physics and ecology in the lessons to increase the knowledge of pupils and develop their thinking skills. With this, we will strengthen interdisciplinary relations and ensure unity and continuity in education.

Including:

the educational process of physics teaching, its content, methods, their organization, from the pedagogic-psychological point of view of pupils and the application of ecological knowledge through inter-subject communication, directing educational-methodical activities to the creative direction;

in order to ensure the integrity of inter-subject communication, to provide methodological instructions that lead to a harmonious perception of natural phenomena in the subjects of physics and ecology;

achieve to teach nature conservation by providing ecological knowledge in physics teaching;

achieve that environmental education and upbringing are taught in physics classes as well as in all subjects;

it is necessary to show that in the process of pedagogical experiment-testing pupils' learning of liquids, gases, thermal phenomena, sound phenomena, pressure and other topics based on intersubjective connection with ecological knowledge is mutually complementary and harmonious.

It has been shown in a number of works [3-11] that the conduct of training in the above interdisciplinary relationship has a significant impact on the quality and efficiency of education. Environmental education is of great importance in the prevention of anthropogenic influences, forming a sense of rational attitude to the environment, preservation of natural resources for future generations. If we take into account that the first elementary concepts of ecological education and upbringing begin in secondary schools, the importance of ecological education and upbringing is important in ensuring unity between nature and society and maintaining natural stability, making young people use nature consciously and in their hearts. It is useful in instilling love for nature and teaching thrift. We believe that such education should be carried out in a systematic way, and teachers of each subject should conduct it from the point of view of their subjects. Conducting such work, especially in the course of physics education, plays an important role in pupils learning more about the secrets of nature. This causes the growing

young generation to perfectly acquire knowledge about nature, to be able to feel the subtlety of the surrounding environment, its beauty, and to increase their love for the Motherland and its nature.

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