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*Түйін сөздер:* қашықтықтан оқыту; дайындық; дайындық құрылымы; деңгейлер мен өлшемдер; дайындықты қалыптастыру моделі.

### **Model of teacher readiness formation to distance learning of students**

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#### *Abstract*

The article is devoted to the problem of formation of teachers' readiness for distance learning of students. The authors consider the concepts of "distance learning", "readiness", "pedagogical model", on the basis of studying the issues of providing personnel for the distance education system, the requirements for the system of training specialists for distance learning, for the structure of forming the teacher's readiness for distance learning of students are determined, and the organizational and pedagogical conditions for the effective formation of the readiness of future teachers in universities for successful work in the distance learning system are also identified. Based on the work of researchers on the issues of training teachers to work in the distance learning system, the article reveals the contents of the components of the structure of the teacher's readiness for distance learning of students, identifies the levels and criteria for the formation of teachers' readiness and the principles, the implementation of which is necessary for the successful formation of future teachers' readiness to perform their professional functions in the distance learning system of students. The article presents a model of the process of forming the readiness of future teachers for distance learning, reflecting the logic and internal dynamics of the process, the result of which is the formation of the readiness of future teachers for distance learning of students.

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*Keywords:* distance learning; readiness; readiness structure; levels and criteria; readiness formation model.

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### **THE ESSENCE OF THE CONCEPT OF SOCIAL ECOLOGY AND THE RELATIONSHIP BETWEEN MAN AND NATURE**

#### *Abstract*

Modern environmental problems are not limited only to biological content; in recent decades, environmental research has acquired a social orientation, regulating the relations of the "man-Nature-Society" system, which has led to the emergence and development of a new branch of management ecology, social ecology. The ideas of social ecology include the intervention of Man and humanity in all natural systems; the rate of evolution and change of natural systems under the influence of anthropogenic factors; the relative and characteristic influence of geological forces and man on natural systems. The concept of social ecology in general develops directly in relation to socio-economic problems, so there is a need to integrate the branches of natural, social and technical science to solve it. This integration, firstly, will affect the conduct of new interdisciplinary research, and secondly, the environmental content of existing disciplines will be provided methodically and methodically. The new

stage of the relationship between man and society is characterized by systematic approaches, so it is necessary to reorientate school education to the formation of a scientific picture of the modern world. We see this in the ecologization of Natural Science subjects in school by linking them together. Environmental education is now fully integrated into school programs, and its new component, socio-ecology, is beginning to manifest itself. The article discusses the essence of the socio-ecological concept in the content of natural science disciplines and the problems of the relationship between man and nature.

*Keywords:* socio-ecology; nature; natural systems; biosphere; ideas of social ecology; natural science; social and technical sciences; integration; new interdisciplinary research; the relationship between man and society; the scientific picture of the modern world; natural and scientific disciplines.

**Introduction.** Determining the place of social ecology in the system of science, its relationship with other branches of science is one of the most difficult tasks. The relationship between the branches of Social Ecology and sociology covers the issues of protecting Social labor discipline, preserving rural and urban society. Protection of social labor discipline studies the “violation of balance” in the working environment of a person. Through the use of Natural Resources and its revival, people can also make changes to nature in a certain amount and cause harm. While the preservation of rural and urban society as a separate social discipline considers the permanent place of residence of a person, which is a social factor, Social Ecology, in turn, studies the environment of residence of a person.

The relationship between man and his environment cannot be the subject of study in a single field of science. Due to the increasing complexity of the social structure, that is, the relationship of man in it with nature, it is becoming increasingly difficult to find a solution to the relationship between man and the environment. Therefore, it is better to look at social ecology not only from the point of view of studying the relationship between a person and his environment, but also to determine his relationship with other branches of science.

The relationship between man and the environment characterizes the historical stages of the formation of relations between nature and society (the era of hunting-gathering and agricultural Culture, Industrial and post-industrial society). The history of studying the formation of the relationship between society and nature dates back to ancient times. The analysis of this problem coincides with the beginning of the twentieth century.

**Main body.** Nature is a reality that exists independently in the minds of people. In the words of the scientist V.I.Vernadsky “... man and his appearance as a social person are very closely related to the biosphere in terms of legitimacy and material and energy.”

The emergence of civilization led to the emergence of new factors affecting the fate of living things. The main factor in it is that it is the main geological force that today affects global processes on earth – human activity.

According to the modern understanding, the general scientific worldview summarizes and systematizes cognitive knowledge about nature, society and man, as well as their relationship and development with each other at a high level in philosophical, socio-political, socio-economic, Natural-Scientific, Technical and other aspects. As a result of the differentiation of various branches of Science, a conceptual system of the general scientific worldview is formed, where philosophy plays a key role. In the words of the philosopher D.Kishibekov “... it is known that the emergence and formation of humanity and society depends on the existence of the natural environment, the necessary prerequisites, conditions...” [1]. Philosophy and the natural sciences are aimed at achieving some objective reality, and the evidence of Natural Science presupposes some philosophical justification.

The formation and development of human society in the historical and cultural environment was accompanied by environmental crises of anthropogenic impact at the local and regional levels.

Man was forced to look for new resources for life, which led to the formation and development of agricultural culture, that is, the transition of humanity to agriculture and animal husbandry. As a result, the anthropogenic impact changed

the structure of ecological systems and led to deep landscape transformations. For example, in the era of agricultural culture, the area of irrigated land in Central Asia was several times larger than today. A vast territory stretching from southern Palestine to northern Syria to Mesopotamia and eastern Iran was the home of Agriculture. But improper irrigation (artificial irrigation of the land) changed the composition of the soil, destroyed vegetation, and the soil became barren [2].

In modern times, the relationship between society and nature is studied in detail. E.O. Novozhilova presented the concept of the relationship between society and nature through environmental changes. It connects environmental changes – the transition of relations between society and the environment to a qualitatively new state, the transformation of the material, energy and information foundations of society's life, the transition to new basic technologies and the establishment of a dynamic balance at a high level [3; 4]. These changes lead to the formation and development of “ecosystem-biospheric - noospheric” socio-environmental problems.

Solving social and environmental problems ensures the ecological stability of the planet. Individual and anthropogenic human activity has a huge impact on our planet and all living organisms living on it. Given that such actions lead to environmental degradation, rapid loss of biodiversity, and climate change, humanity should propose ways to solve these problems.

According to the United Nations Development Programme (UNDP), 17 (seventeen) Sustainable Development Goals are set. The Sustainable Development Goal (SDGs) is aimed at improving the quality of life of citizens, socio-economic development and environmental sustainability of states. In particular, in the implementation of the goal of combating climate change, education increases the ability of people to resist climate change threats, teaches them to know how to prevent them, identify their causes [5].

Therefore, the environmental crisis is not only an environmental, but also a social problem, and its solution should be handled not only by

natural sciences (physics, chemistry, biology, ecology, etc.), but also by Humanities (History, Sociology, Psychology, demography, etc.). Modern problems in the relationship between society and nature can be solved by overcoming the global environmental crisis.

**Methodology.** The methodology of the proposed research includes a systematic understanding of the world; environmental crisis; the crisis of human life in the modern world; humanistic development; the global nature of environmental problems and problems of general responsibility for their solution philosophy and methodology based on.

Since social ecology is a transitional science between the natural sciences and the humanities, it actively uses the methods of the natural sciences and the humanities in its methodology and the methodology that expresses the unity of these two approaches. The peculiarity of the method of social ecology is that its subject depends on the factor bordering nature and society.

The first element of the scientific method of social ecology follows from the theories of social ecology, ecological worldview and Environmental Protection.

**Results.** Before analyzing the concept of “social ecology”, we will first touch on the origin of the term “social”. Social (*lat. Socialis*) – comes from the words united, friendly, common, public. In the scientific literature, the concept of “social” has two different meanings: first, it is used in a broad sense as a synonym for the concept of “society”, which differs from nature, and secondly, it is considered as a separate branch of society, economic, environmental, political, legal, etc.

The term “social ecology” was first introduced into the literature by American sociologists R. Park and E. Burgess in the 20s of the XXI century from the point of view of studying the internal mechanisms of Urban Development. The concept of “social ecology” in a new sense was introduced into the ranks of branches of Science in the second half of the twentieth century, and then began to actively develop after the World Congress of scientists

in the field of sociology in 1966. One of the first to define social ecology was the outstanding figure Raderick Mack Kenzil, the founder of classical ecology [6].

The beginning of the formation of social ecology began with bioecology, i.e. plant and Animal Ecology, and sociology began to develop further from the interest of the field of Science in the environment. Scientists, considering it from the point of view of economic theory and approaches to social geography, define the subject of research of social ecology. There are some difficulties in defining social ecology due to the lack of social studies of environmental issues. Currently, it is considered as a separate branch of science that studies the specifics of the relationship between man and the environment. Consequently, the concept of “social ecology” allows us not only to study the impact of the technological environment on humans, but also to study the laws of human interaction with nature [7; 8].

It is necessary to establish that the subject of the study of social ecology is the relationship between a person and his environment, which is the basis for determining the impact of environmental factors on the quality of life in modern society. Quality of life is defined “as a set of relations that connect the individual with society and the natural environment, each of its elements has its own characteristics and needs” [J.Frade]. This understanding of the quality of life is confirmed by the results of the study, which means that without clean, rich and beautiful nature, it is impossible to live a full life and achieve a high level of quality of life without taking into account the impact of human and socio-economic relations on the state of the ecosystem. The results of the study also show that the issues of quality of life and Environmental Protection are of different importance in different countries. For example, countries with rapidly developing industries, i.e. the biosphere has changed under the influence of the scientific and technological revolution, and countries with a clean environment, but

initially homeless and food insecure, should not be equated [9].

In the study of the essence of the concept of Social Ecology and the peculiarities of the relationship between man and nature, it was proved that education plays a key role in solving environmental, including social, environmental problems, and education is an important condition for overcoming these problems. Currently, environmental issues are increasingly being introduced into school programs. For example, according to the World Report on education monitoring, an analysis of 78 national curricula shows that the term “ecology” is found in 55% of them, and the term “environmental education” is found in 47% [10]. “According to the analysis of the updated educational program at a new school, developed in Kazakhstan in accordance with the goals and objectives of the study, it was found that this indicator is in the range of 35-45%, as well as the low level of transmission of the concepts of” “social ecology “” in the content of the standard program” [11].

Analyzing the content of high school programs, it is noted that there is a partial chaotic transfer of socio-environmental concepts: “environmental management”, “natural conditions”, “natural resources”, “means of production, types of production”, “geography of peoples”, “rational use of Natural Resources”, “humanity”, etc. The complexity and versatility of the concepts contained in these educational materials in the formation of socio-environmental knowledge of students requires its further development. “We are convinced that the development of ecological culture and environmental literacy of schoolchildren is impossible without the formation of knowledge about social aspects of nature, the role of Man and society on the planet, so the need for the introduction of socio-environmental concepts in the educational purposes of the sections “environmental management” and “fundamentals of geoecological research” in the section “nature management and geoecology” from geography is proved [12].

The formation of concepts is impossible without environmental education, which is given in the section “Ecology and the impact of human activity on the environment”, which is considered as socio-ecological aspects of biological concepts and individual socio-environmental concepts, deepening their content and moving to more complex concepts. However, the programs do not take into account the continuity that forms leading socio-environmental concepts on an interdisciplinary and interdisciplinary basis. We determined this in our research by compiling the following questionnaire questions for the transmission of the concept of social ecology in school programs, for example:

1. Subject of Social Ecology.
2. Main tasks of Social Ecology:
  - disclosure of the laws of nature;
  - the formation of laws in which people live;
  - formation of the relationship between man and nature;

– disclosure of the laws of society’s development.

3. The main components of social ecology are:

- ecosystem and geosystem;
- sociosystem;
- geosystem and biosystem;
- *biosystem*.

4. Stages of the relationship between society and nature.

5. Forms of interaction between man and nature.

6. Social ecological system - the object of study of socio-ecology.

7. The system of social and ecological control.

8. Socio-ecological forecasting.

Analyzing the questionnaire on the transfer of the concept of social ecology in school programs, its conclusion can be seen in the diagram below (Figure 1).

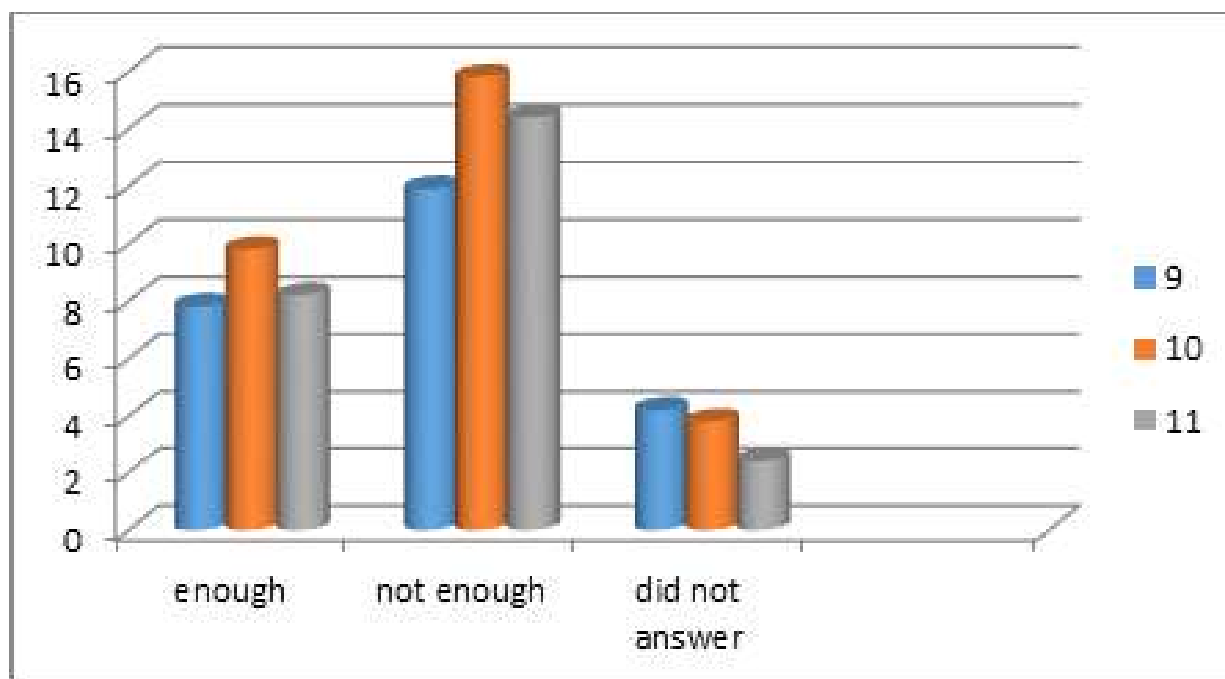


Figure 1. Presentation of the concept of social ecology in school programs

During the analysis of a special survey, it was noted that students’ assimilation of the concepts of Social Ecology was partially formed in the school by natural science subjects, as

well as through general media (popular science magazines, educational literature, current printed pages) [13].

At the same time, in order to determine the interests and abilities of students to choose an environmental orientation and their understanding of their future profession, teachers of the orientation class asked Short questions, the results of which were processed and summed up.

Analysis of the content of elements of social and environmental education in educational programs of natural science disciplines it made it possible to reveal the essence of the concept of Social Ecology and identify the features of the relationship between man and nature. This, in turn, determined the relevance of research work on the formation of social and environmental values of students.

**Discussion.** Analyzing a lot of literature that has dealt with the issues of formation and development of social ecology, we have noticed that today a different view of social ecology has been formed.

Philosophical scientists define social ecology as a separate branch of science that comprehensively studies the problems of interaction and interaction between man, nature and society. E.V. Girusov based the concept of social ecology on the concept of “Environment”, and A.V. Losev and G.G. Provadkin on the concept of “Noosphere”, according to V.D. Komarov, “social ecology should consist of a separate category that does not depend on either biology or geography”, I.B. Novik, V.A. Los, A.V. Kapura argues that “sociobiogenesis” and “socioecosystems” make up M. Skiba’s “environmental quality.”

The conclusion that follows is that in modern philosophical literature, various aspects of the biosphere and its relationship with social factors are studied. In particular, the theoretical and methodological problems of the relationship between society and nature are actively analyzed. In this regard, the correct philosophical approach to environmental problems undoubtedly affects the comprehensive solution of environmental problems, as well as the development of socio-environmental education.

The essence of E.V. Girusov’s idea of harmony in nature helps to deepen the understanding of the natural dialectical balance in nature. Based on the works of I.F. Reimers, V.D. Komarov, I.P. Gerasimov, they consider social ecology as scientific approaches to the study of natural objects, unique methods of human development as a new approach to the world in order to avoid a global crisis. I.P. Gerasimov gives a definition that social ecology should not be considered as a separate discipline, since it is becoming a complex field of scientific knowledge, covering all the fundamental areas of scientific knowledge.

The impact of environmental stress on the environment has led to the emergence of socio-economic problems in society, the solution of which is carried out on a common purposeful basis with other branches of science. This common goal includes the ecologization of society, the formation of a new ecological thinking and ecological worldview. From this we can see that classical ecology, according to the definition of N.F. Reimers, has gone beyond its biological framework and turned into a “megahecology” in modern conditions [14].

B. Kommoner argues that the basic principles of environmental protection are the result of the relationship between man and nature, proving that everything in nature is closely linked, the need to seek and study the stability and variability of these relationships, their breaks and the emergence of new relationships. According to the following principle, defining the concept of isolation of nature as the highest level ecological system, it means that nothing in nature disappears without a trace. Damage to natural systems by the relationship between man and nature separates man from nature. Its essence is that it reminds us of the power of nature, that nature knows everything, and that man is only a part of that nature. Natural systems create favorable conditions for life, and if a person does the opposite for his own need for these favorable conditions, then we owe nature, that is, in the sense that the gift that nature gives us is not free (Figure 2).

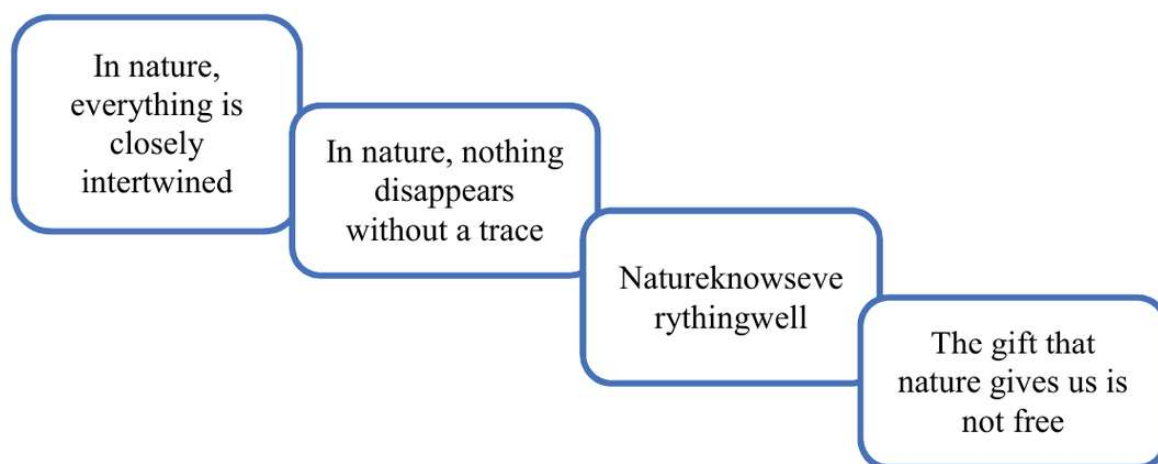


Figure 2. **B. Commoner basic principles of environmental protection [15].**

The conclusion that follows from this proves that the basic principles of Environmental Protection are the main component of the subject of social ecology.

We can say that environmental issues are very closely related to the branches of economic science. The rapid development of productive forces, along with increasing the material and cultural wealth of society, leads to environmental pollution, or rather to a violation of the ecological balance. Therefore, the relationship between society and nature in the context of modern economic growth requires a deeper study, that is, the search for the path of harmony between nature and society. This, in turn, involves the replacement of the concept of “economic efficiency” with the concept of “environmental efficiency”, the use of resource-saving and environmentally friendly

technologies, improving the environmental culture of society.

**Conclusion.** The current period is characterized by the emergence of many problems related to the state of the environment, such as crises of resource destruction as a result of human merciless attempts to treat nature. Changing this situation, that is, entering the path of sustainable development, is possible only through a sincere understanding of these issues, strict adherence to environmental principles. The main tool for solving these problems is appropriate environmental education for all people. Therefore, there was a need to improve environmental education, search for new approaches to teaching, and the purpose of our research was to determine the theoretical foundations of socio-environmental education in schools, thereby forming socio-environmental values of students.

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### Әлеуметтік экология ұғымының мәні және адам мен табиғат арасындағы қарым-қатынас

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#### *Аңдатпа*

Қазіргі экологиялық мәселелер тек қана биологиялық мазмұнмен шектеліп отырған жоқ, соңғы онжылдықта экологиялық зерттеулер әлеуметтік бағытқа ие болып, «адам-табиғат-қоғам» жүйесі арақатынастарын реттеп, басқарушы экологияның жаңа бір саласы әлеуметтік экологияның туындап, дамуына әкелді. Әлеуметтік экология идеяларын адамның және адамзаттың барлық табиғат жүйелеріне араласуы; антропогенді факторлардың әсерінен табиғат жүйелерінің эволюциясы мен өзгеру жылдамдығы; табиғат жүйелеріне геологиялық күштер мен адамның салыстырмалы және сипатты әсерін құрайды. Жалпы әлеуметтік экология ұғымы әлеуметтік-экономикалық мәселелерге тікелей байланысты дамиды, сондықтан, оны шешу үшін жаратылыстану, қоғамдық және техникалық ғылым салаларының кіріктіру қажеттігі туындады. Бұндай кіріктіру біріншіден, жаңа пәнаралық зерттеулердің жүргізілуіне әсер етеді, екіншіден, қазіргі оқытылатын пәндердің экологиялық мазмұны әдіснамалық және әдістемелік жағынан қамтамасыз етіледі. Адам мен қоғам ара-қатынасының жаңа кезеңі жүйелілік тәсілдерімен сипатталады, сондықтан мектепте білім беруді қазіргі заманғы әлемнің ғылыми бейнесін қалыптастыруға қайта бағдарлау қажет. Мұны біз мектептегі жаратылыстану – ғылыми пәндерді бір-бірімен байланыстыру арқылы экологияландырудан көреміз. Экологиялық білім беру бүгінгі таңда мектеп бағдарламалдарына толығынан еніп, оның жаңа бір құраушысы әлеуметтік-экология көрініс таба бастады. Мақалада жаратылыс-ғылыми пәндері мазмұнындағы әлеуметтік-экологиялық ұғымының мәні және адам мен табиғат арасындағы қарым-қатынас мәселелері талқыланады.

*Түйін сөздер:* әлеуметтік-экология; табиғат; табиғат жүйелері; биосфера; әлеуметтік экология идеялары; жаратылыстану; қоғамдық және техникалық ғылым салалары; кіріктіру; жаңа пәнаралық зерттеулер; адам мен қоғам ара-қатынасы; қазіргі заманғы әлемнің ғылыми бейнесі; жаратылыс-ғылыми пәндер.



**Сущность понятия социальная экология и взаимоотношения человека и природы**

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*Аннотация*

Современные экологические проблемы не ограничиваются только биологическим содержанием, в последнее десятилетие экологические исследования приобрели социальную направленность, регулируя соотношения системы «человек-природа-общество», что привело к возникновению и развитию новой отрасли социальной экологии. Интеграция идей социальной экологии во все системы природы человека и человечества; скорость эволюции и изменения систем природы под влиянием антропогенных факторов; геологические силы и относительное и характерное влияние человека на системы природы. Концепция социальной экологии в целом развивается в непосредственной связи с социально-экономическими проблемами, поэтому для ее решения возникла необходимость интеграции отраслей естественных, общественных и технических наук. Такая интеграция, во-первых, влияет на проведение новых междисциплинарных исследований, во-вторых, методологически и методически обеспечивается экологическое содержание современных преподаваемых дисциплин. Новый этап взаимоотношений человека и общества характеризуется системными подходами, поэтому необходима переориентация школьного образования на формирование научной картины современного мира. Это мы видим в экологизации естественнонаучных предметов в школе, связывая их между собой. Экологическое образование сегодня полностью вошло в школьные программы, и одна из его новых составляющих – социальная экология. В статье обсуждается сущность социально-экологического понятия в содержании естественнонаучных дисциплин и проблемы взаимоотношений человека и природы.

*Ключевые слова:* социальная экология; природа; системы природы; биосфера; идеи социальной экологии; сферы естественных; общественных и технических наук; интеграция; новые междисциплинарные исследования; взаимоотношения человека и общества; научная картина современного мира; естественно-научные дисциплины.

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