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ECOLOGICAL CULTURE, SCIENCE, CREATIVITY – AS A PLEDGE OF COGNITION THE BIODIVERSITY OF NATURE AND ITS PRESERVATION

Annotation. An increasing number of specialists are inclined to believe that the main cause of the ecological crisis lies not only in backward technologies, little effective environmental protection and imperfect legislation, but also in the extremely low ecological culture of people. The experience of the modern older generation is based on ecological values that do not correspond to the new time. Since most people of this generation are brought up in the spirit of consumption, in the spirit of conquerors of nature. Without changes in the culture of nature management, one cannot hope for positive changes in the environment. This article examines the experience of holding annual environmental actions, competitions and conferences among the students of the Aktau school, as a result of which there is an intensification of scientific and environmental activities, environmental education and involvement of children in the conservation of the biodiversity of nature and biological resources.

Keywords: ecological education; ecological culture; biodiversity; vegetation; wildlife.

Introduction

In the modern educational process, equipped with computer and innovative technologies in teaching, as well as the tendency of schoolchildren to "gadget mania", it is important to preserve and support the activities of students aimed at learning about the biodiversity of nature and its preservation.

The basis of life on Earth is biodiversity and its sustainable development. The biological resources of the Earth are vital for the economic and social development of mankind. Therefore, it is increasingly recognized that biological diversity is a world heritage of great value for present and future generations. At the same time, today, more than ever, the threat to the existence of species and ecosystems is great. The extinction of species caused by human activity continues at an alarming rate. Humanity has always had a negative impact on its natural environment, but it was only at the end of the second millennium that it became clear that the interaction between humanity and the surrounding nature acquires the character of a protracted global conflict, the name of which is the global environmental crisis [1].

The very origin of the term "biodiversity" is controversial. It is believed that the phrase "biological diversity" was first used in 1892 by G. Bates. On the other hand, it is argued that the term "Biodiversity" was first introduced by V. Rosen in 1968 at the national forum "US Strategy on Biological Diversity".

Some literary sources write that the beginning of the study and conservation of biodiversity was laid in 1948, when the International Union for the Protection of Nature and Its Resources was established. The first UN Conference on the Human Environment was held in Stockholm in 1972.



At this forum, general principles of international cooperation in the field of nature protection were outlined.

In 1992, the UN Conference on Environment and Development, which was held in Rio de Janeiro, adopted the International Convention for the Protection of Biological Diversity. The adoption of this document eloquently testifies to the importance of the problem of preserving the totality of living organisms inhabiting our planet in their native habitat, the understanding of the problem by most States of the world and the desire to do everything possible to preserve the existing diversity of organisms. It was recognized that the decline in the level of biological diversity is one of the main causes of the progressive degradation of natural ecosystems.

On December 20, 2006, the UN General Assembly, by its resolution 61/203, proclaimed 2010 the International Year of Biodiversity.

In the Convention, biological diversity is understood as "the variability of living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part; this concept includes diversity within a species, between species and ecosystem diversity". The World Wildlife Fund defines biodiversity as "all the diversity of life forms on earth, millions of species of plants, animals, microorganisms with their sets of genes and complex ecosystems that form wildlife."

A.A. Tishkov understands biodiversity as "the diversity of life at all levels of its manifestation, formed as a result of the action of evolution, ecology and anthropogenic factors" [2].

There are three types of biological diversity: 1) genetic – reflects the intraspecific diversity of individuals; 2) species – reflects the diversity of species of living organisms; 3) ecosystem – reflects the differences between ecosystem types, habitats and ecological processes. The principle of ecosystem stability states: species diversity ensures ecosystem stability.

In general, the reasons for the decline in diversity are: growing consumption of resources, neglect of species and ecosystems, insufficiently thought-out state policy in the field of exploitation of natural resources, lack of understanding of the importance of biological diversity and the growth of the Earth's population. However, since the "Neolithic revolution", the opposite process has been going on in parallel – the formation of biodiversity by humans during the development of agriculture, crop production and animal husbandry.

Among other tasks in the field of biodiversity protection, I would like to pay special attention to the ecological and educational task, which consists in the ecological education of the population, the dissemination of ideas for the protection of biodiversity. The conservation of biodiversity in the future can be sustainable only if the awareness and responsibility of society at all its levels, the conviction of the need for action in this direction will constantly increase.

In our understanding, the solution of this problem is possible if we pay attention to this problem at school. Everyone knows that "Communication" with nature will allow a child to remain a harmonious person, feel part of the biomir, and be an important element of social life.

Therefore, our work at the biology teacher's school is aimed at studying and protecting nature through the direct participation of the child in the ecological life of the region: the implementation of scientific projects, campaigning for the protection of rare and medicinal plants in the coastal zone of the Caspian Sea of Aktau, and much more.

For three years, we have been holding events at the school, which are perceived by schoolchildren with great initiative, and also bring positive results both from the point of view of the educational process, and are an invaluable help to the city of Aktau in the field of control and protection of natural resources. Every year we summarize the results of environmental work and environmental education among school students. Such school events are very popular: Business card "Let's make Aktau clean"; Erudite "Environmental safety"; Landscape composition "Autumn fantasy"; "And our world will become cleaner"; "Ecological polymath"; "Animal world". In addition, master classes were organized for students and teachers. Teams of young ecologists



participated in the ecological quest "Nature of the native Land", a flash mob competition. The labor action of the eco-council was to plant trees and create a school park.

No less significant events in 2020 – 2021 are the holding of the mini-conference "Environment and conservation of biodiversity of Mangystau region". The speeches of school students with scientific reports that sometimes touch on very hot environmental problems of the region, I think, are always relevant and interesting to a wide range of specialists. The purpose of the conference: development of creative potential, activation of research activities of students in the field of ecology. There were enough people willing to make a report, which indicates that the field of research of students in grades 7-11 is expanding. The students presented their projects, not just making reports, but enthusiastically talked about the research. What worries our Mangystau schoolchildren? These are, for example, environmental issues related to the assessment of the state of the population of Red-book species (*Malacocarpus crithmifolius*, *Crambe edentula*, *Clypeola jonthlaspi*, *Crataegus ambigua*), the influence of mowing and recreational load on the species composition of vegetation, the ecological state of the animal world, the dynamics of the number and distribution of argali, and many others. As mentioned earlier, not only students of our school can try their hand at scientific activity, but also students of other schools who have completed their projects as part of school biology classes. In this aspect, the school competition "The Best Abstract" is the best fit, the purpose of which is also to support students who are interested in research and practical work on the study and conservation of biodiversity of natural ecosystems. Here are a few topics-examples of actual research of students at this event: ""Kyzylsay"- state regional natural park" (Aidzhan R.), "The magic of Bozshyra mountain" (Bizhanova A.), "Aktau-Bozachy zoological reserve of republican significance" (Gubaidullin S.), "Ustyrt state reserve" (Musan A.), " Katran toothless - a plant of the Red Book" (Tuleogali J.), "Saxaulchik Leman (*Arthropytum lehmannianum*)" (B. Shurman) and dozens of others.

Students of grades 5-11 can have the opportunity to show their talents and knowledge on the verge of creativity and science by participating in the creative competition "Specially protected natural territories of the Mangystau region". The purpose of the competition is to educate the younger generation to respect the objects of the animal and plant world, including in specially protected natural areas.

The objectives of the competition: acquaintance with specially protected natural territories, their role in nature protection and the functions performed by them; acquaintance with the sights of the native land representing natural or historical and cultural value, planning and implementation of research activities in specially protected territories.

Also, the institution annually conducts environmental actions-contests: "Plants of Mangystau region", "Wildlife of Mangystau region" and "Feed the birds in winter". "Plants of the Mangystau region" is held among students of grades 5-7 in the following areas: ecological and educational (environmental protection measures for the study and protection of plants of Mangystau region), as well as a creative direction consisting of 2 contests for children of different ages. The results of the action-contest "Protect the Caspian" are summed up in winter and are based on the evaluation of the work of children in three directions: practical "Caspian coast!" – labor landings to clean up the coast from household garbage; ecological and educational "My lovely Caspian" - events with 4th grade students, creative – a competition of environmental videos, information booklets, presentations about environmental measures to preserve the Caspian Sea for environmental groups, poems with design, collages. "Feed the birds in winter" takes place in winter among 5th-6th grade students. The figures speak about the active participation of children and teenagers in the event.

So in 2020, 55 students of the school took part, and in 2021, 85 students have already taken part. The children visit the botanical garden, parks of the city, where they observe and feed birds, make feeders and hang them in parks and squares of the city, monitor the number and species diversity of birds.



Materials and methods of research

The research was conducted at a school in Mangystau region. To identify the primary and final level of formation of the components of ecological culture, as well as to analyze the dynamics indicators for the academic year, we used the following methods: A modified version of the methodology "Diagnostics of the level of ecological culture of the individual" by S.S. Kashlev, S.N. Glazychev for students of grades 5-6, the test "Ecological culture of students" by E.V. Asafova for grades 7-8. The analysis of the data of the class summary tables allowed us to identify the level of formation of the components of the ecological culture of each individual student and the indicator of the individual dynamics of the components of the ecological culture of students.

Research results

Students of grades 5A, 6A, 7A and 8B participated in this study. Only 44 students participated in the diagnosis of the level of ecological culture of the individual according to S.S. Kashlev, S.N. Glazychev for students of grades 5-6. Environmental knowledge of the 6th grade was higher than that of the 5th grade. The component of the value of nature and the attitude to nature, on the contrary, showed higher in the 5th grade than in the 6th grade. In general, the overall level of ecological culture at the beginning of the research was low. Perhaps the students did not know about the essential aspects of the animal and plant world, they show a desire to take care of animals and the environment, but the cognitive attitude to plants is not developed. They take care of animals and plants, but they do not show interest in this content. The study showed that our work has yielded good results. Students began to understand the natural connections of objects, phenomena, improving their knowledge about the features of the natural world. Although they are not yet able to analyze the consequences of inadequate environmental impacts, they already show a desire, care and respect for nature (Table 1).

Table 1 – Results of diagnostics of the level of ecological culture of the personality of students in grades 5-6 (according to S.S. Kashlev, S.N. Glazychev)

Components of ecological culture												The general level of ecological culture			
Environmental knowledge				The value of nature and attitude to nature				Environmental activities							
5th grade		6th grade		5th grade		6th grade		5th grade		6th grade		5th grade		6th grade	
Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
N	S	S	V	S	V	N	V	N	S	N	S	N	S	N	S

The results of the test "Ecological culture of students" by E.V. Asafov for grades 7-8 are shown in Table 2. 46 students of grades 7 A and 8 B participated in the testing. If at the beginning the students had insufficient development of ecological interests, the presence of fragmented ecological ideas and knowledge that are not realized in everyday life and creative work. In the 2021-2022 academic year, not only systems of beliefs, value orientations and attitudes have been formed that encourage mastering new environmental knowledge and implementing them in activities based on a humane human attitude to nature, but it should also be noted that students are active not only in participating, but also in developing and conducting environmental activities.



Table 2 – Results of the "Ecological culture of students" test

Components of ecological culture												The general level of ecological culture			
Environmental education				Environmental awareness				Environmental activities				7th grade		8th grade	
7th grade		8th grade		7th grade		8th grade		7th grade		8th grade		7th grade		8th grade	
Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
N	S	S	V	S	V	N	V	N	S	S	V	S	V	N	V

Conclusion

Thus, if the educational system of an educational institution for some reason does not have the possibility of organizing and implementing environmental education of children in accordance with existing models, such an institution should not refuse to solve the problem of forming an ecological culture of children, since it can be solved by other ways and means using the potential of additional education. At the same time, additional environmental education is easily incorporated into an already existing or created model of environmental education, introducing its own features and possibilities for solving a very important, especially relevant at this stage of social development, problem of the formation of ecological culture. The versatility of such work allows students to be involved in environmental protection and environmental education in different areas and interests, to achieve high results, both in the process of mastering theoretical knowledge and in solving specific practical problems of our region. As a result, the creative and scientific work of our students is highly appreciated both at competitions of various levels, and by representatives of the scientific ecological community, and the public of the city.

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ЭКОЛОГИЯЛЫҚ МӘДЕНИЕТ, ҒЫЛЫМ, ШЫҒАРМАШЫЛЫҚ –
ТАБИҒАТТЫҢ БИОАЛУАНТҮРЛІЛІГІН ЖӘНЕ ОНЫҢ САҚТАЛУЫН БІЛҮДІҢ
КЕПІЛІ**

Аңдатпа. Экологиялық дағдарыстың басты себебі артта қалған технологияларда, қоршаған ортаны тиімсіз қорғауда және заңнаманың жетілдірілмегендігінде ғана емес,



сонымен қатар адамдардың өте төмен экологиялық мәдениетінде деп санайтын сарапшылардың саны көбейіп келеді. Қазіргі аға ұрпақтың тәжірибесі жаңа уақытқа сәйкес келмейтін экологиялық құндылықтарға негізделген. Өйткені бұл ұрпақтың басым көпшілігі тұтынушылық рухта, табиғатты жаулап алушылардың рухында тәрбиеленген. Табиғатты пайдалану мәдениетін өзгертпей, қоршаған ортадағы оң өзгерістерге үміттенуге болмайды. Бұл мақалада Ақтау қаласындағы мектеп оқушылары арасында жыл сайынғы экологиялық іс-шараларды, конкурстар мен конференцияларды өткізу тәжірибесі қарастырылады, нәтижесінде ғылыми-экологиялық іс-шаралар, экологиялық ағарту және балаларды табиғат пен биологиялық әртүрлілікті сақтауға қатыстыру белсендіріледі. биологиялық ресурстар.

Кілт сөздер: экологиялық білім; экологиялық мәдениет; биоәртүрлілік, өсімдіктер, жануарлар әлемі.

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ЭКОЛОГИЧЕСКАЯ КУЛЬТУРА, НАУКА, ТВОРЧЕСТВО – КАК ЗАЛОГ ПОЗНАНИЯ БИОРАЗНООБРАЗИЯ ПРИРОДЫ И ЕГО СОХРАННОСТИ

Аннотация. Все большее число специалистов склоняется к мнению, что главная причина экологического кризиса кроется не только в отсталых технологиях, мало эффективной природоохранной деятельности и несовершенстве законодательства, а и в крайне низкой экологической культуре людей. Опыт современного старшего поколения создан на экологических ценностях, не отвечающих новому времени. Так как большинство людей этого поколения воспитаны в духе потребления, в духе покорителей природы. Без изменений в культуре природопользования нельзя надеяться на позитивные изменения в окружающей среде. В данной статье рассматривается опыт проведения ежегодных экологических акций, конкурсов и конференций среди учащихся школы г.Ақтау, в результате которого происходит активизация научной и природоохранной деятельности, экологическое воспитание и привлечение детей в сохранение биоразнообразия природы и биологических ресурсов.

Ключевые слова: экологическое образование; экологическая культура; биоразнообразие, растительность, животный мир.