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# FORMATION OF ECOLOGICAL CULTURE OF STUDENTS IN BIOLOGY LESSONS

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## Abstract

The article considers the most acute methodological approaches to teaching in a general education institution related to increasing the cognitive activity of students, developing their practical skills, systematic thinking, deepening and expanding students ' competencies. On the example of studying biology as the basis of natural science knowledge , methods of forming students ' environmental competence were used.

**Keywords:** environmental education, school, student, method, nature.

The history of mankind is closely connected with the origin of nature. At the present stage, the issues of its traditional interaction with humans have grown into a global environmental problem. This is due to the fact that as the influence of technology and the Internet grows, it has a negative impact on human health. Society needs not only a system of environmental knowledge, but also citizens with practical skills and abilities in the field of environmental protection, the ability to predict the environmental consequences of human economic activity. In addition, young citizens should feel responsible for the environment. The formation of a new type of relationship between man and nature aimed at overcoming the degradation of the natural environment and its preservation is considered as an effective approach to solving the environmental problems of modern Kazakh society. The solution of these tasks actualizes the issues of using the potential of environmental education of the younger generation.

Teaching the subject of Ecology teaches to explain the essence of environmental and social problems, to analyze the development of relationships between the environment and man. It is necessary to scientifically and methodically analyze the issues of environmental education and upbringing in secondary schools and universities, to build goals and objectives, content, didactic foundations of continuous environmental education.

The research was conducted in 2019-2020 on the basis of the transmitting institution of KSU "School No. 23" of the Turkestan region. The study involved students of the 11th grade of the same school. The school has created experimental and control classes. A plan for conducting the experiment in three stages has been set in accordance with the topic of the research work. ET-11 group (25 people) – control group BT-12 group (25 people) - experimental group.

At the first stage of the formative experiment, a diagnostic map with criteria, indicators, and methods was developed.

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**Table 1.** Diagnostic map of the experiment

| Criteria | Indications | Methods |
|---|---|---|
| Axiological | - attitude to nature;<br>- mainformation of human qualities;<br>- understand the multifaceted value of nature. | «Nature value» survey |
| Emotional-volitional | - emotional attitude to nature;<br>- attitude of students to negative actions;<br>"it's a matter of nature. | "I and survey" nature" |
| Motivational | - the desire to help nature;<br>- preparation for environmental activities | " My help" survey |

To conduct research on this basis, 4 methods were chosen: the "knowledge" method (modification, O. V. Polosueva), the task of this method was to determine the knowledge of the main educational program. The methodology "the value of nature" (O. V. Polosueva) was used to determine the attitude of 11th grade students to the environment. To determine the emotional-volitional component, the method "I and nature" (Zhdanova S. V.) was used, aimed at identifying the student's emotional attitude to nature. The methodology "my help" (Zhdanova S.) determines the level of involvement of students in environmental activities.

**1. The methodology "knowledge" (modification, O. V. Polosuyeva)**

The purpose of the methodology: to determine the level of knowledge of students on the basic concepts of ecology (population, ecosystem, homeostasis, etc.). This method is modified based on the methodology of O. V. Polosuyeva. It determines the students' knowledge of ecology.

There are 20 questions in this methodology. For each correct answer, the student receives 1 point. As a result, a student can score the highest score-20. Students with scores from 20 to 17 have a high level of knowledge in ecology. Students who scored 16-13 points have an average level of knowledge in ecology. And students below 13 points have low knowledge of ecology. Questions on the relevant parameters are given in Appendix 2.

So, after analyzing the results of this technique in two groups, the following results were obtained. The results are presented in table 2.

**Table 2.** Diagnostic results according to O. V. Polosuyeva's "knowledge" method

| The level of knowledge of schoolchildren on ecology | Number of students | Percentage, % |
|---|---|---|
| High | 9 | 36 |
| Middle | 12 | 48 |
| low | 4 | 16 |

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According to Table 2, it can be said that 36% of the surveyed students (9 people) have a higher education in ecology. Students know the methods of scientific cognition, know information about the unity of nature, the relationship and interdependence of organisms in nature. 48% of the surveyed students (12 people) have an average level of education. Students are poorly versed in the concepts of demography, phenology and meteorology. 16% of the surveyed students (4 people) have a low level of environmental knowledge. Students do not know the characteristics of the population, do not understand the types of nutrition in the ecosystem, cannot understand the consequences of the transition of ecosystems to each other. So, the method "the value of nature" (O. V. Polosuyeva) the purpose of this method is to determine the attitude of students to the environment.

The methodology also shows that students have formed basic moral qualities and they understand the multifaceted value of nature.There are 7 questions in the methodology that students should answer on their own, without hesitation. The methodology includes questions such as What is the moral value of nature, what value does nature have for you, etc.

The content of students' responses is evaluated. The students' answers are divided into 3 groups. The first group-students understand the value of nature. The second group is difficult for students to answer. The third group-students do not understand the value of nature.

The results obtained using the method "the value of nature" (O. V. Polosueva) are presented in Table 3. Based on the data obtained, we conclude about the percentage of understanding of the natural value by 11th grade students.

According to table 3, 20% of the surveyed students (5 people) have a high level of understanding of value. 32% of the surveyed students (8 people) have an average level. 48% of the surveyed students (12 people) have a low level of understanding of the value of nature.

**Table 3.** Diagnostic results according to O. V. Polosuyeva's method "the value of nature"

| The level of students' understanding of the value of nature | Number of students | Percentage, % |
|---|---|---|
| High | 5 | 20 |
| Middle | 8 | 32 |
| low | 12 | 48 |

Thus, a high level indicates students' understanding of the multifaceted value of nature, a positive attitude to nature, and the formation of basic moral qualities.

The average level indicates that schoolchildren poorly understand the multifaceted value of nature, are neutral to nature, basic moral qualities are insufficiently formed.

A low level indicates a lack of understanding by students of the multifaceted value of nature, a negative attitude towards nature, lack of formation of basic moral qualities.

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**2. The methodology of "I and nature" (S. V. Zhdanova)**

Advantages of cloud technology: determination of students' emotional attitude to the environment.The methodology reflects the attitude of students to negative human actions in relation to the environment.

The results obtained using this technique allow us to assess the emotional and volitional attitude of students to the environment. In technology, there are the following questions: what emotions and feelings cause people to have a negative attitude towards nature, can you stop your friend if you want to harm the environment, etc.

In this method, the student consists of 6 questions, which he must answer on his own, without hesitation. The content is evaluated

The answer is students. The students' answers are divided into 3 groups. The first group-students have a positive attitude to nature, and people react negatively to nature. The second group is difficult for students to answer. The third group -students are neutral about nature and do not react to negative behavior of people in relation to nature.

The results obtained using the "I and nature" technique (Zhdanova S. V.) are presented in Table 4. Based on the data obtained, we conclude about the percentage of understanding of the natural value by 11th grade students.

According to Table 4, 32% of the surveyed students (8 people) have a high level of emotional and volitional attitude to nature. 24% of the surveyed students (6 people) have an average level. 44% of the surveyed students (11 people) have a low level of emotional and volitional attitude to nature.

**Table 4.** Diagnostic results according to the method of S. V. Zhdanova "I and nature".

| The level of emotional and volitional attitude to nature | Number of students | Percentage, % |
|---|---|---|
| High | 8 | 32 |
| Middle | 6 | 24 |
| low | 11 | 44 |

So, the high level of emotional-volitional relationships suggests that. The readiness of students for environmental protection activities is at a high level. Takes an active part in environmental protection activities.

The average level shows that students are engaged in environmental activities only on request. Reluctantly engaged in environmental activities.

A low level indicates that the student is not participating at all. in solving environmental problems. Does not show initiative and does not participate in environmental activities.

3. the technique of "my help " (S. V.Zhdanova)

The purpose of this methodology is to determine the readiness of students for environmental activities. The methodology reflects the desire of students to help the environment.

The results obtained with the help of this technique allow us to assess the motivation of students for environmental activity. The methodology includes the following questions: What makes you engage in environmental activities, what prevents you from engaging in

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environmental activities, do you consider yourself obligated to engage in environmental activities, etc.

There are 6 questions in this methodology. Students had to choose an answer that corresponded to their life principles. When choosing an answer that characterizes indifference to nature, such students have a low level of ecological culture. Students who do not respond belong to students with a low ecological culture. Students who are interested in defending when choosing an answer are described as students with a high culture.

The results obtained using the "my help" technique (Zhdanova S. V.) are presented in Table 5. Based on the data obtained, we conclude about the percentage of readiness of 10th grade students for environmental activities.

According to table 5, 20% of the surveyed students (5 people) have a high level of preparation for environmental activities. 24% of the surveyed students (6 people) have an average level of preparation for environmental activities. And 44% of the surveyed students (11 people) have a low level of preparation for environmental activities. A high level indicates that students know the norms and rules of behavior in nature and observe them.

The average level shows that students are not fully aware of and comply with the rules of behavior in a living environment.

A low level indicates that students do not control their behavior, their actions in the environment.

**Table 5.** Diagnostic results according to the method of S. V. Zhdanova "my help"

| The level of preparation of students for environmental activities | Number of students | Percentage, % |
|---|---|---|
| High | 5 | 20 |
| Middle | 8 | 32 |
| low | 12 | 48 |

After interpreting and conducting the data according to the methods, the characteristics of the levels of formation of the ecological culture of 11th grade students were developed.

High level: students form a solid knowledge of the unity of the living environment, the relationship and interdependence of organisms in the environment; students understand the multifaceted value of nature. Students know the norms and rules of behavior in nature and fulfill them. Takes an active part in environmental protection activities.

Intermediate level: students have insufficiently formed knowledge about the unity of the living environment, the ecological interrelation of organisms in nature; they have a poor understanding of the multifaceted value of nature. Students completely do not know and do not follow the rules of behavior in nature. Reluctantly engaged in environmental activities.

Low level: students do not know the ecological connection and interdependence of organisms in a living environment. Students do not control their behavior, their actions in nature. They do not understand the multifaceted value of nature. Does not know the rules and norms of behavior in nature. Does not show initiative and does not participate in environmental activities.

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In this research paper, the most acute methodological approaches to teaching in a general education institution are considered, related to increasing the cognitive activity of students, developing their practical skills, systemic thinking, deepening and expanding the competencies of students. Among those who today pose a threat to the environment, especially to human health, the harmful effects of building materials extracted by synthesis were discussed.

That is, by conducting additional extracurricular work with students for environmental education, using various methods, the child has formed ecological cognition, previously he only mastered the concept of ecology. In addition, he is used to increasing the importance of the ecological situation in life, forming ecological cognition.

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