Relevance Of Using The Edge Component In Teaching Biology

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Abstract.

This article discusses the importance and relevance of using edge components in biology education. During the educational process, students will be given a diagnostic survey to get acquainted with the rare plants of their region and determine the level of knowledge of the regional material by students of the Sarsen Amanzholov Higher College. The local history work contains data reflecting the natural, economic, social and cultural interrelation of the region under study. In addition, the most effective way of rational consideration of regional components in unity is to consider the scientific worldview of students, a holistic image of the environment, scientifically based environmental and socio-cultural attitudes, and a system of value-oriented relations.

Keywords: *Teaching biology; regional component; sustainable development goals and medicinal plants.*

I. INTRODUCTION

Article 29 of the Law of the Republic of Kazakhstan On Education states that «in order to integrate education and science, ensure and improve the educational process, develop and implement new training technologies, and ensure advanced training of teachers in educational organizations and the corresponding infrastructure, educational, methodical and scientific-methodical work is carried out» [1].In the strategic development plan of the Republic of Kazakhstan for 2023-2029, the key areas of development of education in Kazakhstan «training of qualified personnel will be linked to plans for the industrialization of the country. In technical, vocational and higher education, a transition will be made to a system that meets the requirements of the modern labor market, and educational standards will be formed by professional standards through the National Qualifications System» [2]. Efficient use of natural resources and conservation of biodiversity is one of the most relevant topics. There are about 6 thousand plant species on the territory of the country, of which 14% are endemic. 387 species are listed in the Red Book of the Republic of Kazakhstan, including Rheum L.

The rare and endemic Rheum Altaicum Losinckplant Rheum Altaicum Losinck, which belongs to the genus, also includes [3].The flora of East Kazakhstan totals 1,283 different plants and includes various groups of useful plants, of which 87 are considered rare species. Sustainable socio-economic development of the region is closely linked to the rational use and protection of natural resources. Especially valuable medicinal plants form a special ancient part of the natural flora. In harsh natural and climatic conditions, a unique gene pool of plants that are resistant to adverse environmental influences and high synthesis of biologically active substances is formed, and is of particular value as a source of medicinal raw materials. Due to the anthropogenic impact of humans, the weakening of animal husbandry, and control over the protection of natural resources, the reserves of many valuable medicinal plant species have significantly decreased.

The purpose of the study: to review the literature on rare Red Book species in the flora of East Kazakhstan, to identify the knowledge of students of the S. Amanzholov Higher College about rare species, local lore.

In the course of the study, the following tasks were set:

1) Familiarization with scientific literature relevant to the research topic;
2) familiarization of the control group with the prepared review related to the study
3) determination of the state of knowledge of students of the S. Amanzholov Higher College about rare species, local lore,

4) conducting quantitative and qualitative analysis of the collected materials, its mathematical processing and generalization;

Novelty of the study: first-year students of the S. Amanzholov Higher College conducted a diagnostic survey on rare species, local lore, and prepared handouts on these species.

II. METHODS

Theoretical (synthesis and analysis), empirical (conversation, observation, survey), statistical (work on statistical processing of research results).

Use of edge components in the educational process. Twenty-first-century research has changed the goals and content of general and higher education, learning processes, and perceptions of its results.

Biological science occupies an intermediate position between natural science and social science, integrating with natural science and pedagogical disciplines, initiating the orientation of other natural sciences to humanism. Timely improvement of the methodological training of future specialists is associated not only with the need for practice, but also with scientific achievements in solving the problems of teacher training in the field of natural education. Environmental issues that arise in our natural environment also highlight environmental issues in the education and training and upbringing of students. Greening of knowledge is carried out not only with the assimilation of theoretical concepts. For this purpose, in educational institutions that train specialists, the content of the main disciplines can be achieved only by strengthening their own research of future specialists, understanding the natural features of their region, and the types of life that are inclined to them. For example, disciplines related to the natural science cycle are ideally suited for implementing such research and regional components. Therefore, when training specialists, it is possible to implement several requirements for future teachers by including the regional component in the content of the discipline:

- Sustainable Development Goals: quality education and work on aspects of biodiversity conservation;
- introduction of the regional component creates conditions for the formation of research skills of future teachers;
- future teachers master the method of linking biological content with local materials;

research work on regional material students develop the ability to organize independent activities using types of research, such as observation, experimentation, setting up an experiment, etc.; Students increase their interest in studying biology [4,5,6].

The flora of East Kazakhstan totals 1,283 different plants and includes various groups of useful plants, of which 87 are considered rare species. Sustainable socio-economic development of the region is closely linked to the rational use and protection of natural resources. Especially valuable medicinal plants form a special ancient part of the natural flora. In harsh natural and climatic conditions, a unique gene pool of plants that are resistant to adverse environmental influences and high synthesis of biologically active substances is formed, and is of particular value as a source of medicinal raw materials. Due to the anthropogenic impact of humans, the weakening of animal husbandry, and control over the protection of natural resources, the reserves of many valuable medicinal plant species have significantly decreased. As objects of research, we also considered rare species in the flora of East Kazakhstan and identified their biological features: **Cypriedium calceolus, Erytronium sibiricum, Paeonia tenufolia, Drosera rotundifolia, Liliaceae Juss, Pulsatilla Miil., Tulipa hetesopetala, Rhadiolla rosea, Macropodium nivale (Pall.), Diphasiastrum, Rhaponticum carthamoiles of** Alynda [7] .

III. RESULT AND DISCUSSION

A total of 4 academic groups participated in our diagnostic survey, of which Group A was identified as a control group, and groups H, B, and D were identified as expert groups. In the course of studying biology, we held a round table with a pedagogical experiment, providing experimental groups with information about the flora of the East Kazakh region as a whole, rare species, as well as interesting materials and data, followed by a survey in local history content. The control group received only a

questionnaire without providing additional data. According to our observations: by providing additional data on local lore, we noticed an increase in the cognitive interests of students. Next, we decided to interview students of the S. Amanzholov Higher College to make sure at what level our region has knowledge about rare plant species listed in the Red Book and about general local lore.

The diagnostic survey consisted of the following questions:

1. Do you like the subject of biology? The selected answer is highlighted. (Yes. No. I can't answer).
2. the plant that you like best in the surrounding nature?
3. How well do you know the plants of your region? (Yes. No. I can't answer).
4. a friend from another region came to visit you. He starts asking plants that grow only in Eastern Kazakhstan, can you name these plants?
5. What plants of East Kazakhstan are listed in the Red Book of the Republic of Kazakhstan?
6. Do you want to attend a circle dedicated to studying the various plants that grow around us? (Yes. No. I can't answer).

The result of the diagnostic survey was as follows:

Table 1. Practice results

Student responses	control group H 28 B /		a Group A 24 B / a		group B 24 B / a		group D 17 B / a		total
	qty	%	quantity	%	quantity	%	%qty % qty % qty % qty	%	quantity
Yes	10	41	21	75	16	66	12	70	59
No	10	41	4	14	5	20	2	11	21
reply I am suffering	4	18	3	11	3	14	3	19	13
number of students who took part in Saulnam:									93

Thus, a study conducted by students of a Higher college in order to identify rare species and the state of local history education, allowed us to draw the following conclusions:

IV. CONCLUSION

The topic of our research raises the problem of local lore. We managed not only to get to know the rare plants of our native land, but also to get acquainted with the conditions of their protection, to increase the cognitive interests of rare species by studying the features of their natural habitat and biology. Works in the field of local lore contain data reflecting the natural, economic, social and cultural interrelation of the region under study. At the same time, considering the regional components in unity, increasing the scientific outlook of students, cognitive abilities, forming a holistic image of the environment, scientifically based environmental and socio-cultural attitudes, and a system of value-oriented relations is not only rational, but also the most effective way to form the worldview of the individual as a whole

In the survey, students of the control group showed their knowledge of local history in Nizhny Deng.

- Small number of native plant species;
- common species found in Kazakhstan are often mentioned, and local people do not know well the types of protected plants;

2. the main reason for the poor knowledge of students about the flora of their region, in our opinion, is that the curriculum pays little attention to regional matarei.
3. groups H, B, D, designated by the experimental group, as a result of providing important information, the results of the diagnostic survey showed a level of knowledge of 66%.

The following protection measures are offered as a rare valuable species:

1. conservation of habitats and expansion of protected areas, such as national parks.
2. prohibition of grazing in the main growing areas
3. restoration of natural populations by introduction
4. increase the number of botanical gardens where rare species can be grown.
5 conduct regular research and monitoring of populations and their condition.
6. greater integration of edge components in training programs.

In this regard, in educational institutions, the curriculum of biological disciplines provides for the allocation of 10-15% of the time to the regional component. Therefore, when training specialists, if possible embedding the regional component in the content of the discipline, you can implement several requirements for future specialists:

- implementation of the regional component creates conditions for the formation of research skills of future specialists;
- master the methods and techniques of linking biological content with local materials by future specialists;
- research work on regional materials students develop the ability to organize independent activities using types of research, such as observation, experimentation, setting up an experiment, etc.;
- students ' interest in studying biology increases [8,9].

In the education system, environmental literacy of the population is one of the most important processes. This is due to the fact that the interpretation of environmental situations is a problem that is assimilated by consciousness in different ways and in different ways, in accordance with the level of education, age of each person [10].

The local history work contains data reflecting the natural, economic, social and cultural interrelation of the region under study. At the same time, consideration of regional components in unity is not only rational, but also the most effective way to form a scientific worldview of students, a holistic image of the environment, scientifically based environmental and socio-cultural attitudes, and a system of value-oriented relations.

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