

## Student-centered technology in the professional training of future biology teachers for the regional component

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### ABSTRACT

One of the most pressing global problems today is the prevention of environmental crises is achieved only through targeted actions of people. In this regard, the search for ways out of the environmental crisis is being carried out, which is reflected in the laws "On environmental protection of the Republic of Kazakhstan", "Emergencies of natural and technogenic character", as well as in state documents dedicated to environmental issues. as the "National Action Plan for Environmental Protection for Sustainable Development" adopted in our country. An environmental crisis is not the result of some mistakes in the technical or social development of society, it is a manifestation of a cultural crisis, which includes the relationship of people with each other and the system of interaction between society and nature. To get out of it, people need to master new value-normalized relationships, expand their environmental outlook, change the motto "economic efficiency" of society as a whole to "environmental efficiency." We believe that it is necessary to develop a new system of continuous environmental education and training to support these new trends and changes in cognitive / by cognitive /, value and practical orientation of the content of education. From this point of view, we tried to study the biocological characteristics of plants in the Aral region of the Kyzylorda region as a regional component of teaching biology and to include the results obtained in the educational process. Studying the biology and ecology of plants in the Aral region of the Kyzylorda region, students express their patriotic feelings before their homeland, responsibility and views on nature conservation.

**Keywords:** Aral region, environmental education, educational process, teacher training.

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## INTRODUCTION

The actual problem of modernization of education is the changes in the system of training pedagogical personnel, one of the most important aspects of which is the improvement of the methodological training of future specialists.

Readiness of future teachers for systematic professional growth, the ability to work effectively in constantly changing socio-pedagogical conditions, to be a professional is of key importance. This ensures the implementation of the strategic task of the system of continuous professional pedagogical education - the formation of a new generation of teachers who own modern competencies of pedagogy, psychology, and methodology.

In the process of preparing a modern teacher, it is important to take as a basis the various theories of a technological order existing in psychological and pedagogical practice, such as:

- 1) Charles Cooley - "The effect of "mirror reflection" in people's ideas about how they are evaluated by others";
- 2) Erika Erickson - "On his life path, a person goes through stages of development associated with overcoming crises";
- 3) Jean Piaget - "The ability to think develops only as you go through successive stages, each of which contributes to the acquisition of new cognitive skills";
- 4) Lawrence Kohlberg - "The moral development of a person includes several successive stages, involving the development of cognitive ability and understanding of the feelings of other people."

Of course, these theories are still relevant today, but we need to build the educational process in accordance with modern trends in education. The possibilities of preparing a biology teacher for the implementation of humanistic-oriented education is associated with the preparation of its foundations in domestic pedagogy.

Recent research has changed the goals and content of general and higher education, learning processes and perceptions of its results.

Various aspects of changes in teacher training in the above areas have been deeply studied for a long time [1, 2,3], but in natural science education there is an insufficiently developed mechanism for designing personality development and the content of vocational training.

Some researchers explain that this can be student-centered - the reason for the discrepancy between goals and learning outcomes [4,5].

In the theory and practice of pedagogy of the 21st century, the didactic features of the structure and content of education in the 21st century are of dominant importance. Therefore, today it is important to study how the modern social situation answers the eternal questions "How to teach" and "What to teach" in the context of a paradigm shift, since an innovative idea in modern pedagogy is the use of various teaching technologies.

In a number of existing a large number of methodological approaches and learning technologies, we consider the personality-oriented approach to learning to be important. Student-centered learning is understood as learning that reveals the characteristics of the student - the subject, recognizing the originality and intrinsic value of the subjective experience of the child, building pedagogical influences on the basis of the subjective experience of the student. Person-centered learning has deep roots. The desire for the elevation of man, the most complete embodiment of the human essence in him can be traced from ancient times. Even Protagoras said: "The measure of all things is man." The idea of the all-round harmonious development of the individual was proclaimed in subsequent periods of the development of society. The person is

declared the main value. Personally oriented education is such education, where the personality of the child, its originality, self-worth is put at the forefront, the subjective experience of each is first revealed, and then coordinated with the content of education. If in the traditional philosophy of education socio-pedagogical models of personality development were described in the form of externally set samples, standards of cognition (cognitive activity), then personality-oriented learning proceeds from the recognition of the uniqueness of the subjective experience of the student himself, as an important source of individual life activity, manifested, in particular, in cognition. Thus, it is recognized that in education, it is not just the internalization of the given pedagogical influences by the child, but the “meeting” of the given and subjective experience, a kind of “cultivation” of the latter, its enrichment, increment, transformation, which constitutes the “vector” of individual development. The recognition of the student as the main acting figure in the entire educational process is personality-oriented pedagogy. Of course, in the perspective of such a teaching technology, the professional training of a modern biology teacher should take place.

A teacher of biological disciplines must understand and take into account that the features of the structure and content of education in the 21st century should be based, on the one hand, on interdisciplinarity and complexity, on the other hand, on a high level of skills associated with project and research activities. At the same time, it is impossible to exclude from the learning process taking into account such qualities of trainees as: critical thinking and the ability to solve problems; reasoning, analysis, interpretation, generalization of information; cooperation via the Internet in various networks; dexterity, perseverance and initiative; self-development, self-training and self-control; planning and ability to entrepreneurship; effective oral and written communication; possession of forms and methods of access to information; research skills and methods; curiosity and imagination; creativity, artistry and self-expression; leadership and teamwork; cooperation and interaction; economic and financial literacy; environmental literacy and understanding of the laws of the ecosystem; humanism, tolerance, friendliness, compassion; scientific literacy, including research, design, etc.]. Based on the foregoing, in the professional training of a biology teacher, it is important to implement the above areas of their activities through the application of methods and techniques of such teaching technologies as developmental learning, problem-based learning technology, development of critical thinking, through the methods of collaborative learning, self-realization, etc. [6, 7, 8].

Therefore, the relevance of modern methodological research lies in the translation of theoretical principles / methods of practical activity of a subject teacher.

The relevance of improving the methodological training of biology teachers is inextricably linked with the importance of biology in the modern world. General biology is a science that plays an important role in the formation of new normative principles in modern culture.

Biological science occupies an intermediate position between the natural and social sciences, initiating the orientation of other natural sciences towards humanism, integrating with natural science and pedagogical disciplines. Timely improvement of the methodological training of future biologists is associated not only with the need for practice, but also with scientific achievements in solving problems teacher training in the field of natural education. A detailed analysis of this situation reveals the following contradictions:

- the lack of a methodology for the development of the theoretical foundations of humanistically oriented education and the development of effective methods for their implementation in the practical activities of a biology teacher;
- insufficient development of methodological foundations for organizing activities, deepening the professional activities of future biology teachers to achieve educational goals aimed at humanism;

- organization of the educational process at school made it possible to determine the requirements for the transition to a personality-oriented model and the need to comply with the subject achievements of teaching biology.

The above contradictions have become an urgent scientific problem today:

- determination of the methodology for translating the theoretical foundations of humanist-oriented education into the practical methodology of a biology teacher;
- creation of an effective system of methodological training of future biology teachers.

Methodological training in the modern system of vocational education is carried out in pedagogical higher educational institutions and classical universities. The system-forming course is the theory and methodology of teaching biology, supplemented by practical exercises and innovative methodological special courses.

Analysis of pedagogical and psychological literature shows that in today's education there is a problem of training highly qualified specialists who can quickly adapt to modern conditions, have high professionalism and are in demand in the labor market. professionalization of specialists should begin at an early stage. [9, 10, 11, 12].

Therefore, the most important task is to show the professional and personal characteristics that affect the preparation of future teachers studying at the university. These tasks are clearly defined in the school period, but this question remains open for the student period.

Using the possibilities of the content of the discipline, we have identified the main directions, focusing on what qualities, how to develop personal qualities in order to more fully reveal the problem of professional training of modern future specialists.

-preparation of future specialists for the creative search for new forms and methods of organizing the lesson, the development of cognitive interests, creativity, critical thinking, ensuring the activation of educational and cognitive activities of students;

- the formation of students' skills and abilities of independent work with educational and scientific literature, the culture of educational work, rational cognitive methods of action;

- teaching students to the general culture and culture of pedagogical work;

- to determine the maximum use of disciplines' capabilities in solving the problem of environmental education of future specialists;

- to apply the knowledge gained from the disciplines of the natural cycle in everyday life, to increase attention to the connection between learning and life, that is, to include regional materials in the content of lectures and laboratory, practical classes.

The use of biological materials of local lore helps students master the basics of biology, provides a general level of knowledge, contributes to their intellectual development, forms their ideas about the world around them, and also stimulates communication, helps to awaken and develop an interest in socio-political and economic life. their region, instill love for their native land, take care of all living things around us.

Studying the Regional studies material, students receive information about the flora of the Kyzylorda region, the Aral Sea region, the practical value of plants, aspects of environmental work are considered when studying the materials of the region.

In biology lessons, students get acquainted with the flora of their native land, see that it is not the same in different regions, and, getting acquainted with relics and endemics, begin to understand the historical development of the living world on Earth. Students think about why and where there is

a lot of it, what contributed to its spread, what changes will occur as a result of human economic activity and what can be done to prevent its deterioration.

The use of materials from biological local lore is a source of patriotic education of students. Love for the Motherland often coincides with love for nature. For many, the feeling of homeland is associated with details of nature that they remember from childhood.

In the educational process and in the extracurricular activities of the teacher, Regional studies material is used in the study of any topic of the course of biology, in excursions to nature, when performing summer practical tasks for students, when holding Olympiads and can be used in other lessons. Some authors showed that the concept of professional orientation of education includes the professional orientation of the individual, the professional orientation of general and vocational education [13-17]. Based on this definition, we highlight the following criteria for the implementation of the principle of vocational guidance:

1) penetration of professionally significant material into the content of natural science subjects;

2) the inclusion of professionally significant skills and actions in the content of the discipline.

Since the principle of connection between theory and practice is associated with the consequences of theory, its exact content is determined by specific learning objectives in the context of subject-oriented analysis.

Thus, when determining the content of the natural sciences for the senior classes:

- creation of course material based on the generalization of fundamental theories;
- inclusion in each theory of the following components of knowledge: data, objects, models, concepts, quantities, general and independent laws, dynamic and statistical concepts;
- use of theoretical and experimental scientific methods in teaching natural sciences;
- the feasibility of carrying out the genesis of theoretical conclusions in science for pedagogical purposes in the learning process along the following cyclical spiral: data-model-consequences-experimental verification of consequences-new data. This contributes to the effective development of creative abilities, the formation of the logic of thinking;

the introduction of demonstration experiments, laboratory work, observations in the content of natural science subjects and as a teaching aid;

- it is necessary to take into account the introduction of materials devoted to environmental problems and ways to solve them as an integral part of the natural sciences.

- The content of natural science in each direction, along with the invariant core, should include materials useful for future professions of students and necessary for the formation of special skills and thinking skills in the subject, some of which should be taught only at the discretion of the students.

- All types of textbooks and teaching aids for classes of different orientations should have qualitative differences in the presentation of educational material, as well as in language, level of clarity, system of exercises [18-21].

- Therefore, we believe that when developing programs and textbooks for different areas, it is necessary to take into account the following four components:

- variant core of content containing materials of modern natural science subjects;
- humanitarian aspect of the implementation of student-centered education;

- career-oriented aspect that determines the specifics of regional education;
- scientific aspect, contributing to a deeper study of the material.

In general, the general cultural level of teaching biological subjects at the university can be obtained at least as a result of these four components.

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### **EXPERIMENTAL PART**

In view of the huge humanitarian potential of the science of Regional studies as an important component of human culture, their ability to teach and develop students shows that these disciplines should be taught in the form of elective subjects in the 3rd year.

Analysis of the goals of education in biology shows that their composition and hierarchy change over time, the main attention is paid to the personal experience of previous generations, but these goals are not differentiated according to the abilities and interests of students.

In this way, the study clarified the general goals of teaching biology from a socio-personal perspective.

Taking into account the professional orientation of future teachers in various fields, specific goals of teaching these subjects through the main and additional subjects were determined.

In order to determine the ways of introducing a regional component into the content of education for biology teachers in higher educational institutions, we first start with an analysis of the content of education in universities and general education schools.

In general, the higher educational institution teaches the diversity of plants, their general characteristics in the disciplines "Systematics of plants", "Biodiversity of the organic world".

However, while these disciplines provide general information, specific regional materials are not taught.

Therefore, we decided to analyze the content of the elective course "Bioresources of Kazakhstan", taught in the 8th semester of the 4th year of the Faculty of Natural Sciences of the Kyzylorda State University named after Korkyt Ata. Let's focus on the goals and objectives of the discipline as a whole.

Elective course "Bioresources of Kazakhstan":

Purpose: Performs the following tasks, introducing students to the basic patterns of relationships between plant communities (phytocenoses) and their habitat, structure, life, spatial distribution and classification of phytocenoses.

Tasks: during theoretical and practical classes, students:

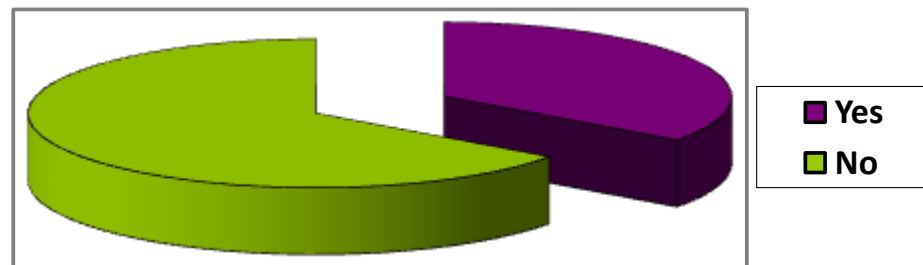
- features of the formation, structure and composition of plant communities (phytocenoses);  
on the relationship of phytocenoses and the environment
- features of biological processes in phytocenoses;
- about the relationship of plants in the phytocenosis;
- the role of animals and humans in the life of phytocenoses and biocenoses;
- should know the floral composition of phytocenoses, the role of species populations, life forms and synusia in the life of phytocenoses.
- correctly and effectively apply geobotanical methods in practice;

- comprehensively analyze and describe plant communities;
- must have the skills to obtain accurate, valuable conclusions and conclusions from the research materials and use them in practice;
- in the course of studying the course, it is necessary to master the knowledge gained in relation to vegetation, solve ecological and practical problems that allow them to better develop them.

The content of the elective course "Bioresources of Kazakhstan" is mainly devoted to the topic "Phytocinosis and Species".

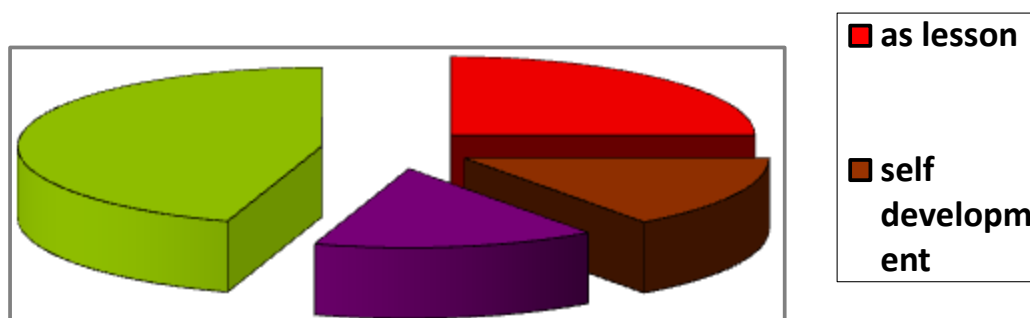
Accordingly, depending on the direction of our research, our main goal was to develop a textbook for students of the specialty 5B011300 - "Biology", one of the elective courses taught in the 4th year, "Regional Studies", which is considered in the "Bioresources" program. Kazakhstan".

Before the introduction of the regional component into the content of education, a survey of university students was conducted.



Picture 1. A look at the introduction of the subject "Regional studies" in higher education:

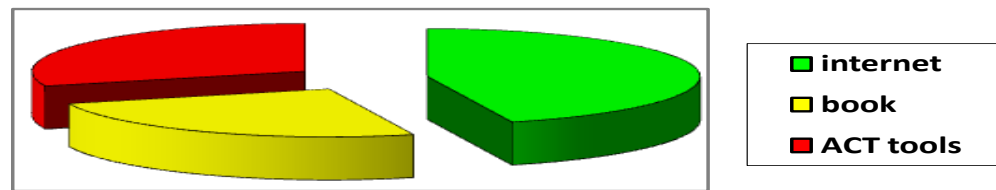
- A) Yes (35%)                      B) No (65%)



Picture 2. For what purpose would you study the subject " Regional studies "?

- a) A) As an ordinary lesson (25%) B) To expand your worldview (15%) C) Like to read (15%) E) To keep abreast of local (regional) news (45%)





1. Picture 3. Where do you get information about your region?

a) A) Through the Internet (45%) Б) from book (25%) В) Other (name your version) (30%)

Poll analysis

First question of the questionnaire

A look at the introduction of the subject "Regional studies" in the higher education system: - 65% of students showed no understanding of the importance of introducing the subject "Regional studies", and the remaining fourteen students expressed their consent to the introduction of this subject. "Regional studies". This means that the majority of students are not yet familiar with the subject of "Regional studies".

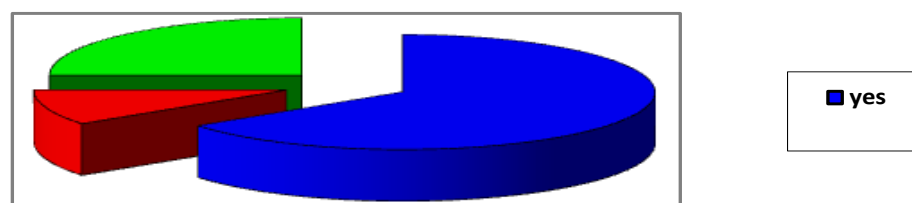
Second question of the questionnaire

To the question "for what purpose would you study the subject" Regional studies" - 10 students answered as a regular lesson, 6 students to expand the world outlook, 6 students love to read, and the other 18 students to follow local (regional) news.

Third question of the questionnaire

To the question "Where do you get information about your region?" - 18 students learned through the Internet, 10 students encountered in books, and 12 students found it through other (name your version) sources of knowledge.

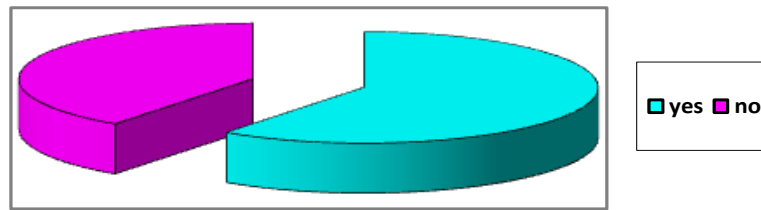
- Survey of university teachers



1. Picture 4. Do you think it is important for students to know and love their region?

A) Yes (65%)      Б) No (10%)      В) I can not answer (25%)





2. Picture 5. Do you consider it necessary to teach the subject " Regional studies " at a higher educational institution?

A) Compulsory (yes) (60%)    Б) Optional (No) (40%)

Based on the above principles, the Kyzylorda region set the task to study the regional materials of the Aral Sea region in schools and universities. Interviews of teachers and analysis of various forms of educational activities and educational programs revealed the following problems.

As a result of studying the experience of a number of educational institutions, we have identified two main ways of creating lessons of a regional nature:

1 introduction of lessons into the content of standard programs, allowing to reveal the individual content of biological local history;

2 development of applied programs based on special regional materials to generalize regional knowledge of students.

It is better to use the first method in the practice of the university, because it can include regional information as a component of the lesson content. Subject to the following didactic conditions:

- clearly defined educational tasks and the purpose of the lesson, taking into account the content of regional education;

- the goals set in the lesson are consistently fulfilled - elements of local history knowledge and skills are formed, patriotic feelings of students and a responsible attitude to the environment of their region are brought up;

- in the process of studying local history in the classroom, various means of enhancing the cognitive activity of students are rationally used.

As a result of scientific and theoretical research, we have supplemented the content of the standard program on the subject "Bioresources of Kazakhstan" with the following topics.

The pedagogical experiment was carried out for three years, which included: setting a problem and choosing empirical research methods, theoretical understanding of the results of the experiment, and the search for effective ways to improve the educational process.

The study was carried out in two stages: definition, formation experiments. At each stage of the study, the goal of the experiment was formulated and the hypothesis was tested. The purpose of the identification experiment is to determine the position of the professional training of teachers so that students can effectively use regional knowledge; understanding by students of the structure of cognitive cognition in the study of basic theories, the ability of teachers to combine the content of educational material with teaching methods, types of lessons, types of cognitive activities of students. Its results confirm the relevance of the research problem.

Determination of requirements for different subject programs, analysis of the content of the program; Determine the comprehensibility of the prepared educational material and the initial experience of using the developed teaching methods.

As a result of the formative experiment, adjustments were made to the prepared experimental programs and teaching methods. As a result of the experimental work at this stage, various programs and teaching materials were developed.

At this stage, experimental programs have been tested, the effectiveness of the developed teaching methods has been evaluated.

The pedagogical experiment was carried out in the senior grades of the secondary school and the Kyzylorda State University named after I. Korkyt Ata, Department of Biology, Geography, Chemistry, Abai Kazakh National Pedagogical University, Institute of Natural Sciences and Geography, Silkway International University. It is known from the study that statistical hypotheses allow making a sufficiently substantiated conclusion only if the initial data on the basis of which the statistics are calculated are accurate. The objectivity of the results depends on the results of planning a pedagogical experiment.

The topic of our research is "Methodological foundations for the use of regional components in the professional training of future biologists", on the basis of which we began to determine the level of use of regional components in the educational process in universities and secondary schools. For this purpose, we analyzed the regulatory documents of universities and secondary schools. The level of transfer of regional components in the curriculum has been determined. The results of the study prove the need to intensify the teaching of regional materials in the classroom. If so:

By activation we mean: first of all

- use the results of direct monitoring in the environment;
- use in the lessons of the collected and systematized local history material;
- establishing links with other similar disciplines with elements of local history;
- connection with extracurricular studies in local history;
- choosing the right incentives for carrying out work on local history;
- inclusion of students' sensory and emotional states in the learning process, etc.

If we take into account the above conditions or a significant part of them, the nature of the mental activity of students will change significantly, the effectiveness of all local history work with students will increase.

However, research shows that the success of individual teachers is not the same as the success of a public school in the Aral Sea region of the Kyzylorda region.

Especially:

- targeted work on the formation of local history knowledge in the classroom is rarely carried out, they are given only in the form of episodes;
- often local history data are considered one-sided, mainly focused on the presence of certain objects in the region, and not on their qualitative characteristics;
- issues of rational nature management and changes in the natural environment of the region, which are very important for enriching local history knowledge with specific environmental aspects, are not considered or are considered very superficially.

- the natural components of the region and types of human activity are studied in isolation, without taking into account the relationship.

All of the above shortcomings create formalism in the work of a local history teacher, which was noted when participating in school biology lessons and other school biologist activities, such as the "Young Biologist" circle, biological evenings, and Biology Weeks. In total, in the 2017-2019 academic year, we took part and analyzed 15 lessons and extracurricular activities.

The observations made in the first lessons showed that students' knowledge of local history is very limited. In this regard, we considered it necessary to study in detail their local history level. Since the main purpose of our study is to determine the methodological basis of local history knowledge of students of universities and secondary schools, it is necessary to determine the level education of high school students, i.e. in the 2016-2017 academic year, the actual level of education of students enrolled in modern programs and textbooks of universities and educational institutions was studied.

The overall goal of the defining experiment is reflected in the following objectives:

- a) determination of the local history awareness of high school students,
- b) quantitative and qualitative analysis of the collected material, its mathematical processing and generalization;
- c) we draw conclusions at this stage of the study.

The detection experiment was carried out in the 2016-2017 academic year with the participation of school teachers with experience in the Aral district of the Kyzylorda region.

About 90 pupils who graduated from the 9th grade took part in the experiment, different answers were received.

The diagnostic questionnaire included the following questions:

1. Do you like biology? The selected answer is underlined. (Yes. No. It is difficult to answer).
2. What is your favorite plant in nature?
3. Do you know the plants in your area well? (Yes. No. It is difficult to answer).
4. A friend from another region came to visit you. He will start asking about plants in the Aral Sea region, can you show them?
5. What plants of the Aral region are included in the Red Book of the Republic of Kazakhstan?
6. Would you like to go to a circle to study the various plants that grow around you? (Yes. No. No answer).

The first question in the survey was to determine the general attitude of students of general education schools to plants. The choice was made - the students had to answer positively or negatively. However, we left the answer "Difficult to answer" in order to get an exhaustive answer from them.

The results of this experiment are shown in Table 1.

Students' attitude to plants

Aral region / school	№5		№6		№7		№8		Total	
	82	46	90	67	quantity	%	quantity	%	quantity	%
answers to	quantity	%	quantity	%	quantity	%	quantity	%	quantity	%
Yes	53	65	33	72	79	88	62	90	227	78,7
No	14	17	7	15	7	8	3	6	31	11,5
Difficult to answer	15	18	6	13	4	4	2	4	27	9,8
									Total	285
										100

Students' answers to the first question show a positive attitude towards biology (of which the section "plants"), i.e. 4/5 of the total number of students answered "Yes", then more than 20% said "No", and some students could not clearly define their views on this course and answered: "It is difficult to answer".

Secondly, we tried to ask a specific question in order to find out the attitude of students to the environment.

In the second question of the questionnaire, we tried to find out the attitude of students to the world of the surrounding nature. Analysis of students' answers to this question shows that they have a very broad and comprehensive view of the concept of "surrounding nature." Despite the fact that such a generalized formulation of the question is taken deliberately, the researcher believes that students know some elements of the surrounding nature in everyday life, which gives them great interest and positive emotions. The content of the answers was so varied that it was difficult to generalize and mathematically process the results. When answering this question, the individual characteristics of the students were reflected, their attitude to the natural world is reflected at the propedeutic level.

While the overwhelming majority of the students answered "Everything", the rest mentioned specific objects of nature, such as "flowers, trees, grass, lakes, rivers", "apple trees, pears, ate, reeds" or: "many delicious fruits", were and those who replied: "I love the spring when the trees are blooming and I can smell the fresh air."

From the analysis of the answers, one can see which shortcomings are revealed both in teaching and in the upbringing of students.

When the students named the plant objects of the Aral Sea region, they were mostly mercantile, that is, the consumerist approach prevailed. The number of students who have an aesthetic assessment of the environment is very small, 5% of the answers.

In the next question, the trainees were asked to self-assess what they know about the plants in the region, they were asked to rate how well they know the plants in the region and choose one of the 3 suggested answers. The results of self-assessment of students were compared with the assessment of the teacher and we rechecked the answers to questions №4.

Self-assessment of students' attitudes towards plants in the region

Aral region / school answers to	№5		№6		№7		№8		Bcero	
	quan	%	quan	%	quan	%	quan	%	quan	%
Yes	7	8,5	4	9	6	6,5	5	7,5	22	8
No	7	8,5	3	6,5	10	11	8	12	28	9,5
Difficult to answer	68	83	39	34,5	4	82,5	54	80,5	235	82,5
Total									285	100

Analysis of the data presented in Table 2 shows that the students objectively assessed their knowledge about the plants of the region. Only 8% of respondents answered in the affirmative, 9.5% - negative, and 235 students chose the answer "Difficult to answer", which is 82.5% of the total number of respondents.

The fourth question is how many plants can the plant species show. To analyze the answers to this question, we used a quantitative factor - we combine each level of knowledge with the number of these plant species.

According to the results of research by a number of authors on the theory of natural science (Saleeva L.P., 2018; Tikhonova A.E., 2016, 2017, etc.), even elementary school students can name and recognize about 10 plant species in nature. This number was taken as minimum level - 1st level of education; 11 to 15 species - 2nd level and 15 to 20 species - 3rd level. In addition to these basic levels, there is another level, where the answers are divided under the general name "others" ("I do not know", "I know a lot", "I find it difficult to answer," etc.). The results are shown in Table 3.

Knowledge of the plant diversity of the region

Schools / Answers by Level	№5		№6		№7		№8		Total	
	quan.	%	quan.	%	quan.	%	quan.	%	quan.	%
	82		46		90		67			
1 level	32	39	24	52,5	40	44,5	21	31,3	117	8
2 level	32	39	19	41,5	40	44,5	33	49	124	9,5
3 level	12	15	1	2	5	5,5	8	12,3	26	82,5
other	6	7	2	4	5	5,5	5	7,4	18	63

As can be seen from the table, about half of the respondents (41%) demonstrated their knowledge of the plant species growing near the Aral Sea at the elementary school level, and 43% of the participants named up to 15 plant species, with the highest level of education on our scale (level 3) from 285 students 26 students showed 9.2%, which, in our opinion, is very small.

As for the qualitative analysis of the students' answers to this question, the answers were very chaotic: the species of plants were discussed inconsistently. The names of local species alternate with the names of species typical for other regions of Kazakhstan, there are names of some species that do not grow in Kazakhstan. This, of course, is confusing because teachers name local species according to a specific system, depending on the topic of the program.

Out of 285 students, only 1 student tried to group these plant species by genus, and several people (5 out of 285) named certain plant species, referring to certain species - trees, shrubs and grasses. As a result, the curriculum in secondary schools is built on the principle of a spiral. that is, the content of education becomes more complex as it moves from class to class. However, the analysis of the above answers indicates a low level of knowledge of schoolchildren in local history.

The next question in our questionnaire (5th) was related to the information of students about local history, but set a specific task, the researcher wanted to find out what the students know about the plant species listed in the Red Book of Kazakhstan.

Before including this question in the questionnaire, we analyzed the content of the Red Book in advance and determined the number and composition of each related species for the Aral Sea region. There were just over 30 such species in the Red Book. Second, a number of individual interviews with biology teachers were conducted. to find out what information teachers have on this issue and, therefore, what they can provide to their students.

In this study, we considered it necessary to take into account not only their knowledge of the Red Book of Kazakhstan, but also their knowledge of rare plant species recommended for protection

by local botanists. This information is published in popular scientific local history literature and is available teachers.

The criteria for analyzing the answers to this question are as follows:

- 5 level (maximum) - correct and complete answer when the student names at least 6 species of rare plants;
- 4 level - the answer is correct, but incomplete, when the student names up to 4 types;
- 3 level - the answer is partially correct, if the student named simultaneously with the correctly named protected species (at least 2), he also named those that do not yet belong to protected species;
- 2 level - the answer is incorrect, the student named the plants that are not subject to protection. The results of the analysis of this issue are shown in Table 4.

Students' knowledge levels about protected plants in their region

Schools / Answers by Level	№5		№6		№7		№8		Total	
	quan.	%	quan.	%	quan.	%	quan.	%	quan.	%
	82		46		90		67			
5 level	0	0	0	0	1	2	0	0	1	0,4
4 level	7	8,5	3	6,5	25	27,5	12	12	47	16,5
3 level	14	17	7	15	24	26,5	22	18	67	23,8
2 level	15	18,5	4	8,5	5	5	8	8,5	32	10,3
1 level	46	56	32	70	35	39	25	37	138	49
Total									285	100

Analysis of the answers showed that the results of the survey turned out to be much lower than expected. It should be noted that when determining the normative level, we did not have a high indicator, since we determined from personal observations and previous studies of other authors about the low level of students' local history knowledge [22,23,24,25,26 ,27].

Thus, if the student correctly named 6 plant species, we considered it sufficient for the highest 5th level, i.e. more than 20% of those listed in the Red Book of the Republic of Kazakhstan. However, the answers at this level did not even reach 1%! Half of the respondents answered levels 4, 3 and 2, and the other half (138 people) did not answer this question at all or "did not know," that is cannot name any protected plants in the Aral Sea region.

Of course, the results we obtained were very low, we considered it appropriate to check the knowledge of local historians, because for several decades a lot of popular science literature about the plant of the region, including rare and endangered species, has been published in the region; in pedagogical universities of the region, in addition to basic botanical courses, special courses of regional content are usually taught, many field experiments are carried out in the natural environment, which made it possible to predict the availability of local history knowledge in schools of the region. The Aral Sea region, where our graduates work. However, despite this, according to the results of the experiment, students of a number of schools in the Aral Sea region demonstrate a low level of local history knowledge.

The answers to the questions we asked students in individual and group conversations did not correspond to their views on plants in the survey, were interested in the course and content of conversations about plants in our region, watched dried herbs and colorful handouts.

Thus, a study conducted by students of a number of schools in the Aral Sea region to determine the state of local history education made it possible to draw the following conclusions:

1. On the whole, the students participating in the survey showed a low level of local history knowledge.

- local plant species are rarely mentioned;
- common species found in Kazakhstan are often cited and poor awareness of local protected plant species;

2. The main reason for the poor knowledge of the flora of their region by students, in our opinion, is that in educational programs little attention is paid to regional materials.

This is reflected in the following rules;

- despite the fact that the biology program and its "Plants" section focus on the need to include materials on local history in the curriculum, biology teachers do not pay sufficient attention to local species in the learning process;

- a number of teachers rarely make trips to nature, as a result of which students do not identify handouts or dried herbs;

- programs and textbooks for students are based on the content of materials on the general flora of the Republic of Kazakhstan;

- in the literature on the methodology of teaching biology in higher education over the past 10-15 years, there are few questions that implement the principle of local history in teaching students.

In conclusion, the teachers of the schools who participated in this experiment, in general, agreed with the conclusion of the dissertation student about the poor education of students in local history and are confident that this method will lead to the development of regional aspects of education in the development of new educational programs. , as well as the possibility of developing a variety of plans and programs, there are special conditions for increasing the level of local history in schools of the Kyzylorda region, since all the variable parts of the curriculum are directly related to regional education.

Having studied the above, it should be noted that biology teachers of the Kyzylorda region use local history materials about the flora and fauna of this region. However, teachers use long-established teaching methods and techniques.

During the pedagogical observation and analysis of the lessons, we noticed that teachers use traditional methods of conversation, i.e. (to determine with the students what they know about this or that representative of the flora and fauna of the Kyzylorda region); story (includes information about local plant and animal species in the interpretation of new material); abstracts (instruct students to prepare a short report on some types of local plants and animals, their features); observation (students consider natural objects of wildlife during excursions or laboratory work); shows the types of visual aids (live and dry plants, wet preparations, collections of fruits and seeds, pictures and tables, color slides, film strips, movies, etc.); practical exercises (students learn to recognize certain relatives of local plants and animals, study their biological and ecological characteristics, and also use some types of training and extra-curricular activities with students.

In particular, the basic concept of "vocational training" is defined as vocational education, which is the main way of learning independently or through the system of vocational education, and the encyclopedic dictionary gives definitions of terms within the concept of "vocational training" "and is a type of labor activity, which is usually a source of funds for existence.

## **CONCLUSION**

Bioecological features of plants in the Aral region of the Kyzylorda region were studied as a regional component.



In scientific research, biological study of local lore is considered as a discipline that studies the wildlife of the native land and includes the following tasks:

- systematic monitoring of seasonal phenomena in the life of animals and plants;
- determination of the patterns of distribution of animals and plants in the study area;
- to get acquainted with the biodiversity of plants and animals of the native land, learn how to conduct phenological observations of natural phenomena and determine their influence on plants and animals;
- the study and protection of natural communities is the formation of an ecological worldview.

In our study, we assessed the state of conservation, reproduction and effective use of biological resources in the Aral Sea region in the following areas:

- geobotanical studies of the dried seabed;
- assessment of the ecological state of natural pastures;
- determination of the agromeliorative state.

To incorporate the results of the above research into the learning process, we proposed a structural-content-process model for using regional components.

In the component of action, methodological, subject and intellectual skills are given, in the value component - universal, moral, environmental, professional values.

The content of the variable part reflects scientific and methodological knowledge, types and values of activities within the framework of the training courses of the variable part of the curriculum.

- In the procedural component, organizational forms, methods, training technologies are distinguished.
- The analysis of the content of education in universities and general education schools in order to identify ways of introducing the regional component into the content of education of biology teachers at the university.
- In addition, a survey was conducted to determine the level of knowledge of university students about the regional component.
- Analyzing the results of the survey, two main ways of creating lessons of a regional nature were proposed:
  - introduction of lessons into the content of standard programs, allowing to reveal the individual content of biological study of local lore;
  - development of applied programs based on special regional materials to generalize the regional knowledge of students.

As a result of scientific and theoretical research, the content of the program "Bioresources of Kazakhstan" was supplemented by several topics.

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