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METHODOLOGICAL FOUNDATIONS OF EXTRACURRICULAR EDUCATION IN BIOLOGICAL EDUCATION (BY THE EXAMPLE OF THE DEPARTMENT OF PLANTS)

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Abstract. The article analyzes the content of extracurricular activities, teaching features of the department "Plants" in biological education. A system of training sessions has been created, aimed at increasing the effectiveness of extracurricular training in acquiring basic knowledge in biology. The methods of scientific research in education are presented in order to develop the cognitive interest of students. In the formation of students' cognitive activity, along with theoretical materials, the results of a study conducted jointly with students are presented. The ways and methods of using the results of the study in the formation of the cognitive activity of students are proposed, the effectiveness of the methodological system is experimentally proven. Using specially prepared texts on all topics of the "Plants" department, it is recommended to create a methodology for conducting extracurricular activities in biology, to increase students' cognitive interest in the study of biology and the quality of assimilation of the material. Various effective teaching methods have been created to increase the effectiveness of extracurricular activities for students: features of the use of research in the field when performing individual work (field labs), interactive project research, the campus living laboratory method, the research-based learning method conditions" (investigative case based learning).

Keywords: educational system, methods, extracurricular activities, experiment

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БИОЛОГИЯЛЫҚ БІЛІМ БЕРУДЕ СЫНЫПТАН ТЫС ОҚЫТУДЫҢ ӘДІСТЕМЕЛІК НЕГІЗДЕРІ (ӨСІМДІКТЕР БӨЛІМІ МЫСАЛЫНДА)

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Аннотация. Мақалада биологиялық білім беруде «өсімдіктер» бөлімі бойынша сыныптан тыс оқудың мазмұны, оқыту ерекшелігі талданады. Биологиядан негізгі білімді меңгеруінде сыныптан тыс оқудың тиімділігін арттыруға бағытталған оқу сабақтарының жүйесі жасалады. Білімгерлердің танымдық қызығушылығын дамыту мақсатында білім беруде ғылыми зерттеу тәсілдері ұсынылған. Білімгерлердің танымдық іс-әрекетін қалыптастыруда теориялық материалдармен қатар, білімгерлермен бірге жүргізілген зерттеу жұмыстарының нәтижелері беріледі. Білімгерлердің танымдық іс-әрекетін қалыптастыруда зерттеу нәтижелері білім беру барысында қолданудың жолдары мен әдістері ұсынылып, әдістемелік жүйенің тиімділі эксперимент жүзінде дәлелденген. «Өсімдіктер» бөлімінің барлық тақырыптары бойынша арнайы дайындалған мәтіндерді қолдана отырып, биологиядан сыныптан тыс оқу сабақтарын өткізу әдістемесін жасау, оны оқушылардың биологияны оқуға деген танымдық қызығушылығын және оқу материалын игеру сапасын арттыру үшін мектеп тәжірибесінде қолданудың ерекшеліктері ұсынылады. Сыныптан тыс оқытудың тиімділігін арттыруда әртүрлі тиімді оқыту әдістері: жеке жұмыстарды орындауда далалық жағдайдағы зерттеу (field labs), интербелсенді жобалық зерттеу, «тірі кампус зертханасы» (campus living laboratory), «іздестіру жағдайына негізделген оқыту» (investigative case based learning) әдістерін қолдану ерекшеліктері, жоба әдісін қолдана отырып, білімгерлердің биологиялық білімін арттырудың әдістемесі жасалады.

Түйін сөздер: білім беру жүйесі, әдіс-тәсілдер, сыныптан тыс жұмыс, эксперимент

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МЕТОДИЧЕСКИЕ ОСНОВЫ ВНЕКЛАССНОГО ОБУЧЕНИЯ В БИОЛОГИЧЕСКОМ ОБРАЗОВАНИИ (НА ПРИМЕРЕ ОТДЕЛА РАСТЕНИЙ)

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Аннотация. В статье анализируется содержание внеклассной работы, особенности преподавания отдела «Растения» в биологическом образовании. Создана система учебных занятий, направленных на повышение эффективности внеаудиторного обучения в приобретении базовых знаний по биологии. Представлены методы научного исследования в образовании с целью развития познавательного интереса учащихся. В формировании познавательной деятельности студентов наряду с теоретическими материалами приводятся результаты исследования, проведенного совместно со студентами. Предложены пути и методы использования результатов исследования в формировании познавательной активности учащихся, экспериментально доказана эффективность методической системы. Используя специально подготовленные тексты по всем темам отдела «Растения», рекомендуется создать методику проведения внеклассных занятий по биологии, повысить познавательный интерес учащихся к изучению биологии и качество усвоения материала. Созданы различные эффективные методы обучения для повышения эффективности внеклассных занятий для обучающихся: особенности применения исследований в полевых условиях при выполнении отдельных работ(field labs), интерактивные проектные исследования, метода «живая лаборатория кампуса» (campus living laboratory), метода «обучение основанное на исследовательские условия» (investigative case based learning).

Ключевые слова: воспитательная система, методы, внеклассная работа, эксперимент

Introduction

The Law of the Republic of Kazakhstan "On Education" states that "one of the main tasks of the education system is: the development of creative, spiritual and power capabilities of the individual, the formation of solid foundations of morality and a healthy lifestyle, enriching horizons through the creation of conditions for the development of individuality"

(The law of the Republic of Kazakhstan «Education», 2007).

In recent years, our society has been undergoing radical changes. One of them is new changes in the field of education. In general education schools, secondary and higher educational institutions, the following activities are aimed at improving the content of self-education, research and scientific education.

School and teaching teams are engaged in the adjustment of curricula, the selection or development of author's curricula, the publication of alternative textbooks. In addition, in recent years, despite the development of mass media, the launch of a digitalization system, there has been a general decline in interest in learning among students. This is especially noticeable in general education municipal schools, where most of the students study. The decline in interest in reading is primarily due to the lack of use of popular science literature, the availability of unnecessary information, etc. This affects the quality of students' training, their speech culture, the development of logical thinking and interest. B.E. Raikov, attaching great importance to the use of scientific literature in the classroom and outside of school hours, believes that a natural science teacher, in addition to textbooks designed for effective teaching, should use popular scientific, and sometimes even fiction. Description of scientific discoveries, activates classroom work on mastering the natural forces of nature, develops the horizons of students, increases interest in natural science. After working on any section of the program, it is useful to give students a brief explanation of what they read in accordance with the topic from the books, and then passed in class" (Wagner et al., 1992).

Materials and methods

Currently, there are two directions in teaching students - on the one hand, some students have a desire to study subjects in depth, on the other hand, there is a clear tendency to decrease interest in obtaining knowledge. The school is faced with the question of how to organize the educational process in order to satisfy the students' interest in studying and ensure in-depth study of the subject by others.

In our opinion, one of the effective conditions for teaching biology is extracurricular education. The term "extracurricular education" was proposed in 1886 by V.P. Sheremetyevsky (Telkova, 2009). Practice shows that organized extracurricular education in elementary school and the study of literature courses in middle and high school bear fruit: it affects the speed of reading, forms interest in reading, develops interest.

In the methodology of teaching biology, such well-known methodologists as N.V. Dubinina, V.V. Pasechnik, D.I. Traitak, Yu.V. Brykin, N.V. Lukyanova, Zh. Kozhentaeva, K. Kayym, R. Satimbekov, A. Ametov, N. Tormanov, B. Ursheeva, N. Ablaikhanov, K. Zhumagulov, A. Kalieva (Dubinina et al., 2001: 96; Traitak,1990: 81–84; Brykin 2004: 71–74; Lukyanova, 2005: 191; Kozhantaeva et al., 2007; Ametov, 2000: 511; Tormanov et al., 2004: 12–15; Kalieva, 2015: 76–81) and others attached great importance to the organization and use of extracurricular learning. As the experience of teachers and methodologists shows (A.P. Medovaya, K.G. Makarova, G.P. Grodensky, E.I. Turbina, E.I. Shepherd, O.P. Greenuvenne) and special studies of the organization of extracurricular education in biology, effective study of program material, deepening and expanding the acquired knowledge, contributes to the satisfaction of students' interests, the development of their cognitive abilities.

Extracurricular work in biology is carried out in every school. In order to meet the needs of individual children interested in biology, the teacher suggests that they conduct some kind of observation in nature, read various scientific and educational literature, create a visual aid, select information for the design of a wall newspaper or information stand, etc. (Salybekova et al., 2021: 1106–1121; Kasatkina, 2004: 160; Malashenkov, 2006: 96; Salybekova et al.,

2022: 196–206; Tommasoa et al., 2022: 550–569).

In order to satisfy the students' interest, the teacher must set a specific goal by directing extracurricular activities according to a specific plan. Experienced teachers, as a rule, monitor the interests of students in the cycle of biological disciplines, constantly keep them in the center of attention, understand the need to develop the interests of children in a certain direction, select appropriate individual tasks for this task, make up the content.

The most common types of extracurricular activities are:

– experiments and observations organized in the conditions of nature, at the educational and practical site, in a living corner, greenhouse;

– creation of artificial nests for birds and observation of their habitats;

– control over one object that has an independent mark;

– production of visual aids, models, mannequins;

– preparation of reports, abstracts, reviews, etc.

Results and analysis

The pedagogical experiment was conducted in 2020–2022. Students of secondary school № 15 "Tortkul-Tobe" of the village of Kusshy ata of Turkestan region participated in its preparation and conduct. 81 students took part in the experiment, of which 41 students were in the experimental group, 40 students were in the control group.

Experimental work consisted of three stages.

1. Defining experiment
2. Formative experiment
3. Control experiment.

Theoretical conclusions and practical conclusions were tested experimentally at each stage, the results obtained were analyzed, compared, and mathematical processing was carried out. During the experimental work, pedagogical requirements were observed.

At the second stage of the study (2020–2021 academic year), an exclusive experiment was conducted. It included:

– control of the educational process;

– a conversation with students in order to identify interest in the content of the biology section about plants;

– conversations with teachers, their attitude to the content and structure of the section "Plants" was determined, recommendations for improving the content of the section and teaching methods were studied;

– approbation of educational materials on extracurricular educational classes of school № 15 "Torkul-Tobe".

To obtain data in the ascertaining experiment, we used questionnaires, conversations with students, parents, classroom teachers, tested students' knowledge by sections and their processing. The work was carried out in close contact with the library staff.

During the ascertaining experiment, it was found that students beginning to study biology have the necessary knowledge that contributes to the perception of educational material in the section "plants", show great interest in obtaining new knowledge about the diversity of plants and their life, reading additional literature. The approbation of extracurricular training sessions on individual topics of the section, stories written for independent reading by students, made it possible to make adjustments to methodological developments for conducting an educational experiment..

Gymnasium classes were selected for the pedagogical experiment. In subsequent years, the selection was carried out according to the results of academic performance. Experimental and control classes with the same level of training of students were selected for

the study. For such differentiation, we used data on students' achievements in acquiring knowledge and skills in the subjects studied. In addition, based on the marks in the school journal, students can be attributed to a certain typological group. According to the criteria used in pedagogy, students with high scores (with current grades of "4" and "5") are "strong" students. The group with an average level includes students who master the educational material mainly on "3" and "4" (this is the "average" group). In this study, the experimental and control classes were approximately the same in terms of the number of strong and average students.

In order to determine the levels of knowledge of the two selected groups, the levels of assimilation of knowledge by students (AKS) were determined according to the formula of V.P. Simonov (Simonov, 1981):

AKS = (1x quantity "5" + 0.64 x quantity "4" + 0.36 x quantity "3") x 100%/N

AKS — the level of knowledge assimilation , N — the number of students.

The experiment involved classes with approximately the same level of knowledge. The levels were determined by the students' quarter grades. The levels of knowledge acquisition by students tested during the ascertaining experiment are shown in Figure 1.

In addition, the preliminary knowledge of sixth graders about plant biology was revealed. They were offered test work to determine the existing knowledge base about the structure and activity of the plant organism. The analysis of the results showed that there are no significant differences in the indicators of biological knowledge among students of control and experimental classes.

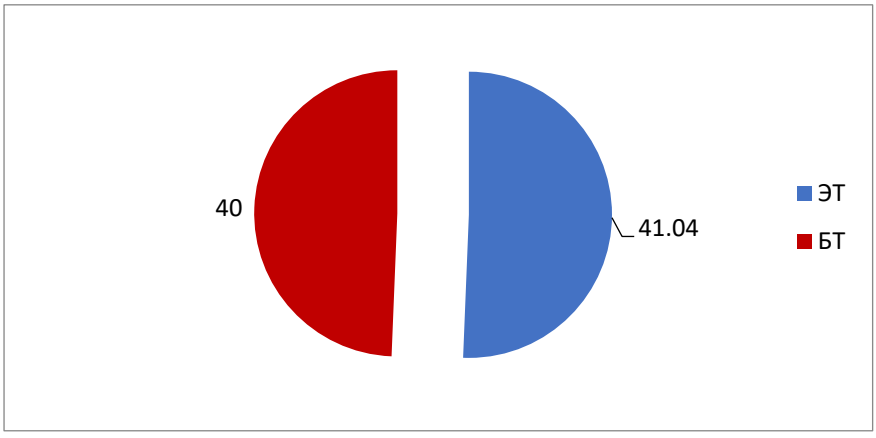

Fig. -1. The knowledge levels of the students participating in the experiment. EG is an experimental group. KG-control group

It is known that the well-being of the family is of great importance in the development of the child. On the one hand, it also depends on the level of financial situation, since families with their wealth have the opportunity to buy a book, a game, visit exhibitions, theaters and provide a good rest for the child. In our study, even in middle- or low-income families, parents, as a rule, tried not to restrict children in buying the books they needed and participating in cultural events. On the other hand, the moral atmosphere in the family is important, since good material conditions are not enough for the full-fledged upbringing of children. In our study, 97 % of students in the control and experimental classes came from

full families where both parents participated in their upbringing.

In addition to school (gymnasium, lyceum), students attended various sports sections, clubs, which influenced their overall development, showing interest in studying (Table 1).

Training in control and experimental groups was carried out according to the standard program of the section "Plants", used during the experiment according to the textbook of A. Solovieva, B. Ibragimova, Zh. Alina "Biology" for the 7th grade of secondary school. At the same time, the requirements and minimum content for the level of biological training of students are taken into account (Solovyova et al., 2017).

Table 1. Extracurricular activities of students of experimental and control groups

Busyness	Experiment		Control	
	quantity (22)	%	quantity (32)	%
- total number of visits	50	82	38	118
- sports sections	12	54	9	28
- music	7	32	4	12,5
-dance clubs	4	18	7	22
-studios (art, theater, etc.)	3	14	2	6
-English, etc. languages	15	68	16	50
-attending additional classes				

All students of the control and experimental groups had the opportunity to use texts for extracurricular learning when studying the following topics of the section "Plants": "general acquaintance with flowering plants", "root", "kidney". The texts were designed in the form of separate brochures and distributed to students before studying the topic of extracurricular education. Each brochure consisted of 10-20 pages with text. In addition, students were presented with a list of books about plants for independent extracurricular education: a textbook "Biology" for the 6th grade by R. Alimkulova, A. Abibolla, Zh. Kozhentaeva, K. Kayym, K. Zhumagulova, "Textbook of natural science" for the 6th grade, author Abdimanapov B. Sh.. Currently, an electronic version of all textbooks is available, so the instructions for working on the site are fully familiarized and explained okulyk.kz (Alimkulova et al., 2015; Abdimanapov, 2017).

Students of experimental groups, along with this topic, prepare questions for the captains' competition, repeat the stories they read or write miniature essays about plants based on extracurricular learning. The compilation of questions and tasks based on the study of the presented popular science literature, we refer to the second methodological provision that contributes to improving the effectiveness of training.

In the experimental classes, the study of each topic of the section "Plants" ended with special extracurricular lessons that perform generalizing and control functions. Extracurricular classes were held in the form of fairy tales, games, competitions or holidays and directed students to work with popular science literature. Extracurricular training sessions have become the third methodological condition in our study, contributing to the effective assimilation of program material, the development of educational motivation.

In addition, during the research work, methods of conducting excursions, equipment of the biology room, holding biological evenings, organizing exhibitions of students' works were used.

Biological excursions are a form of extracurricular activity used in the study of biology. On excursions, students learn to see, observe, compare objects and phenomena of interest to them, find examples of the connection of organisms with each other and with environmental conditions. Each trip to the excursion is a powerful tool for the development of critical thinking and research abilities of students. The theme of the tour is very diverse. The place of the excursion can be a forest, a pond, a park and even a school experimental training ground. A living connection with nature awakens students' interest in studying it and contributes to the accumulation of knowledge. This method was carried out to familiarize students of the 6th grade with the surrounding world of flowering plants when explaining the topic "Flowering plants", to understand the reasons for their diversity. Before the excursion, a conversation was held with the students about the rules of behavior in nature, careful attitude to plants.

Organization of exhibitions of students' works. The exhibition is held in accordance with any biological party, holiday, circle, where observation diaries, collections and herbariums created by students, as well as photographs taken in nature are presented. Labels with the name of the work and its author-performer were attached to each exhibited work.

In the organization of extracurricular education, work was also carried out on equipping the biology classroom. The students took part in the preparation of herbariums, photographs, handouts, shelves for plants collected during the tour. The use of materials made with their own hands increases the responsibility of students.

Fig. 2. Work on the production of racks for plants and herbariums from materials collected during the tour

The organization and content of extracurricular work in biology has always been monitored for the presence of independent activity of students of a research nature corresponding to the age characteristics of students (Fig.2). These include: independent experiments and observations, work with reference books, magazines, popular science literature, etc.

During the excursion on the theme "Flowering plants", students studied flowering plants growing in the school yard, in the recreation park and by the water, divided them into classes of "monocotyledons" and "dicotyledons", got acquainted with their structure. Students photographed each observed plant, recorded the formula of the flower, the area of distribution. They also collected materials for the manufacture of herbarium. During the excursion, a blitz quiz about flowering plants was organized with the students, the students answered questions, listened to the answers of others, tried to determine the correct ones.

Blitz Quiz Questions:

– What forms in flowering plants on a flower? (Seed)

– The second name of flowering plants (Angiosperms)

– How do flowering plants reproduce? (seeds)

– Name 3 life forms of flowering plants? (Grasses, shrubs, trees)

– Are peas an annual or biennial plant? Explain your answer

– Give an example of a perennial plant (apple trees, birches, tulips, etc.)

– The fruits of which plant are used as a cure for scurvy? (Lemon)

– Where can I find a plant called "Dragon Berry"? (Cacti in America)

– The name of which plant is translated from Arabic as "patience" (sibur)? (Aloe)

– In which part of the plant does the seed develop? (In fruits, flowers)

– How to distinguish a perennial from an annual? (if a plant blooms and produces fruits and seeds 1 time during the growing season, it means that it is an annual plant.)

Thus, the control and experimental groups in the educational experiment on the model of organization and use of extracurricular learning differed in that the training in experimental classes was carried out taking into account all these methodological conditions. Students of this class used texts and books developed by us for extracurricular learning related to preparing for extracurricular lessons - repeating the texts they read, composing questions for upcoming quizzes, contests, games, etc. The students of the control groups were able to use both the texts developed by us and the scientific books presented in extracurricular education, which corresponded to the level of biological training of students, but no extracurricular activities were conducted in these classes.

To take into account the results of the experiment, the following were carried out: registration of lessons, oral and written verification work, teachers' diaries were kept to determine the activity of students manifested during preparation for the lesson and its attendance. With the help of the questionnaire, the level and dynamics of students' interest in reading scientific and popular literature, the development of interest in the subject were revealed.

The effectiveness of the experiment was determined by monitoring and quantitative and qualitative analysis of the responses of students in the experimental group. The results of the quantitative analysis are presented as a percentage of the main elements of knowledge and are presented in the form of tables and diagrams. The qualitative analysis of the test papers took into account both the completeness and the informativeness of the assimilation of the educational material.

The knowledge sections of the students of the experimental and control groups were conducted after studying each topic through written papers, including issues of mandatory reduction of the content of education.

In general, in teaching and reading popular science literature, in particular, given that students are guided by various motives, the change in motivation of extracurricular learning and teaching biology among students of the experimental group at the end of the experiment

was determined by comparing it with the motives of students of the control group. For objectivity, when comparing the results, the number of students in the experimental and control groups was chosen approximately the same.

During the formation of the experimental and control groups, ways to improve the effectiveness of extracurricular learning were studied: circles, excursions, work with scientific literature. The training of the control group was conducted according to traditional forms of training. The experimental group was trained in accordance with extracurricular activities based on innovative teaching methods.

The purpose of the formative experiment is to deepen the concepts, to reveal the possibilities of students in the section "Plants" in biological education.

In addition, methods of field research (field labs), interactive project research, the method of "Campus living laboratory" (Campus living laboratory), "learning based on search situations" (investigative case based learning), etc. were used to improve the effectiveness of extracurricular learning.

At the final stage of the formation period, design works were carried out on the topics "Flowering plants", "Structure and functions of leaves", "The importance of light in plant life", "Characteristics of plant ontogenesis".

At the final stage of the experimental work, control work was carried out as at the beginning of the experiment, thus the level of knowledge assimilation was determined. Its results are shown below, while the coefficient of assimilation of knowledge increased by 0.18 (Fig.3).

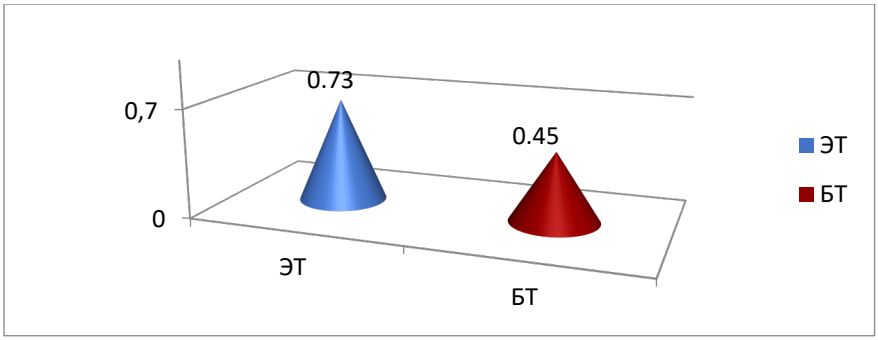

Fig.3. The coefficient of assimilation of knowledge at the end of the experiment

When determining the effectiveness of extracurricular learning, the indicators of the level of assimilation by students of the content and volume of ideas about plants and their interrelation at the end of the experiment increased by 22.5 %, considering that at the beginning of the experiment a high level was not observed. Average levels increased by 2 %, and low levels – by 24 % (Fig.-4).

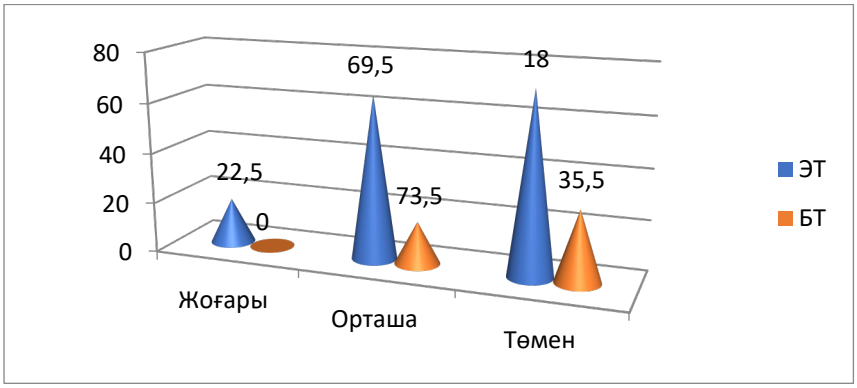

Fig. 4. Indicators of the level of mastering by students of the content and scope of concepts in the formation of biological knowledge of students during extracurricular learning at the end of the experiment

In answering the question about root modifications, the relationship of their structure and functions, students of experimental classes gave many examples of plants with certain modifications, noted the functions of each of them. Students of control classes, as a rule, limited themselves to naming 1–2 types of modified roots and their functions.

In accordance with the standard curriculum of the updated content on the subject "Biology" for grades 7–9 of the basic secondary education level on the topics "Methods of vegetative reproduction in plants", "Flower structure. Types of pollination. Flowering and pollination. Types of pollination (self-pollination, cross-pollination, artificial)", "The concept of fertilization of plants and the formation of zygotes. Double fertilization and its biological significance" the development of herbarium materials , their research and application in the design of the cabinet showed great interest.

We associate the high quality of the responses of the students of the experimental class on the topic "root" with extracurricular learning, in the motivation of which the final lesson on the topic under study using the knowledge gained during extracurricular activities was of great importance.

Analysis of the results of written works carried out after studying the topics "Leaf", "Stem", "Flower", "Fruit and seed" showed that the answers of students in experimental and control groups, both in terms of knowledge elements and completeness and rationality, have the same differences as the answers discussed above. To confirm the above, we present the results of the analysis of the answers to the questions of subsequent written works on each of the studied topics according to the experimental methodology. The answers are classified according to four parameters: correctly complete, correctly incomplete, incomplete with inaccuracies, incomplete with gross errors.

The written work on the chapter "Growth and development" required answers to the following questions:

1. How does the movement of minerals dissolved in water occur along the stem?

2. The birdhouse was attached to the tree trunk with a wire, and after a few years the wire cut through the bark of the tree, and a leak appeared in this place. How to explain such a phenomenon?

3. How does the tree grow in thickness?

4. The soil contains the roots of lilies, wheatgrass, nettles. By what signs can these plant organs be distinguished?

5. In the fields, peas are usually grown together with oats. Why is this method used for growing peas?

6. What biological feature of cambium is observed in the analysis of annual rings?

Answers of students of experimental classes to the proposed questions on the topic "Sprout.Stem" showed the presence of more than sufficient elements of knowledge. So, in the answers to the question about how the movement of minerals dissolved in water along the stem occurs, students of experimental classes (82 %) named the types of conductive tissues, wrote about the features of their structure, the value of water evaporation and vascular pressure in this process. In the control classes, only 37 % of the students named the pathways, and a high flow of mineral salts dissolved in water showed only 22 % of the answers.

The relationship of stem thickness with cambium cell division was revealed by 92 % of students in the experimental and 78 % of students in the control group. In addition, the students of the experimental group analyzed the features of the formation of cambium cells.

The work, written after studying the topic "Flower", included the following questions: What is a flower and what is its role in the life of a plant, what is the structure and what is the difference between cherry and tulip flowers, what is its biological role, what are the characteristics of wind-pollinated plants, what are the features of cross-pollination.

The coefficient of complete assimilation of knowledge on the topic "Flower" according to the formula of A.V. Usova in the control group was 62 %, in the experimental group – 85 %, the coefficient of the level of training according to V.P. Simonov showed in the control group – 57 %, in the experimental group – 75 %. The reliability of the experimental results according to the formula of A.A. Kyveryalg was equal to 8.6.

After studying the topic "Fruit and seed", the tasks in the written work were within the framework of questions : what is fertilization and what is its biological significance, why is fertilization in flowering plants called double, from which parts of the flower the pericarp is formed, how the embryo, endosperm and membranes are formed in the developing seed, what is the difference between the fruits of plants, name the types of fruits known to you.

The elemental analysis of the answers to the question about fertilization in flowering plants showed that the students consciously used the terms "germ cells" or "gametes", "egg", "sperm", "central cell". In the experimental group, this is 95 % of students, in the control group – 82 %.

Calculated according to the formula of A.V. Usova, the coefficient of complete assimilation of knowledge on the topic "Double fertilization. The biological value of double fertilization" was 65 % in the control group and 87 % in the experimental group; the level of training according to V.P. Simonov was 62 % in the control group and 75 % in the experimental groups. The reliability of the experimental results determined by the formula of A.A. Kyveryalg was equal to 8.2.

Conclusion

The results of experimental studies served as the basis for the following conclusions:

In the second chapter, "Methods of extracurricular learning in the study of the section "Plants","the study of the efficiency of the vital activity of biological objects (plants) through the form and methods of teaching organized during extracurricular time was carried out on the basis of the following tasks:

– the possibilities of the effectiveness of the assimilation of knowledge during extracurricular learning and the performance of additional special tasks in accordance with the curriculum for the content of the subject "Biology" are determined;

– training is organized using complex forms of training.

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