BIO Web of Conferences **116**, 07022 (2024) https://doi.org/10.1051/bioconf/202411607022
EBWFF 2024

RETRACTED

Environmental education in higher education: modern tracks

Aleksey Azarkhin[1*] and *Sayhan* Abduev[1]

[1]Samara State University of Economics, 141, Sovetskoi Armii Street, Samara, 443090, Russia

Abstract. This article is devoted to the peculiarities of environmental education in the modern period, supporting the idea that the focus has shifted to improving its quality, focusing on the priority of filling the domestic labor market. The introductory part of the paper shows the main tracks of ecologists' education at the present stage and highlights the most important aspects of the educational program. In the course of the description of materials and research methods, the conclusions are formulated that normative approaches to the regulation of this educational content are gradually moving from the formal-declarative level to the sphere of real implementation. Modern forms of training in the form of master classes, business games, quizzes, environmental dictations significantly revitalize the perception of information by students in this segment. At the same time, the importance of not only legal, but also moral aspects of knowledge transfer is emphasized. The spiritual component of education in this area is very clearly expressed, since the persons receiving such knowledge are actually called upon to save humanity from a possible ecological catastrophe. The results of the work are presented in the form of concrete proposals for improving the foundations of domestic environmental education. The education of ecologists requires not only the simple transfer of information, but also the formation of certain analytical, experimental and technological skills in students, thanks to which they will be ready for independent work after graduation. The methodological block reveals and substantiates the most effective means and methods of environmental education, among which the priority is given to design and modeling. At the same time, the importance of the regional component is shown, especially when it comes to specially protected areas (reserves, sanctuaries). In the course of the discussion the reasons that hinder the effectiveness of environmental education were formulated, and concrete proposals for the optimization of this process were made.

1 Introduction

Different countries have their own national programs for the training of top-level specialists in environmental protection. They differ in the number of academic disciplines studied and their content. Domestic education has managed to preserve its traditions by adopting the best achievements of the European system of university education.

* Corresponding author: aazarkhin@mail.ru

© The Authors, published by EDP Sciences. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

Man is actively affecting the environment, and frequently he does it in barbaric rather than careful manner, which leads to a real threat of ecological disaster. In order to promptly respond to these challenges, qualified specialists are needed who are able to influence a change in the attitude of the population towards such manifestations, from indifference to active counteraction.

Most states recognize the importance of environmental education in order to maintain political stability and economic autonomy [1-9]. A powerful impetus for development in this area was given by the World Summit on Sustainable Development in Johannesburg (2002) where the participating countries confirmed their commitment to the idea of the important role of environmental education.

Over the completed period, the international community has managed to accumulate positive experience in this segment, which is of interest, subject to comprehension and application on the national soil. Russia has withdrawn from the Bologna system of higher education. This stage is recognized by the official authorities as completed. Priority is given to unique domestic approaches that maximize the development of each student's abilities. At the same time, the mobility of students is preserved, the possibility of their study in exchange programs in other countries, which allows you to feel yourself a participant of another educational environment and compare this process with studying in domestic universities. Russia has not abandoned two-stage education, as many experts feared, but retained this approach and strengthened the position of specialist training. The noted tracks are also characteristic of environmental education.

Federal educational standards have undergone radical adjustments to fit the new political and social realities. There has been a reorientation in the partnership of educational experience from the Western to the Eastern direction. In this segment, ties with China, India and Thailand have expanded. As never before, the domestic labor market needs competent professionals in the field of natural objects protection, who possess innovative methods and are ready to solve non-standard tasks. Filling it with such personnel is quite possible, the emphasis is on the quality of training.

Ecological education has reached a new level thanks to the works of I.P. Borodin, M.I. Budyko, V.I. Vernadsky, G.A. Kozhevnikov, A.V. Yablokov. The contribution of each of these scientists to the development of universal approaches in the field under consideration is invaluable. At the same time, they have always emphasized that they are out of politics, not allowing the ideologization of training programs. At present, there is rather low author competition in the segment under consideration, which does not indicate a lack of interest in the relevant subject, but rather a small number of authorized experts.

The idea of rational equality in freedom, which is one of the fundamental ideas in legal understanding, finds its niche in environmental education [2]. In the segment under consideration, the ideas about legal freedom as the basis of responsibility are extremely significant. The formation of the latter was evolutionary, through a reasonable selection of models of human behavior, some of which died out as unviable, others, on the contrary, were consolidated as samples of appropriate behavior and transformed into normative prohibitions. Law is inherent in the nature of man, contributes to his biological and social preservation, it is an indicator of the level of his freedom. Each individual recognizes the possibility of having a certain degree of independence, the incentive for this he finds in the law, where the basic rights are enshrined. It is obvious that rational principles are put in the first place here, because with the basic equality of all subjects, someone is able to realize his freedom to a greater extent, someone to a lesser extent. This principle is clearly seen in the possibility of receiving higher education. Equal access to it is granted to any citizen of Russia. But the realization of this right is the subject of their conscious choice and free will, supported by certain factors - proper training during schooling, self-development, internal

RETRACTED

discipline, awareness in various areas, abilities, including the ability to perceive large amounts of data, their systematization.

In the light of the above, it is obvious that the choice of the environmental direction of education should be made on the basis of a well-considered, balanced decision. The student realizes all the difficulties of its obtaining, but they are guided by the desire to master the appropriate professional competencies and the amount of knowledge to engage in personally interesting, socially useful activities.

The peculiarity of environmental education is determined by the type of activity, which after its mastering is planned to be engaged in by the persons receiving it. Meanwhile, this is a very specific content, since natural resources and most of the objects of the complex under consideration are in federal and municipal ownership. After the abolition of the legal monopoly of the state on land, it began to be transferred to individuals and legal entities, i.e., the range of subjects owning this real estate has significantly expanded, which eventually complicated relations, increased the number of transactions and caused numerous court disputes. The necessity to conduct cadastral works, clarification of boundaries, elimination of revealed overlaps between adjacent land users, protection of violated rights has emerged. There is a special terminology in this area of special knowledge. Activity of cadastral engineer, geodesist is not only analytical, but also technological, associated with the use of equipment and making calculations. Thus, the level of information obtained is no longer private but public, as well as environmental law as a whole, of which the relevant academic discipline is a part. As the process of formation of this branch as an independent one is still in progress, the standard of environmental education will certainly be adjusted, being filled with new content determined by modern realities [4].

2 Materials and methods

As it was mentioned in the introduction, the task of environmental education optimization and its adaptation to new realities is currently being solved.

One of the most difficult tasks of environmental education is considered to be its complexity, since social relations forming the subject matter belong to different branches of knowledge [1]. This content can hardly be systematized and classified. A considerable scope of normative and theoretical material creates difficulties in mastering even the basic principles. The criterion for attributing to environmental education is the presence of a cause-and-effect relationship with the objects of nature that are subject to protection and conservation. An important function of any education is forecasting. Looking ahead, it is necessary to have clear ideas about which aspects will recede into the background and which, on the contrary, will become more acute and require urgent action. Optimistic calculation is focused on the development of events without natural and social cataclysms. However, it is always necessary to work on plan B as well, since emergencies are quite probable. Future specialists in the field of ecology should master the algorithm of professional behavior under any inputs. In addition, the presence of this kind of ideas will allow them to block negative determinants by taking preventive measures. Based on this, the educational process should be organized. The educational environment should be saturated with information and digital content in a particular cognitive area. It is also advisable to prepare both students and teachers to work with it.

A person receiving environmental education is an emerging future specialist. Certainly, in the process of learning he becomes the center of numerous sociocultural situations. Some of them are typical and are not subject to change - federal state standards, others vary (writing of term papers and final works, passing different formats of practical training). Joint activity in the listed directions requires the correct building of a line of relations

RETRACTED

between the teacher and the student to create the most favorable for her communicative and cognitive conditions. "Molding" a specialist ecologist is not only an intellectual process, there are many moral and ethical moments in it, which are also to be taken into account. The desire for autonomy should not turn into anarchy and chaos.

Foreign psychology calls for not getting ahead of the curve, living in the moment. Meanwhile, environmental education does not fit into the proposed narrow boundaries, it is characterized by active planning. For this purpose, students try to get the most of knowledge, providing themselves with a kind of safety cushion for the future, on the principle of "I will learn it, it might be useful". This understanding is the most correct, because it leaves room for self-discovery, deep immersion in the subject, orientation on the most interesting topics.

Certain experience of education is offered by the Soviet higher school. Not only ideological, but also cognitive moments featured in the teaching there. Academic work was seen as subsidiary. Individual research projects in the chosen specialty were at the center of attention. Lecture courses were taught by different professors so that students could familiarize themselves with the pedagogical style of each one, hear polar points of view on debatable aspects, and in the end be able to form their own opinion. Often seminars and colloquia went beyond their scheduled time and actually lasted for 6-7 hours, turning into heated debates. Each student was certified by the results of the report at the department [3]. This format of training emphasizes independent work, under the strict control of the teaching staff.

The most effective traditionally include means and methods of criminal law, where nature protection is represented by a number of compositions. Environmental crime is becoming transnational in nature, and it has long been impossible to combat it by the forces of a single state; it requires the combined efforts of law enforcement agencies. Competent building of such interaction is the key to success. Modern environmental education gives students an idea of possible directions of such cooperation, its prospects and successes. The problem is that the system of environmental crimes continues to be formed; it contains compositions designed on the principle of general and special norms, which causes certain conflicts in law enforcement. Students should be prepared for such situations.

They should know that in order to identify violations in the area under consideration, operational-search activities are carried out. This activity is strictly regulated, its results are recorded in the forms established by law, in the absence of violations of the procedure of organization and conduct they can acquire evidentiary value [7].

Environmental education should be oriented to the ideas of building civil society and the development of its initiatives, because without its support the state is unable to implement policy in the field under consideration [8]. Relations of the level of trust, support and agreement with the established official prohibitions are peculiar to the rule of law and democratic society. Students in the course of training are inculcated with the idea that punishment for violations is not reduced to punitive moments, as it is not only a legal, but also a moral phenomenon, expressed in negative social assessment.

In light of the above, we are faced with an intractable collision. On the one hand, environmental education is designed to solve the problem of maximum awareness of a wide range of people with normative attitudes, on the other hand - we remember the Confucian saying that "laws do not need to be known, they need to be obeyed". In essence, the inevitability of responsibility deters abuses more strongly than punishment itself. In this sense, genetic memory works, the experience accumulated by previous generations, recipitated in the light of modern realities. Student audiences perceive the basic thesis of the inevitability of punishment for encroachments on objects of nature and the damage caused to them, so the curriculum should be built around this basic idea.

RETRACTED

At present, a complete abandonment of sanctions for such abuses is not possible. General liberalization of punishments does not work in the field of ecology, as such acts cause damage, often irreparable. However, there is a certain measure in this aspect as well. It is the correlation between the term and moral attitudes.

One of the priority tracks of modern environmental education is the assessment of military conflict from the perspective of a natural and social catastrophe. Such actions are harmful to all ecosystems. Material resources are directed for strategic purposes, using natural wealth. It is accepted to distinguish several stages, each of which is the subject of study from the point of view of ecology: preparatory actions; operation of military equipment and facilities, negative impact on the environment; direct military actions, their destructive nature; difficulties of post-war recovery [5].

Students should realize that military conflicts are always connected with the struggle for natural resources. Even the very fact of threatening to start such actions already causes ecological damage, direct warfare causes indirect and direct harm to natural objects. Of course, negative environmental consequences arise not only for the participants in hostilities, but also for other states, since their spread is not limited by officially established borders.

A relevant example of the negative impact on ecosystems is the consequences of damage caused by the pro-Nazi forces of Ukraine and NATO states supporting them with munitions, which should bear all kinds of responsibility for the damage they cause to air, water, soil, flora and fauna on the territory of Russia and border areas. They have caused many times the risk of damage to dangerous facilities, including the risk of spreading radiation and chemical contamination and mass contamination of vast localities.

As a result, the following conclusions were obtained.

1. Environmental education is steadily in demand. Higher school offers it in several formats, European - two-stage and domestic (specialization). The choice is left to the learner, he makes it consciously, guided by the tasks he sets for himself. Priority is given to the practice-oriented approach, which allows to get a professional in the field of environmental protection ready to independently solve complex problems.

2. Students acquire a wide range of knowledge in the relevant field of study, which is comprehensive in nature, including significant aspects of the humanities and natural sciences. Legal aspects play a special role, as the protection of natural objects is associated with the establishment of a number of administrative and criminal prohibitions.

3. Environmental education is not only an informational process, but also an activity filled with spiritual and moral content. The basics of ecological culture are imparted to students and they become carriers of a special worldview.

4. Environmental education is indeed interdisciplinary. Understanding of this reality is able to bring learning to a new systemic level.

5. Training of modern standards of environmental protection begins in higher school actually from the zero mark, because the level of knowledge obtained in school during the study of basic subjects of "Chemistry", "Geography", "Social Studies", "Biology" in essence does not give continuity in the study of environmental factors. Students of the 1st year demonstrate a complete lack of awareness in the subject area they are to study. There is no theoretical training, representations at the level of data obtained through mass media and social networks.

6. Specifics of environmental education are not represented by some teachers, having only general training, referring to the lack of private methods, the impossibility of studying closed information, with the stamp "for official use".

7. The exhaustibility of natural resources requires imparting to graduates of environmental education the skills of lean production, the ability to work in difficult climatic conditions, in polluted areas.

RETRACTED

8. Those who receive environmental education should realize their special mission: to prevent environmental disasters and, if they occur, to be ready to combat them in the most dangerous areas.

3 Results and discussion

Based on the data obtained, we came to the opinion that environmental education reveals a number of interrelated trends. It demonstrates clearly the processes of integration, showing the contradictions between states and individual social groups, resulting in global upheavals [6]. Civilization is at a dangerous line, when the unreasonable ambitions of some countries, trying to act on the principle of force rather than right, can throw mankind back in the chain of development, creating at the same time threats of environmental disasters. The task of environmental education is to provide students with sustainable ideas about true social values, and to teach them to resist negative challenges. In the light of this, axiological and activity approaches are the most demanded in the system of obtaining ecological knowledge.

A sociological survey of students of Samara State University of Economics, studying in the direction of "Land management and cadasters" (bachelor's and master's degree) was conducted. The age group of 17 - 20 years old (first - third year of full-time education) was formed for participation. Respondents (89%) showed satisfaction with the level of education received, indicating that it meets their expectations at the time of enrollment. About 75% stated that too much time is devoted to basic courses, to the detriment of elective disciplines, which are of practical interest to them. 92% of the respondents noted the usefulness of the internship, indicating that it allowed them to acquire important skills in the field of surveying and cartography. Trainees (88%) had a desire for more involvement of practitioners in the learning process, who are able to convey to students the latest trends and share their personal experience of environmental activities.

96% of respondents consider themselves eco-activists, participate in volunteer actions to protect the environment. 54% of students expressed interest in educational exchange, with training in foreign universities, the priority was given to Asian countries. 89% named China as a desirable destination [10].

67% of respondents spoke about the desire to stay after graduation to work at nature conservation sites in the Samara region. The national parks "Samarskaya Luka" and "Buzuluksky Bor", Zhigulevsky State Biosphere Reserve were mentioned among the attractive locations for employment during the survey.

4 Conclusions

Finally, it should be noted that environmental education is closely related to environmental culture. The formation of the latter takes place within the framework of the axiological approach. These are systemic phenomena that cannot be considered independently of each other. Only a conscious choice of the path of an environmentalist through the prism of mastering professional competencies allows to build ecological thinking in the right direction.

First of all, the optimal form of discussion in the chosen field is research and practice conferences; remote participation is acceptable. The speakers demonstrate their position in understanding the significant tracks of environmental education through reports and abstracts. Two main approaches can be identified. Advocates of the first one believe that environmental education is fully formed and systematized, does not require any innovations and corresponds to the existing realities.

RETRACTED

The representatives of the second approach are convinced that environmental education is being formed as an interdisciplinary complex, which requires a new approach to teaching the disciplines traditionally included in the considered subject area, filling them with a qualitatively different content.

Secondly, environmental education should be focused on solving non-standard tasks. To this end, students should acquire not only theoretical knowledge, but also practical skills, the ability to work with equipment and make calculations, with the processing of the obtained results.

Thirdly, it is necessary to welcome the initiatives of students to participate in voluntary actions for the protection of the environment.

Fourth, it is necessary to involve more actively in the educational process environmental practitioners who are able to fill it with modern approaches and orient students on the most popular topics for the preparation of projects.

Fifth, the priority is to improve the quality of environmental education, which is achieved through a competent combination of highly professional teaching and management activities for the optimal organization of the educational process. The academic advantages of higher education should be combined with innovative teaching methods.

Sixth, the educational segment under consideration should maintain its mobility in order to combine the opportunities to study in domestic and foreign universities with the implementation of positive experiences of national universities.

Seventh, environmental education should promptly respond to new challenges by making necessary changes in the curriculum, eliminating irrelevant courses and introducing a wide range of applied subjects as electives.

References

1. K. V. Agamirov, State and Law **3**, 40-53 (2023) DOI: 10.31857/S102694520024817-9.
2. A. R. Gilmullin, State and Law **1**, 162-167 (2023) DOI: 10.31857/S102694520024141-6.
3. K. P. Krakovsky, State and Law **4**, 155-168 (2023) DOI: 10.31857/S102694520025624-7
4. P. A. Kucherenko, A. A. Terekhov, State and Law **2**, 139-144 (2023) DOI: 10.31857/S102694520024326-9.
5. S. F. Milyukov, N. I. Kuznetsova, State and Law **7**, 178-184 (2023) DOI: 10.31857/S102694520021672-0.
6. P. Y. Naumov, S. I. Zakhartsev, I. V. Kholikov, V. M. Bolshakova, State and Law **9**, 64-72 (2023) DOI: 10.31857/S102694520024304-5.
7. A. M. Pleshakov, State and Law **5**, 203-207 (2023) DOI: 10.31857/S102694520025208-9
8. J. T. Toshchenko, State and Law **6**, 198-202 (2023) DOI: 10.31857/S102694520025953-9.
9. S. Jia, Vestnik of St. Petersburg University **15(24)**, 250-261 (2024) DOI: https://doi.org/10.21638/spbu14.2024.116.
10. X. Wang, Ya. Li, Research on the digital transformation of higher education in Russia and its inspiration. Zhong guo gao gao deng deng xin xi hua **1**, 84-86 (2022)

RETRACTED