

18

EFFECT OF SOCIAL PARTNERSHIP ON THE DEVELOPMENT OF CREATIVE NATURAL-SCIENCE SKILLS IN STUDENTS

EFFECTO DE LA COLABORACIÓN SOCIAL EN EL DESARROLLO DE HABILIDADES CREATIVAS EN CIENCIAS NATURALES EN LOS ESTUDIANTES

Nikita Kalashnikov¹

E-mail: school85nk@mail.ru

ORCID: <https://orcid.org/0000-0002-8691-9311>

Boris Artemenko²

E-mail: artemenkoba@cspu.ru

ORCID: <https://orcid.org/0000-0001-8101-4401>

Elena Bystray²

E-mail: bistraieb@cspu.ru

ORCID: <https://orcid.org/0000-0003-2822-2329>

Irina Ivanova²

E-mail: ivanovaiyu@cspu.ru

ORCID: <https://orcid.org/0000-0002-3993-3751>

Irina Kolosova²

E-mail: kolosovaiv@cspu.ru

ORCID: <https://orcid.org/0000-0001-7714-3358>

Nadezhda Permyakova²

E-mail: permyakovane@cspu.ru

ORCID: <https://orcid.org/0000-0002-2489-3072>

¹ Children's Ecological Center of Chelyabinsk. Russia.

² South-Ural State Humanitarian Pedagogical University. Russia.

Suggested citation (APA, seventh ed.)

Kalashnikov, N., Artemenko, B., Bystray, E., Ivanova, I., Kolosova, I., & Permyakova, N. (2023). Effect of social partnership on the development of creative Natural-Science skills in students. *Revista Conrado*, 19(95), 180-187.

ABSTRACT

The article is devoted to an urgent direction in the development of society – fostering individuals with environmentally-oriented thinking, focused on environmental protection and nature-creative activities. In this process, an important component becomes the system of natural science education (preschool, school, and additional) in this process. The authors report on the experience of implementing this direction of activities through the organization of social partnerships within the framework of network interaction of the additional education institution “Children’s Environmental Center of Chelyabinsk” with various groups of possible social partners. Organization of the experimental part of the research is disclosed based on the example of the annual project implemented in the municipal education system of Chelyabinsk, “Young Minister of Ecology and their team”, as the practical implementation of this project would be difficult without the participation of social partners from universities, cultural institutions, charitable foundations, etc. The comparison of the results of initial and final assessments demonstrates the efficiency of the social partnership technology in developing a student’s environmentally-oriented personality.

Keywords:

Natural-science education, creative natural-science skills, environmentally-oriented personality, social partnership, education system.

RESUMEN

El artículo está dedicado a una dirección urgente en el desarrollo de la sociedad: fomentar individuos con un pensamiento orientado al medio ambiente, centrado en la protección del medio ambiente y las actividades creativas en la naturaleza. En este proceso, un componente importante se convierte en el sistema de educación en ciencias naturales (preescolar, escolar y adicional). Los autores informan sobre la experiencia de implementar esta dirección de actividades mediante la organización de asociaciones sociales en el marco de la interacción en red de la institución de educación adicional “Centro Ambiental Infantil de Chelyabinsk” con varios grupos de posibles interlocutores sociales. La organización de la parte experimental de la investigación se presenta basándose en el ejemplo del proyecto anual implementado en el sistema educativo municipal de Chelyabinsk, “El Joven Ministro de Ecología y su equipo”, ya que la implementación

práctica de este proyecto sería difícil sin la participación de interlocutores sociales de universidades, instituciones culturales, fundaciones benéficas, etc. La comparación de los resultados de las evaluaciones iniciales y finales demuestra la eficacia de la tecnología de colaboración social en el desarrollo de la personalidad respetuosa con el medio ambiente del estudiante.

Palabras clave:

Educación en ciencias naturales, habilidades creativas en ciencias naturales, personalidad orientada al medio ambiente, colaboración social, sistema educativo.

INTRODUCTION

A global problem of today related to the safety of human life on Earth is preserving and improving the condition of the natural environment. The intensive impact of anthropogenic pressure on nature, caused primarily by the unlimited consumption of resources and the absence or ineffectiveness of programs for their replenishment, gradually leads to the degradation of the sources of exhaustible resources, especially non-renewable ones.

To resolve the problem of preserving and improving the state of the natural environment, the Russian Federation has developed and implemented the National Project "Ecology". Under this project, action is taken in such directions as waste utilization and recycling, elimination of landfills, preservation of forests and water bodies, reduction of atmospheric emissions, development of ecotourism and environmental education, and preservation of biological diversity (Ministry of Natural Resources and Environment of the Russian Federation, 2023).

Importantly, at the legislative level, there is a significant body of documents regulating work on preserving and multiplying Russia's natural wealth. Among these is the Federal Law on Environmental Protection No. 7-FZ of January 10, 2002 (State Duma of the Federal Assembly of the Russian Federation, 2002), the Principles of the State policy in the area of environmental development of the Russian Federation until 2030 (approved by the President of the Russian Federation 2012), and the Ecological Doctrine of the Russian Federation (Government of the Russian Federation, 2002), to name a few.

In the documents listed above, a major role is attributed to the environmental education and information of Russian citizens. An emphasis is placed on the need to start this process in childhood. Therefore, the education system plays an important role in these efforts.

Article 74 of the Federal Law on Environmental Protection states: *"Ecological education shall be pursued for the*

purposes of shaping up an ecological culture in the society and fostering a careful attitude to nature and rational use of natural resources by means of disseminating ecological knowledge on ecological safety and information on the condition of the environment and on the use of natural resources" (State Duma of the Federal Assembly of the Russian Federation, 2002). Thereby, the Law accentuates the role of the education system in natural-science and, most importantly, environmental education of the population. A confirmation of this is found in the Concept of Environmental Education in the General Education System developed in 2022 (Dziatkovskaia, 2022, 2023).

The issues of environmental education starting from preschool are discussed by both Russian (Isakova, 2017; Dziatkovskaia & Zakhlebnyi, 2020; Ryzhova, 2020; Ryzhova & Voronenko, 2020; Mamedov, 2023; Nikolaeva & Klemiashova, 2021; Tiunaseva et al., 2023, and others) and foreign researchers (Batyrbayev, 2018; Barrable, 2019; Cawford, 2019; Federico, 2020; Carrus et al., 2020; Pirchio et al., 2020, 2021; De Lulio et al., 2022; Krotenko, 2022, and others).

The leading role in the environmental education of the younger generation is naturally given to educational institutions, e.g. kindergartens (environmental education), schools (natural-science education), and additional education institutions (natural-science education, including environmental). However, these organizations are not always able to ensure a quality educational process in full on their own. In this case, it is possible to engage the so-called social partners to organize the educational process. Such partners can be cultural institutions, higher education and research institutions, public organizations, charitable foundations, etc. In the framework of network interaction, social partners can expand educational opportunities by offering their own resources, material base, and assistance in organizing and conducting various scientific, educational, competitive, and other events.

The goal of the present study is to establish the role of social partnership in developing students' creative skills in natural sciences and fostering their environmentally-oriented thinking.

MATERIALS AND METHODS

The main network partner of the Children's Ecological Center of Chelyabinsk is the City Methodological Association of supplementary education teachers of subjects related to natural sciences and ecology and biology. This association provides the opportunity to summarize the professional experience of additional education teachers

of Chelyabinsk and design their joint work on developing an environmental outlook in students.

Another social partner is represented by students' parents, who are actively engaged, for example, in ecotourism. Parents not only participate in ecological trekking, rafting, and expeditions but act as initiators in figuring out the routes and organize many bio-ecological events.

Network interaction as a contemporary innovative technology, through joint activities of educational organizations and social partners, contributes to the creation of an open educational environment, a unified educational space, which provides students with ample opportunities for self-improvement and self-realization. This process facilitates the development of not only students but also the network partners involved. Network interaction centered around a project that cannot be implemented by any of the participants alone is carried out according to the following principles:

- preservation of the independence of the participants in network interaction;
- observance of equality and mutual interest;
- partners' collaboration compensates for their individual deficiencies and contributes to the development of the organizations participating in network interaction (Lekomtseva & Zolotareva, 2011).

The described technology is utilized in the organization and conduct of the "Ecological Marathon" – a targeted city program focused on the development of students' personal attitude to the natural environment and their motivation for nature-saving activities.

Among network partners in this work are, firstly, several universities of Chelyabinsk, namely Chelyabinsk State University, South Ural State Humanitarian and Pedagogical University, and Chelyabinsk State Institute of Culture. These partners not only provide platforms for organizing and holding a number of competitions ("Nature Connoisseurs", "Young Naturalists", "I am changing the world around me", etc.), but give students the opportunity to meet and communicate with the region's leading scientists and specialists in botany, zoology, and ecology as part of a field trip for young ecologists.

Secondly, the network interaction includes environmental organizations, specifically: the Ural Interregional Department of the Federal Supervisory Natural Resources Management Service, the Department of Ecology and Nature Management of the Chelyabinsk Administration, the Regional State Institution "Specially Protected Natural Territories of the Chelyabinsk Region", and Chelyabinsk Forest Museum. Specialists of these institutions and

organizations carry out joint environmental work with students through various activities: cleaning the Chelyabinsk barren from household garbage, collecting dead wood and brushwood, and cleaning the coastal areas of the Miass River and lakes located not only within the Chelyabinsk limits (Smolino, Pervoye, Sineglazovo) but also within the region (Turgoyak, Chebarkul, Elovoye, etc.).

The third category of participants are cultural institutions that to some extent perform the educational function, including in ecology. Among these are the Chelyabinsk Zoo, the State History Museum of South Ural, the Chelyabinsk Regional Children's Library named after V. Mayakovsky, and the Central Library named after A. S. Pushkin. Collaboration with partners of this group involves thematic excursions and literary and poetic contests of an environmental orientation: "These Wonderful Animals", "The Malachite Box", exhibitions of drawings from the contest "We Came to the Zoo", etc.

Fourthly, the network interaction includes public organizations and foundations: the Chelyabinsk Regional Branch of the Russian Children's Fund, the public organization "My Planet", and the Union of Female Entrepreneurs of the Chelyabinsk Region "Union of Success". These organizations sponsor the award stages of competition events and help popularize the environmental movement among the population.

The Children's Ecological Center of Chelyabinsk serves as the connecting link in the examined network interaction.

The experimental section of the study focused on testing the efficiency of network interaction with social partners in developing the creative natural-science skills of students as a component in the formation of their environmentally-oriented personalities. The experiment involves students attending classes in the Children's Environmental Center of Chelyabinsk (55 people), divided into two groups: experimental (27 people) and control (28 people). The gender ratio of students was not considered.

The study utilized standard research methods, e.g., theoretical (a review of literature on the research problem, as well as normative documents provisioning for the educational process, summarization, systematization, the study of the pedagogical experience of teachers in additional education) and empirical (open observation, surveying, conversations, personal observations of the authors, and mathematical and statistical data analysis).

The efficiency of the described social partnership as a prerequisite for the development of students' creative natural-science skills was tested by means of a score-rating system. This system was used as a method that not only

provided a comprehensive evaluation of the development of creative natural-science skills in students but allowed managing the quality of the development of these skills.

Each criterion and indicator defining the development of students' creative natural-science skills was assessed by specially developed assessment tools in accordance with the types of activities (Table 1) using the following rating scale:

- 0-33 points – low level of creative natural-science skills;
- 34-67 points – average level of creative natural-science skills;
- 68-100 points – high level of creative natural-science skills.

At the ascertaining stage, at the beginning of the school year, the control and experimental groups were compared from the point of their ratio of students with high, average, and low levels of creative natural-science skills as a component of an environmentally-oriented personality in a student before the implementation of the social partnership technology.

The level of development of students' creative natural-science skills was identified as an average assessment of creative natural-science skills development according to the formula 1:

$$(F1)$$

where U_{av} – average assessment of the development of creative natural-science skills in students;

P_1 – assessment of the cognitive criterion;

P_2 – assessment of the process-activity criterion;

P_3 – assessment of the motivation-personality criterion.

Differences in the level of development of creative natural-science skills at the ascertaining stage between the experimental and control groups were assessed by Pearson's chi-squared test (χ^2).

Students actively participated in a variety of activities throughout the school year, including environmental field trips, research projects, competitions, and themed field trips. Researchers observed, interviewed, and evaluated students' participation, learning outcomes, and skills development during these activities (Table 2).

At the end of the academic year, a final assessment of the level of creative natural-science skills of students was conducted.

RESULTS AND DISCUSSION

Table 1. Correspondence of criterion indicators and types of students' activities in terms of the scoring and rating system.

No.	Criterion	Indicator	Types of activity	Maximum score
1	Cognitive	Cognitive and learning skills	Solving rebuses, crossword puzzles	2
			Participation in online quizzes	2
			Solving a recognition task	3
			Solving a memorization task	4
			Solving a comprehension task	5
		Analysis and synthesis skills	Solving a complex task for recognition, memorization, and comprehension (the Water body task)	7
			Performing laboratory work	4
		Hypothesizing skills	Solving an educational problem	5
			Performing a modeling task	8
			Execution of educational projects and research works	10
Total				50 points

2	Process-activity	Laboratory-experimental skills	Performing the task suggested in the instruction card	7
			Solving an experimental problem	8
		Process-project skills	Research work on an individually selected topic	15
Total				30 points
3	Motivation-personality	Communication and presentation skills Assessment and diagnostic skills Modeling and design skills	Completion of a comprehensive site exploration assignment	10
			Attendance in a lab of interest	5
			Participation in themed days	5
Total				20 points
OVERALL TOTAL				100 points

Table 2. Levels of development of creative natural-science skills in students (initial assessment).

Group	N	Criteria for the levels of development of creative natural-science skills								
		Cognitive			Process-activity			Motivation-personality		
		low	average	high	low	average	high	low	average	high
		%	%	%	%	%	%	%	%	%
EG	27	22 81.5	4 14.8	1 3.7	25 92.6	1 3.7	1 3.7	23 85.2	3 11.1	1 3.7
CG	28	23 82.1	4 14.3	1 3.6	25 85.7	2 7.1	1 3.6	25 89.3	2 7.1	1 3.6
Total	55									

The effectiveness of involving social partners was reviewed based on the example of the project “Young Minister of Ecology and their team”, which is being implemented in Chelyabinsk. The goal of the project is to build a system of student self-governance, where the main role is that of the minister. To achieve this goal, throughout the school year, students participate in the proposed events:

- projects in the improvement and landscaping of territories and cultural monuments and the preservation of cultural heritage;
- projects to solve environmental problems;
- projects in volunteering.

Those willing to take part in the event submit their projects electronically and describe their relevance, program of action, results of project implementation, photos, media materials, and essays on the topic “If I were the Minister of Ecology...”.

In the finals, the participants of the Contest are offered to participate in several other competitions. One of these is the competition “EcoErudit” for knowledge of basic ecological concepts, theories, and laws. Another event is the defense of the program “If I were the Minister of Ecology...”, where participants in teams present the program of actions of the virtual Ministry of Ecology and answer questions from the jury and other participants of the Contest.

In the first half of the year, the work includes the distribution of social roles (positions in the ministry), the creation of a charter, and the approval of an emblem and a seal. The completed work is defended in the form of creative self-presentation, where students present not only themselves but also their vision of the structure and objectives to be fulfilled by the “Ministry of Ecology”.

Work with students is organized in such a way that they develop a logical chain of natural science knowledge, skills, and abilities, which they learn in the course of activities in any of the described directions. For example, when visiting specially protected natural territories, students decide on the topics of their reports. Further, these reports translate into the creation of conservation projects, for example, “Introduction of Red Book Plants” or “Ecological Signs”.

Students learn about public speaking or participation in debates, which involve employees of various organizations, including the Ministry of Ecology of the Chelyabinsk Region.

In the second half of the year, each student receives individual assistance based on their personal interests, e.g., making environmental posters, doing research, writing essays, etc. The performance of each student is reflected in the rating, based on which several candidates for the post of “Young Minister of Ecology” (chairman of student self-government) are selected. Each applicant presents their program, which decides the person to become the “minister”, and the other applicants are offered responsible positions in the “ministry” according to their interests.

Final diagnostics show a significant decrease in the share of low-level students in the experimental group (EG), while the number of such students in the control group (CG) has not changed significantly. On the other hand, the number of students with a high level of skills in the EG is significantly greater, while in the CG the improvement is insignificant (Table 3).

Table 3. Levels of development of creative natural-science skills in students (final assessment).

Group	N	Criteria for the levels of development of creative natural-science skills																	
		Cognitive						Process-activity						Motivation-personality					
		low		average		high		low		average		high		low		average		high	
			%		%		%		%		%		%		%		%		%
EG	27	5	18.5	15	55.6	7	25.9	9	33.3	9	33.3	9	33.3	3	11.1	6	22.2	18	66.7
CG	28	19	67.9	6	21.4	3	10.7	22	78.6	4	14.3	1	3.6	22	78.6	5	17.9	1	3.6
Total	55																		

In the EG, the share of students with a low level of creative natural-science skills at the start of the experiment amounts to: by the cognitive criterion – 81.5%, by the process-activity criterion – 92.6%, and by the motivation-personality criterion – 85.2%. In the final assessment, the qualitative indicators are noticeably different: by the cognitive criterion – 18.5%, by the process-activity criterion – 33.3%, and by the motivation-personality criterion – 11.1%.

In turn, the number of students with highly developed creative natural-science skills has improved by the time of the final assessment, reaching: by the cognitive criterion – 25.9% (compared to 3.7% pre-experiment), by the process-activity criterion – 33.3% (compared to 3.7% pre-experiment), and by the motivation-personality criterion – 66.7% (compared to 3.7% pre-experiment).

Analysis of the results of the initial and final assessments of creative natural-science skills shows that in the control group, the number of students with a low level of these skills reduced, but not as much as in the experimental group. In the latter, this share dropped from 82.1 to 67.9% by the cognitive criterion, from 85.7 to 78.6% by the process-activity criterion, and from 89.3 to 78.6% by the motivation-personality criterion.

The number of students with a high level of creative natural-science skills was virtually the same: by the cognitive criterion – 3.6% in the initial assessment and 10.7% in the final one, by the process-activity criterion – 3.6% in both

assessments, and by the motivation-personality criterion – 3.6% in both examinations.

To reliably identify differences in the development of creative natural-science skills in students between the experimental and control groups, final assessment data was processed by Pearson’s chi-squared test in comparing the two groups after the formative stage of the experiment.

Thus, it can be concluded that the implementation of network interaction with social partners motivates students to explore the natural environment and its patterns and to develop their own environmental culture and awareness. The latter acts as a prerequisite for the development of creative natural-science skills and ultimately contributes to the formation of an environmentally-oriented personality in them (Kalashnikov, 2021).

CONCLUSIONS

In view of current global environmental problems, there is an increasing importance of developing the culture of environmentalism in the younger generation as an integral part of general human culture, exteriorized in its developed creative natural-science skills.

The conducted study on the impact of network interaction of the educational institution with various groups of social partners on the development of creative natural-science skills in students proves the efficiency of this form of work.

In particular, among students attending classes in the Children's Environmental Center, in which the educational process is conducted with the active participation of various social partners, the number of those with underdeveloped creative natural-science skills decreased significantly by each criterion: by the cognitive criterion – from 81.5 to 18.5%, by the process-activity criterion – from 92.6 to 33.3%, and by the motivation-personality criterion – from 85.2 to 11.1%.

Thus, the use of the network interaction technology promotes the development of students' creative natural-science skills, which are a component of an environmentally-oriented personality.

The study is conducted with the financial support of the Federal State Budgetary Institution of Higher Education "Mordovian State Pedagogical University named after M.E. Evsevev" under project No. MK-21-2023/2 of May 4, 2023, "Organizational and pedagogical conditions for designing an environmental and developmental environment in preschool educational organizations of Chelyabinsk".

REFERENCES

- Barrable, A. (2019). Refocusing environmental education in the early years: A brief introduction to a pedagogy for connection. *Education Sciences*, 9(1), <https://doi.org/10.3390/educsci9010061>
- Batyrbayev, N. M. (2018). Ecological education of the population as an important component of environmental policy. *Journal of Actual Problems of Jurisprudence*, 88(4), 113-117.
- Carrus, G., Pirchio, S., & Tiberio, L. (2020). Transiciones hacia la sostenibilidad, cambios de estilos de vida y bienestar humano: desafíos culturales, medioambientales y políticos. *Psychology*, 11(2), 163-169.
- Cawford, B. E. (2019). Political aspects of the role and significance of environmental education. *Teorii i problemy politicheskikh issledovaniy. Theories and Problems of Political Studies*, 8(2B), 197-207.
- De Lulio, R., De Martino, M., & Isidori, E. (2022). Environmental education and its contribution to sustainable cities. *Science for Education Today*, 12(2), 136-150.
- Dziatkovskaia, E. N. (2022). Novaia kontseptsia ekologicheskogo obrazovaniia: Evoliutsiia kliuchevykh poniatii [New conception of environmental education: Evolution of key concepts]. *Values and Meanings*, 5(81), 112-125.
- Dziatkovskaia, E. N. (2023). O kontseptsii otechestvennogo ekologicheskogo obrazovaniia v mezhdunarodnom kontekste. *Scholarly Notes of Transbaikal State University*, 18(1), 6-13.
- Dziatkovskaia, E. N., & Zakhlebnyi, A. N. (2020). Missiia ekologicheskogo obrazovaniia – 2030. *Pedagogika*, 6, 68-76.
- Federico, F. (2020). Natural environment and social relationship in the development of attentional network. *Frontiers in Psychology*, 11, 1345. DOI: 10.3389/fpsyg.2020.01345
- Government of the Russian Federation. (2002). Order of the Government of the Russian Federation of August 31, 2002, No. 1225-r "Ecological doctrine of the Russian Federation". <http://government.ru/docs/all/43014/>
- Isakova, A. A. (2017). Nepreryvnoe ekologicheskoe obrazovanie kak osnova formirovaniia ekologicheskoi kul'tury (na primere regionalnogo obrazovaniia. *Pedagogical Journal*, 7(1B), 430-439.
- Kalashnikov, N. V. (2021). Formirovanie tvorcheskikh estestvenno-nauchnykh umenii u obuchaiushchikhsia v usloviakh dopolnitelnogo obrazovaniia. [Doctoral Thesis. South Ural State Humanitarian and Pedagogical University].
- Krotenko, T. Y. (2022). Lifelong education in China: Environmental aspect. *Obrazovanie i problemy razvitiia obshchestva*, 3(20), 4-9.
- Lekomtseva, E. N., & Zolotareva, A. V. (2011). Opyt setevogo vzaimodeistviia obshchego, dopolnitelnogo i professionalnogo obrazovaniia v ramkakh organizatsii vneurochnoi deiatelnosti. *Yaroslavl Pedagogical Bulletin*, 2(4), 229-232.
- Mamedov, N. M. (2023). Ekologizatsiia obrazovaniia ne zamenit ekologicheskoe obrazovanie. *Energy*, 2, 8-13.
- Ministry of Natural Resources and Environment of the Russian Federation. (2023). National project "Ecology". https://www.mnr.gov.ru/activity/np_ecology
- Nikolaeva, S. N., & Klemiashova, E. M. (2021). Ekologo-kraevedcheskii i ekologo-geograficheskii podkhod v vospitanii starshikh doshkolnikov. *Preschool Education*, 10, 20-28.
- Pirchio, S., Passiatore, Y., Panno, A., Cipparone, M., & Carrus, G. (2021). The effects of contact with nature during outdoor environmental education on students' wellbeing, connectedness to nature and pro-sociality. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.648458>
- Pirchio, S., Sing, B. S. F., & Passiatore, Y. (2020). Where to raise happy and skilled children: how environment shapes human development and education. *Frontiers in Psychology*, 11. <https://www.frontiersin.org/research-topics/10139/where-to-raise-happy-and-skilled-children-how-environment-shapes-human-development-and-education>
- President of the Russian Federation. (2012). Principles of the State policy in the area of environmental development of the Russian Federation for the period up to the year 2030. <http://www.kremlin.ru/events/president/news/15177>
- Ryzhova, N. A. (2020). Obrazovanie dlia ustoichivogo razvitiia: Chto mozhet detskii sad. *Vospitanie i obuchenie detei mladshogo vozrasta*, 8, 433-434.

- Ryzhova, N. A., & Voronenko, M. V. (2020). Metodicheskie aspekty formirovaniia ekologicheskoi kultury v nachalnoi shkole. *Elementary School*, 9, 71-73.
- State Duma of the Federal Assembly of the Russian Federation. (2002). Federal Law of January 10, 2002, No. 7-FZ "On environmental protection". <http://www.kremlin.ru/acts/bank/17718>
- Tiumaseva, Z. I., Shmakova, L. A., & Shindina, T. L. (2023). Strukturno-soderzhatelnaia model formirovaniia ekologicheskoi kultury subektov obrazovatel'nogo protsessa v shkole v kontekste idei sovremennoi ekologii. *Theory & Practice*, 8(1), 92-98.