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## **ECOLOGICAL EDUCATION IN A RUSSIAN HIGHER SCHOOL: MODERN STATE AND WAYS OF MODERNIZATION**

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Ecological Education in a Russian Higher School: Modern State and Ways of Modernization

This article is devoted to the actual and important problem of improving the quality of higher education, namely the quality of ecological component in the system of higher education, to the searching ways of improving the quality of ecological education at Russian Universities taking into account the introduction of new Federal State Educational Standard of higher professional education. Peculiarities of modern ecological education at Universities, connected to the realization of new approaches such as competence and activity, methods, using innovative technologies including IT and distant technologies, providing and supporting the conditions for new communication models, "subject-subject" models of interaction etc. have been analyzed in this article. Models of ecological education at different levels have been viewed. The aims and tasks of ecological education at Universities have been stated as well as some peculiarities and details of content of ecological education at higher school depending on the educational profile have been defined. It has been showed that ecological component is a necessary and important part of a stable development strategy. The main ways of improving the quality of ecological education at Russian Universities have been discussed. They include defining and improving of the educational aims, the results achieved, creating the competence model of a specialist in the field of ecology, educational principles, content of ecological education, methods, teaching aids and educational technologies. It has also been stressed out that it is of utmost importance to develop such qualities of students as creativity, critical thinking, tolerance, desire and ability to work as team members.

*Key words:* modernization of education, higher education. Ecological education, quality of education, ways of improving the quality of ecological education.

Nowadays at the process of Russian educational system modernization one of the main aims is providing a new quality of education, training of a specialist capable to adapt to rapidly changing environment. The possible ways of reaching a new quality of secondary education are considered to be the introduction of the Federal state educational standard, Russian State Exam, as for the higher education they are providing the Bologna process requirements such as two-level system (bachelor and mastery degree programs), credits etc. It has sense due to the tendency of integrating Russian educational system into global educational environment.

Looking through the processes of educational quality renovation at different levels it's of high interest to analyze the results of external comparative expertise of educational achievement level of Russian pupils. According to the data of international research PISA (Program for International Student Achievement) in 2003 Russia had the following results:

- in the field «**mathematical competence**» 29 – 31 places among 40 countries-participants (in 2000 – 21 – 25 places among 32 countries);
- in the field «**natural sciences competence**» 20 – 30 places among 40 countries (in 2000 – 26 – 29 places among 32 countries);
- in the field «**reading competence**» 32 – 34 places among 40 countries (in 2000 – 27 – 29 places among 32 countries).

Such a low level of Russian school children achievements shows the necessity of making changes in the educational system not only at the school level but at the level of higher education as well, searching for the ways of improving the educational content, technologies, methods, teaching aids.

“The Strategy for education in the conditions of stable development” was adopted by the European Economics Commission of United Nations Organization in 2005 in Vilnius (Lithuania). The resolution of EEC devoted to problem of paying attention to education improvement means the beginning of a serious reforms of all types of education, bringing-up from pre-school through secondary school, higher school to professional levels [1]. The main idea of reforms is to transform from simple transmittion of knowledge and skills necessary for one's existing in a modern

society to readiness and ability to act and live in a rapidly changing conditions, participate in a planning of social development, learn to foresee the consequences of actions taken including possible consequences in a sphere of natural ecosystem stability. One of the synonyms of concept “stable development” is “rational usage of natural environment”. So it is obvious that a much more attention should be paid to the ecological education.

Some changes in the educational system according to the idea of the strategy designers should contribute to developing people’s skills of critical thinking, creativity combined with developing respect to people of different believes and points of view, understanding democratic ways of taking collective decisions and realization of planned actions. To achieve this goal some new subjects are supposed to be introduced into the curricular as well as multidisciplinary should be strengthened to teach students to raise and solve complex social and ecological problems.

The problem met is that education at different levels may have an extra content. Introduction of new subjects or even new topics to the program may lead to either academic load increasing or necessity to reduce some subjects or parts of some subjects. Moreover Federal State Educational Standard for higher professional education requires reduction of lecture portion and increasing the ratio of seminars under condition that not less than 20 – 30% of seminars should include such interactive activities as discussions, role-play, micro research etc.

The necessity of reducing content of ecological educational and providing sufficient time for developing students’ creative and analytical abilities shows that there is a problem of searching for the ways and methods of improving the quality and effectiveness of ecological education at the Universities in Russia.

The aim of the present research is making the analyses of the peculiarities of ecological component realization at higher education and defining the ways and methods of ecological education improving at the Universities.

Peculiarities of modern system of professional higher education are:

- dominating of integrative aims over the subject aims;
- realization of activity approach;

- applying of competence approach;
- changing of authoritarianism in relations between teachers and students to cooperation and partnership in an educational activity;
- realization of new communicative models as well as “subject – to – subject” interaction [2; 3];
- using of innovative technologies including distant technologies etc [4].

The area of natural sciences has been developed in a way from partial to general therefore in spite of a great progress in describing some natural things the whole picture of the laws of biosphere existence presented and depicted in school and University books leaves much to be desired. This fact should be taken into account while defining the criteria of content of ecological education choosing.

Several models of ecological education at schools and Universities are monosubject (horizontal), multisubject (vertical) and mixed. The most spread one is a mixed model of ecological education, implying studying ecology as a subject as well as including ecological aspects into different subjects.

Studying ecological problems not only has a very important meaning itself, it also provides a suitable material for showing relations between social, natural and technological components of stable development.

The period of global ecological content formation is considered to have been completed by the present moment. Ecological education should begin from discussing questions of biosphere stability, characterization of the increase of negative influence on nature. Then the answers to the questions like “When will the natural resources be exhausted?” and “How can one reduce the negative effect of a powerful influence on biosphere?” should be found. Ecological training should also view the ways of stable development which requires special training and at the same time should be known to everyone [5; 6].

In spite of the visible progress in developing content of ecological education during the last 10 years one shouldn't forget about some drawbacks and problems left. One of them is a natural science component of interdisciplinary program of ecological education which has not been thoroughly developed yet. Making an

attempt to create the education meeting modern requirements of a society reorientation to the analyses of an impact of an accelerating development of a mankind we could formulate two global goals:

- 1) to teach people to understand natural processes making the base of a biosphere existence;
- 2) to teach people to understand social processes influencing the wellbeing and stability of the society.

Ecological education at Universities should develop in two ways:

- as an educational paradigm of a stable development according to which every professional no matter the profession chosen should gain such qualities as social responsibility, initiative, foreseeing different situations, the ability to raise problems and find the ways of their solving, patience to other points of view along with the ability to explain own point of view;
- as a sphere of professional skills, knowledge and abilities corresponding to the chosen specialization.

The main ways of renovation of ecological education quality at higher school could be the following:

1. Defining aims, tasks, competences and educational results of training students in the area of ecology taking into account the competence approach and fulfilling the requirements of the Federal State Educational Standard for higher professional education.
2. Defining the principles and requirements for choosing ecological education content, identifying the sequence of main stages of continuous education in the interest of stable development, identifying and providing interdisciplinary bounds.
3. Designing of new methods, forms, aids and technologies in the area of ecological education.
4. Designing aids for evaluation the level of competences developed after studying ecology at different levels.
5. Changing of educational process in the way that student will acquire the ability to analyze independently, to raise problems and solve them.

6. Developing personal qualities of students, creativity, critical thinking.

7. Choosing of effective ways of developing skills of cooperative actions, respect to every student and ability to work as a team.

The aim of ecological education is bringing up and developing ecological culture of individuals and society in the whole as a combination of practical and soul experience of interaction between mankind and nature, providing his existence and development. People's influence on natural environment during the process of producing activity, finding and using natural resources, altering the landscape, distribution of the surface and underground waters and etc. Are compared with geographical processes. People constantly change the nature so the complex approach to designing, applying new methods of cleaning the wastes coming to the biosphere and utilizing of production wastes is of utmost importance [7; 8; 9].

Ecological safety in most countries and its development have 3 important aspects:

1. Social-economics. Ecological education is necessary both for the specialists in the area of natural environment safety and all other specialists.

2. Natural scientific. It's a specialized combination of scientific problems devoted to the preservation of the natural environment and rational usage of natural resources of all components of biosphere.

3. Technical and technological aspect – the introduction of scientific developments in the industry.

Ignoring of the logical chain “education – science – production” has lead to a conflict between production sphere, other activities of people and the possibility of self-preservation of nature. Due to the fact that the priority of life and people's health has been stated by the law ecological education of all our citizens as well as creating new and improving of existing technological processes should become the most important aims of the government.

We observe that there is a great revolution in the field of ecological education. It began from the intention to bring up love for nature and desire to preserve its wealth. Then ecological education join some other areas of knowledge, dealing with

preventing the environmental pollution, paying attention to the healthy wellbeing. At last according to the inner logics of development ecological education went over the framework just only ecological culture and gave birth to the area which could be named social culture of the 21<sup>st</sup> century that is necessary for a successful integration of all people, preventing from social and ecological disasters [6].

In the conclusion it should be mentioned that modern education has to meet the challenge, requiring to unite on a deep level natural sciences and the humanities in order to educate a person capable to take care of our future and have knowledge of objective of nature and society.

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Костікова Н.А., Костіков А.Н., Зачиняєв Я.В., Зачиняєва А.В.

Екологічна освіта в російській вищій школі: сучасний стан та напрями модернізації

Дана стаття присвячена актуальній проблемі оновлення якості освіти, зокрема, екологічної компоненти вищої професійної освіти, пошуку напрямків і способів підвищення якості екологічної освіти у вищих навчальних закладах Російської Федерації.

У роботі виявлено особливості сучасної екологічної освіти у вузах, пов'язані з реалізацією нових підходів, методів, використанням сучасних технологій, створенням умов для реалізації нових моделей взаємодії учасників освітнього процесу. Розглянуто моделі екологічної освіти. Сформульовано завдання екологічної освіти, визначено особливості змісту екологічної освіти в



вузах залежно від напрямів підготовки. Визначено основні напрями оновлення якості екологічної освіти, які включають оновлення цілей, компетентнісної моделі випускника, принципів, змісту освіти, методів, форм, засобів, технологій навчання.

*Ключові слова:* модернізація освіти, екологічна освіта, якість освіти, напрями оновлення якості екологічної освіти

Костикова Н. А., Костиков А. Н., Зачиняев Я. В., Зачиняева А. В.

Экологическое образование в российской высшей школе: современное состояние и направления модернизации

Данная статья посвящена актуальной проблеме обновления качества образования, в частности, экологической компоненты высшего профессионального образования, поиску направлений и способов повышения качества экологического образования в высших учебных заведениях Российской Федерации.

В работе выявлены особенности современного экологического образования в вузах, связанные с реализацией новых подходов, методов, использованием современных технологий, созданием условий для реализации новых моделей взаимодействия участников образовательного процесса. Рассмотрены модели экологического образования. Сформулированы задачи экологического образования, определены особенности содержания экологического образования в вузах в зависимости от направлений подготовки. Определены основные направления обновления качества экологического образования, включающие обновление целей, компетентностной модели выпускника, принципов, содержания образования, методов, форм, средств, технологий обучения.

*Ключевые слова:* модернизация образования, экологическое образование, качество образования, направления обновления качества экологического образования

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