

ECOLOGICAL ASPECTS IN THE FOCUS OF PROFESSIONAL EDUCATION: SUBSTANTIVE AND METHODOLOGICAL DISCOURSE

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The relevance of the study due to the increasing demand of modern science and practice in the development of the conceptual and methodological basis of promising models of professional education that meets international priorities of education for sustainable development, the requirements of modernization in all spheres of life of modern Russian society and training of specialists able to implement the ecological priorities of the state policy in professional activities. The goal of the article lies in the theoretical substantiation of necessity of ecologization of professional training, strengthening the value-semantic components in the content of educational programs of higher schools to identify universal approaches to the efficient formation of ecological consciousness of the personality. Leading approaches underlying decision problems are ideas of co-evolution of nature and society, holism, provisions on ecological imperative, ecological culture of the individual and society acmeological principles of design personal and professional development. The main results of the paper is the justification of the importance of value-semantic self-determination of the individual student to the level of professional education; definition of the maintenance of eco-professional competence of the individual; determining structural and functional components (ideological, motivational, cognitive, activity and practice, reflexive) eco-professional competence of students of the University. The practical significance of the submitted paper is aimed at improving the content of training of professional personnel responsible for making environmentally sound management decisions at both individual and public levels.

Key words: sustainable development, ecological culture, eco-humanitarian paradigm, eco-professional competence of the individual, professional education, students.

INTRODUCTION

Volatility anthropoecosystem is characterized by a «lack of signs of ecosystem». In fact, anthropoecosystem are not systems in ecological sense. The last statement is easily proved by the absence of natural homeostatic mechanisms (material, energy, information) inherent in any natural ecosystem, and hence the impossibility of self-renewal and recovery, response to changes of the environment in accordance with the generalized principle of Le Chatelier (Glazachev, Kosonozhkin, 2011). According to the UNECE definition of (The UNECE Strategy, 2005) the vision of the problem-oriented vision of sustainable development of specific territories (regional, local) and submitted the following: «Our vision for the future is a vision

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of a region that embraces common values of solidarity, equality and mutual respect between people, countries and generations. For a region characterized by sustainable development, including economic vitality, justice, social cohesion, environmental protection and sustainable management of natural resources in order to meet the needs of present generation without damaging the ability of future generations to meet their own needs».

In connection with the above, the natural questions arise: «Is it even possible for mankind to ecology invest the economy and exist in harmony with nature?»; «Is it possible to reduce significantly the rate of human consumption of goods and services?»; «How to conserve natural resources and simultaneously solve the global problem of hunger and poverty in underdeveloped countries?». The answers to these questions are looking for today, the world scientific community, since on them depends the very existence of human civilization in the future. It follows that the solution of environmental problems is impossible in isolation without addressing the complex socio-economic and political problems. According to N.N. Vlasyuk (2006): «The growth of the system, the interaction and interdependence of all spheres of public life identified the following pattern: the stability of socio-economic development depends on the level of development of science and education. Socio-economic sustainability of Russia's development can only be achieved while maintaining (and improving) of technological capabilities of the economy, science, education, the implementation of moral principles, if the relationship of most members of society (as already mentioned) will become more civilized».

O. S. Anisimov and S. N. Glazachev (2013) say: «Indeed, a great synthesis of the highest scientific and philosophical knowledge, its results should be put in as a common knowledge base for all professionals. And not only for reflection of their «private» activities from a human point of view, which respects the interests of the harmonious combination of nature and society, but also to move to Universalna approach in all spheres of activity, to reflexive self-organization, where the basic agent is the vision of the essence of being. And it can ensure the realization of noospheric ideas of a return to the standards of self-organization of our ancestors, led by the light magi and priests. Education should apply to the imposition of conditions for such organization, society, standards abilities adequate reflexive self-organization in all types of environments (Ermolaeva, 2016). This should be the contents of «general education».

The term «development» is a dynamic quality characteristic of any process. «Sustainable development» can be represented in the form of natural successive stages of coexistence of man and nature to the extent that this coexistence is possible: «The Development can be considered as the emergence of a new «order». On the way to a new order the system goes through the chaos period of the disappearance of the old structures and the new. Here we can distinguish the following main stages: 1) the emergence of a new element of the system; 2) his isolation in the

system; 3) alienation in the system and the denial of a new element of the entire «old» system; 4) finally, the formation of a new structure, a new order, a new harmony or absolute antagonism between elements of the system and its return to its «zero» state. Modern «axial time» is characterized by the transition from the third to the fourth stage. The choice of one of two likely futures fell to carry out just for modern people» (Mazur, Kozlova & Glazachev, 2001).

METHODOLOGICAL FRAMEWORK

Methodological basis of research are the dialectical principles of development, universal communication, unity of logical and historical; the idea of synergy on nonlinearity, variability, alternativeness and the irreversibility of development; ideas of co-evolution of nature and society, holism, provisions on ecological imperative, ecological culture of the individual and society; on the harmonious development of personality, the unity of consciousness and activity, the idea of Humanities for environmental education; the principles of humanity, the continuity of the educational process, variability of forms and methods of personality development in the process of education; of integrity, connection of theory and practice; the provisions on integrity of the educational process; acmeological principles of design personal and professional development.

RESULTS

The strategy of sustainable development (SD) became known to a wider audience after the report of the world Commission on environment and development «Our common future» in 1987 the content of this report was the basis of the main document of the intergovernmental conference on environment and development in Rio de Janeiro in 1992 – Agenda for the twenty-first century. The next step in making the ideas of SD as targets for a globalizing world has been the United Nations Millennium Declaration (2000), in which one of the fundamental values proclaimed adherence to the principles of sustainable development (Millennium goals, 2000): «Respect for nature. The basis of protection and rational use of all living organisms and natural resources should be put discretion in accordance with the precepts of sustainable development. The only way to preserve for our descendants the immeasurable riches provided to us by nature. The current unsustainable patterns of production and consumption must be changed in the interest of our future welfare and that of our descendants».

It is important to understand what an amazing expediency as the principle of existence of natural ecosystems is a consequence of the presence of homeostatic regulations that state a «margin of safety» global ecosphere of the planet. The latter circumstance dictates, in our opinion, the absolutely certain way of interaction between society and nature. Psychologically, the only constructive strategy of interaction of man and nature, it is possible to define, in our opinion, as «reasonable

anthropocentrism», the moral imperative of which is obviously meaningful, deliberate preservation of the integrity of the system «society-nature». (Grishaeva, 2011).

The process of value-semantic self-determination at the moment in the context of growing ecological crisis can only occur when taking and assigning individual eco-humanitarian paradigm of thinking. Considering the notion of «eco-humanitarian the paradigm of thinking» in the broadest sense should be defined as «...necessary and the person's perception of the holistic, global ecosystem of planet Earth and the identification of adequate roles and responsibilities in her Man. Thus, the phenomenon eco-humanitarian the paradigm of thinking is inextricably linked with the phenomenon of ecological culture of personality, being its philosophical-methodological basis». (Grishaeva, 2011).

Based on the contents eco humanitarian paradigm of thinking we have developed the concept of «eco-professional competence of the individual». Eco-professional competence is considered as acmeological invariants of professionalism, as an integral phenomenon, the result of the integration of the processes of development of ecological culture and professional competence of experts. This is reflected in such essential characteristics as the system of environmental professionally-oriented views and beliefs of the individual; the need for mainstreaming environmental potential of professional activity; the system of professionally oriented environmental knowledge; environmental and readiness to professional activity; the ability of eco-professional reflection.

We have developed the content of process of formation of eco-professional competence of students of the University, which is based formed ideas about the phenomenon of eco-professional competence of personality, its structural-functional components: ecological and professional outlook; eco-professional motivation; vocational-oriented ecological knowledge; ecological readiness for professional activities and to the eco-professional reflection. The level differentiation of the results of development of eco-professional competence is based on the system of criteria and indicators: 1) formation of eco-professional orientation of the personality, indicators of which are: the need for self-realization through eco-professional activity; aspiration to self-development in the field of environmental culture; the ability and willingness to innovative, independent design environmental and professional activity; ecological knowledge; 2) the formation of professionally significant qualities identified specific eco-professional activities, which the study defined humanity (including empathy); anticipation as the prediction of the results of eco-professional activities; creativity; motivation of achievement; responsibility for the results of eco-professional activity; 3) formation of acmeological invariants of professionalism, the main indicators which are: eco-professional self-development; environmental-professional-regulation, eco-professional self-organization.

Technology testing directed development of eco-professional competence of students of the University consisted of the following main stages:

- implementation in the learning process of the complex of competence-oriented programs for students «Socio-ecological design in education», «Ecological culture in pedagogical activity», «Ecology», «Bases of ecological culture», and educational program for the system of additional professional education of teachers of Moscow and Moscow region «Ecological competence of personality in professional activity», aimed at greening the humanitarian content of training of specialists through the design activity results of the training (system of general cultural competences, general professional competences and professional competences);
- the creation of eco-professional education space which is a humanitarian enrichment technology and expand the creative potential educational possibilities, independently choosing and learning which the student designs their own individual learning space (learning design integration of the environmental dimension of professional activity; participation in the work of the student scientific society; self-selection of subjects and technologies to perform creative tasks of an ecological orientation, etc.);
- provide modular nature of eco-professional education (inclusion of variable modules environmental focus in the content of relevant disciplines, focusing on the capabilities and preferences of students);
- didactic organization of the contents of ecological education on the basis of ecosystem-based cognitive models (implementing a longitudinal interdisciplinary project «Quality of life and the environment»);
- organization of the process of subjective integration (facilitation of creative interaction in the course of active participation of students in designing the content, forms, methods, means and technology of their training);
- the introduction of score-rating system of evaluation of achievements of students (given the large volume of independent creative work).

Thus, in the course of experimental work were implemented didactic conditions of efficiency of development of eco-professional competence, including four groups of strategic factors: functional-target (goals and functional objectives for the design and implementation of eco-professional self-development); the substantive-procedural (design of eco-professional content of the educational modules and programs based on competence approach); organizational-methodical (design of eco-professional education space) and reflective-corrective (development of reflexive self-organization and self-regulation).

Figure 1 presents the results of implementing the above methodological conditions for directed development of eco-professional competence of students

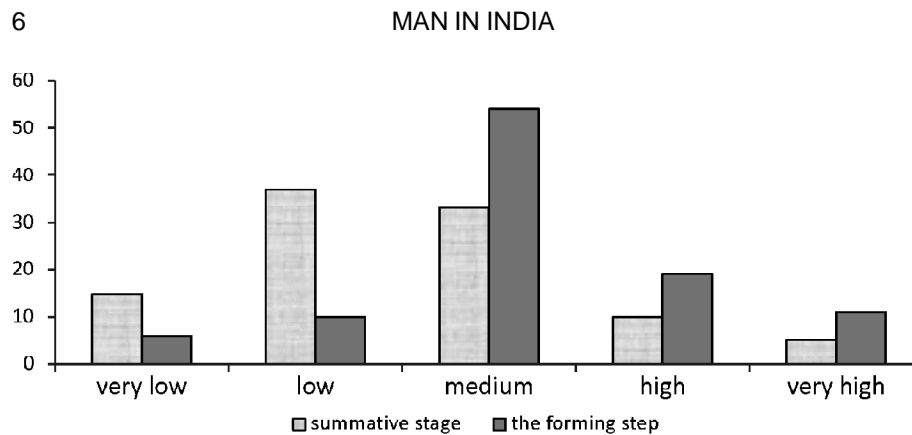


Figure 1: Dynamics of levels of formation of eco-professional competence of students of the University on the results of testing the directional formation (%)

within three years (2014-2016) for geographic-ecological Faculty of Moscow Region State University.

DISCUSSION

One cannot say that the problem of «organic growth» appeared only in the twentieth century, its anthropogenic component existed for the entire historical period of humanity development and was already evident in ancient times, depending on the population and the natural resources potential of individual territories. The ancient philosophers, observing the changes in the environment related to human activity, thought about the allowable limits of this impact, the restrictions imposed by the productivity of nature, and the self-restraint of the population (Litvinenko, 2013). According to Plato (427 or 428 – 347 (348) BC), preceding generations of ancient Greeks in their position in life in relation to the nature tried to follow the wise words carved above the entrance to the Delphic temple of Apollo: «Nothing more than necessity». Concerned about the location of numerous tombs on arable land, Plato (Blavatsky, 1976) wrote the words, that were ahead of their time and in tune with the position of the concept of «organic growth»: «...you oughtn't to have tombs on the arable land; the Earth is our mother; she willingly gives people food. Therefore, let no one – neither living nor dead – deprive us of this, still living». However, in the time of Plato the precepts of the seven sages were forgotten by a part of society, although in philosophical arguments they were being passed from generation to generation.

The most demanding of compliance of human activity with the laws of nature talking occur in the second half of the nineteenth century, as at the global level there was an association of regional ecological problems arising as a result of agricultural activities during centuries, with numerous problems created by the industrial revolution to the surrounding environment. A huge contribution to its

study was made by the galaxy of scientists and public figures of different countries. American diplomat George Marsh, watching the results of new settlers in the New world, wrote that human activity in relation to the organic world discovers the willingness to distort the original balance between different forms of animal and vegetable life, reproducing some and reducing or even completely destroying the other (Marsh, 1866). V.V. Dokuchaev (1953), analyzing the causes of the catastrophic drought and famine of 1891 in the work «Our steppes before and now», said his main task was «to make probably the correct diagnosis» and outline measures to «restore our black-earth steppe, that is the breadbasket of Russia, which was empty in the most necessary and difficult time for us».

Presentation of V. I. Vernadsky on the transition of the biosphere into the noosphere, an evolutionary-geological activities of man, on the natural and anthropogenic cycle, etc., initiated the emergence of the concept of the anthropocene as a specific geological era with the level of human activity, large-scale impact the state of ecosystems of the Earth. The term anthropocene, introduced in 80-ies of XX century by the ecologist Eugene Stoermer and later popularised by a specialist in atmospheric chemistry Nobel laureate for chemistry, P. Crutzen. In 2008 the concept of the anthropocene, as units of the geologic time scale submitted for consideration by the Commission of stratigraphy of the Geological society of London and is considered by a special working group of the geological scientific societies.

It should be noted that there are serious scientific and pedagogical studies aimed at studying the problems of formation of ecological culture in a General sense (Glazachev, 2001; Wagner, 2013). Problems of ecological education at different levels of education studied deeply enough by a number of scholars (Ermakov, 2009; Grishaeva, 2011); questions of ecopsychology were considered in the works of A.V. Ivashchenko, V.I. Panov and A.V. Gagarin (2008).

However, the problem of formation of ecological professional competence of students as acmeological invariant professionalism of their future studied only by the authors of this work.

CONCLUSION

The study found that as direct factors contributing to the effectiveness of the process of formation of eco-professional competence of students are: the modular nature of learning, choice of subjects of an ecological orientation (18, 8%); the choice of the teacher for teaching the chosen discipline (20, 9%); the opportunity to participate in the work of student scientific society environmental focus (24, 7%); informatization of educational process (including the development of distance learning and communication with teachers) (35, 6%).

As indirect factors the participants of the experiment called the state policy in the field of ecology (28, 1%), occupational prestige in the field of ecology (12,

4%); attitude to environmental issues in the media (38, 3%); the activity of public environmental organizations (21, 2%).

It is established that the purposeful formation of eco-professional competence of the individual should be effectively addressed through the integration of the processes of development of ecological culture and professional competence of future specialists, which is reflected in the sequential formation of personality characteristics: 1) environmental system of professionally-oriented views and beliefs of the individual; 2) the need for mainstreaming environmental potential of professional activity; 3) system of professionally oriented environmental knowledge; 4) readiness for ecological and professional activities; 5) ability to eco-professional reflection.

As the development of this topic, you can specify several areas: development of mechanisms for integration of environmental and vocational education in high school; designing flexible didactic systems for different areas of vocational education; sustainability and continuity in the formation of eco-professional competence of future specialists.

Recommendations

The article may be useful for high school teachers, whose task is the effective formation of ecological culture of students.

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