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Eco-Vocational Consciousness Formation Model of a Specialist in Modern Mega Polis

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ABSTRACT
The purpose of the paper is to substantiate theoretically and experimentally the model of integration of environmental and vocational training, which determines the way of formation of eco-vocational consciousness of students, future specialists. The leading method of research of this problem is modeling, which enables to consider this problem as a process of purposeful formation of eco-vocational consciousness of a specialist. The paper presents the model of integration of ecological and vocational training with the aim to form an eco-vocational consciousness of a specialist in a modern mega polis. Factors and conditions for the formation of a specialist's eco-vocational consciousness are revealed; an algorithm for implementing this model has been developed The model is aimed at the integration of environmental and vocational training and is focused on the development of scientific and methodical maintenance to create eco-vocational consciousness of students, future specialists.
Keywords: eco-vocational consciousness, structural components of eco-vocational consciousness, model of integration of ecological and vocational training

INTRODUCTION

In the "Fundamentals of state policy in the field of environmental development of Russia until 2030" clearly the idea is formulated that the development of the country's economy directly depends on the solution of the educational task for the formation of ecological culture among young people. The formation of eco-vocational consciousness is

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directly related to eco-vocational training which is carried out by various social institutions of society. A special place among belongs to the higher vocational school.

Under eco-vocational consciousness we mean an integral mental formation reflecting the interaction of a specialist and Nature, based on eco-vocational knowledge, self-awareness as part of Nature and understanding of the world around it through the prism of eco-vocational relations to it, where the leading attitude is the positive attitude to rational use of natural and human resources, intentions that provide environmentally and professionally appropriate activities for sustainable development and co-evolution of man and nature) [1].

Vocational consciousness, reflecting, transforming the surrounding space, often contributes to the imbalance in nature, as there is a detachment of the vocational development from the development of ecological consciousness [2]. From the contradiction arises the goal – is it possible, using, developing and improving social production, fully to meet the objectively increasing needs of people and not to destroy nature at the same time? We are talking about the formation in the minds of future specialists of the dominant environmental intentions that contribute to the emergence of ecological behavior, as the basis for the self-preservation of not only a single individual, but the entire society as a whole.

Leading eco-psychologists define the "worldview function" of ecological education. V.I. Panov [3, 4] believes that the goal of such education is the formation of an ecological imperative in the mind of a person. V.A. Yasvin [5, 6] singles out as leading characteristics: a set of representations (both individual and group) about the relationships in the system "man-nature" and in nature itself; vital ethical values, dictating the need for ecological values. S.D. Deryabo [7] notes in environmental education: the subjective (personal) attitude of man to the natural world; corresponding strategies and technologies of human interaction with the natural world.

Theoretical analysis [8, 9, 10, 11, 12, 13] shows that the integration process of ecological and vocational training with the aim of forming eco-vocational consciousness in students' vocational training is exacerbated by the presence of a number of contradictions between: the lack of methodological foundations for the formation of eco-vocational consciousness of students - future specialists as a basic component of overcoming the ecological crisis [14, 15]; the need to integrate ecological and vocational training and the lack of a conceptual model for the integration of ecological and vocational training in the learning process.

MATERIALS AND METHODS

Methods of research

In the process of research, the following methods were used: the study of scientific and regulatory sources, forming a psychological and pedagogical experiment, analysis and generalization of psychological and pedagogical experience, psychological and pedagogical simulation and design, review, questioning, conversation, observation, testing, expert evaluation; psycho-diagnostic techniques; mathematical, statistical methods and methods of computer data processing.

Experimental research base

The experimental base of the research was the Federal State Autonomous Educational Institution of Higher Education "Samara National Research University named after Academician S.P. Korolev "(Samara University).

Stages of research

The study of the problem was carried out in three stages:

- at the first stage, the state of the problem was studied in the theory and practice of the formation of university students' environmental training and its integration with vocational training;

- at the second stage the model of integration of ecological and vocational training and technology of its formation in the system of higher education were developed; the simulation of eco-vocational consciousness and the process of its formation in higher educational institutions was carried out;

- at the third stage the results of empirical approbation of the theoretical provisions of the study in the practice of eco-vocational education were summarized and systematized , recommendations for the introduction of a coherent level of integration of ecological and vocational training of students of different learning profiles were developed.

RESULTS

Structure and content of the model

Based on the theoretical and methodological concepts and prerequisites for integration, we single out modular units of integration. The content of integration in our study is represented by modular units, the interaction of which ensures the corresponding integral result. Proceeding from this, the key modular units for the integration of ecological and vocational training are eco-professional ones: cognitive, value-motivational, orientation, and co-native components.

One of the central issues of the study was the allocation of levels of integration in the formation of eco-vocational consciousness. The study reveals the essence of the three levels of integration. In our opinion, the integration of ecological and vocational training can be of several levels: convergent; reciprocal; coherent - each of which corresponds to the stage of eco-vocational training. Convergent level is a structurally expediently organized communication of modular units of ecological and vocational training, leading to self-development of students. Convergence (from Latin converge - close, I converge) is the rapprochement of components of ecological and vocational training, their acquisition of the same focus [16]. Convergent similarity is never deep, so it can be attributed to the first stage of eco-vocational training. The result of such integration is that the student receives the knowledge that reflects the connectedness of vocational and ecological training as a system in which all elements are linked. (Fig. 1).

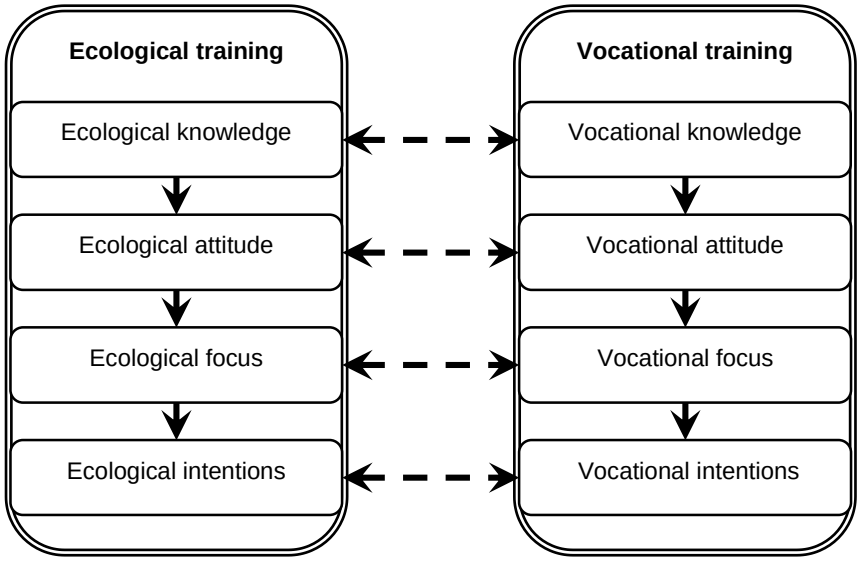

Figure 1: Convergent level of integration

Reciprocal level is a process of alternation, interaction, in which, if one element is strengthened, then another is weakened, this type assumes constant interaction between the components of ecological and vocational training, it can be attributed to the second stage of eco-vocational training (Figure 2). Reciprocal level is a finding a common platform for convergence of ecological and vocational training. At the intersection of already existing ecological and vocational knowledge, students are getting more and more new knowledge, systematically supplementing them and expanding them, moving in a spiral based on the principle of concentricity.

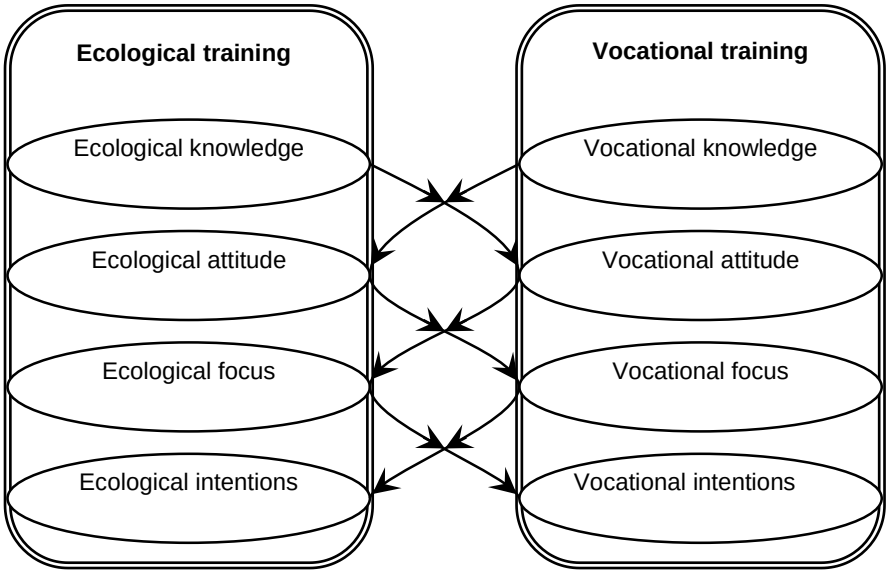

Figure 2: Reciprocal integration level

The coherent level is a process of interpenetration, fusion of modular units of ecological and vocational training, as a result of which eco-vocational consciousness develops. The process of coherent level of integration of ecological and vocational training involves the phenomenon of splicing. (Fig. 3).

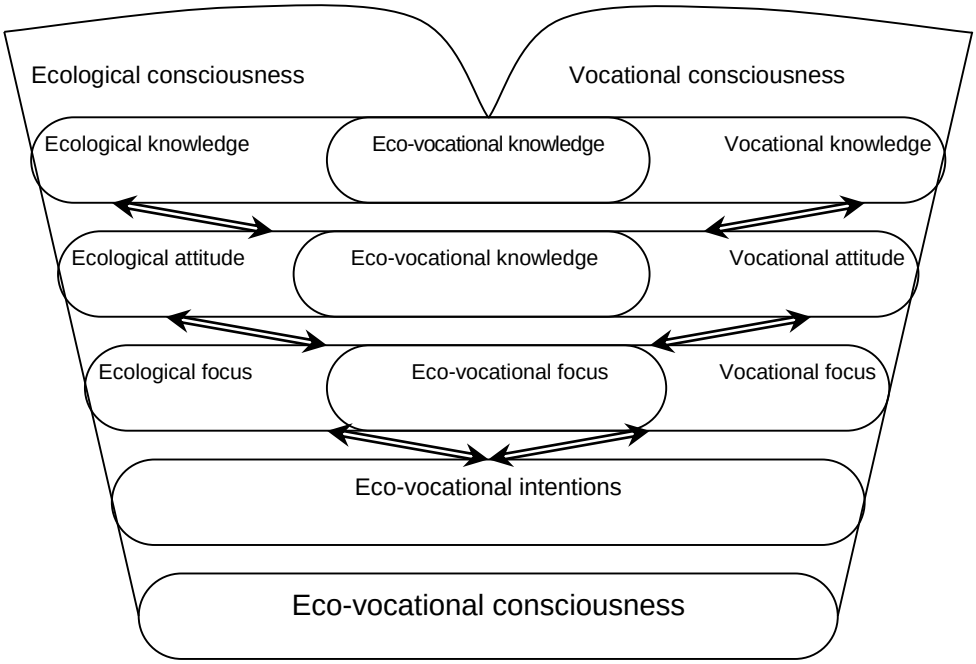

Figure 3: Coherent integration level

Coherent level is the process of "stringing" several (many) integrative modular units of ecological and vocational training into a single core that plays the role of a backbone core. In our opinion, such backbone core is the eco-vocational intention. As a result, we have a close relationship between both the given core and other integrative components, and between the latter ones.

The coherent level is the highest level of interconnection of modular units; this is a system that leads to quantitative and qualitative changes, to the formation of eco-vocational consciousness of students.

The coherent level, like the two preceding levels, is characterized by the property to include elements of other integration levels. The main feature of this integration is the direct target focus on obtaining an applied result.

Stages of integration model implementation

The introduction of this model assumed the following stages of experimental work:

- determination of the initial level of the formation of eco-vocational consciousness and its structural components among students.

- development and implementation of scientific and methodical maintenance, contributing to the successful functioning of the structural and functional model of the formation of the eco-vocational consciousness of students.

- determining the level and identifying the dynamics of the formation of students' eco-vocational consciousness.

Experimental part

In total, the study covered 533 students of the Samara University. It is important to note that, despite the significant difference in the results of the development of eco-vocational consciousness among students of different courses and different faculties, after the experiment, the results of the development of a high level of eco-vocational consciousness were distributed fairly evenly: the leaders are fifth-year students (39.2% (humanitarian orientation) , 36.0% (natural sciences), 29.4% (economic orientation) and 35.2% (technical focus)), followed by high-level results of eco-vocational consciousness developed among the first-year students (24.2%, 28.6%, 24.7% and 29.0%, respectively), followed by third-year students (19.2%, 23.2%, 22.8% and 19.8% respectively).

Identification of the level of the formation of eco-vocational consciousness was conducted in several directions: measuring the level of development of knowledge, attitudes, focus, intentions (Figure 4).

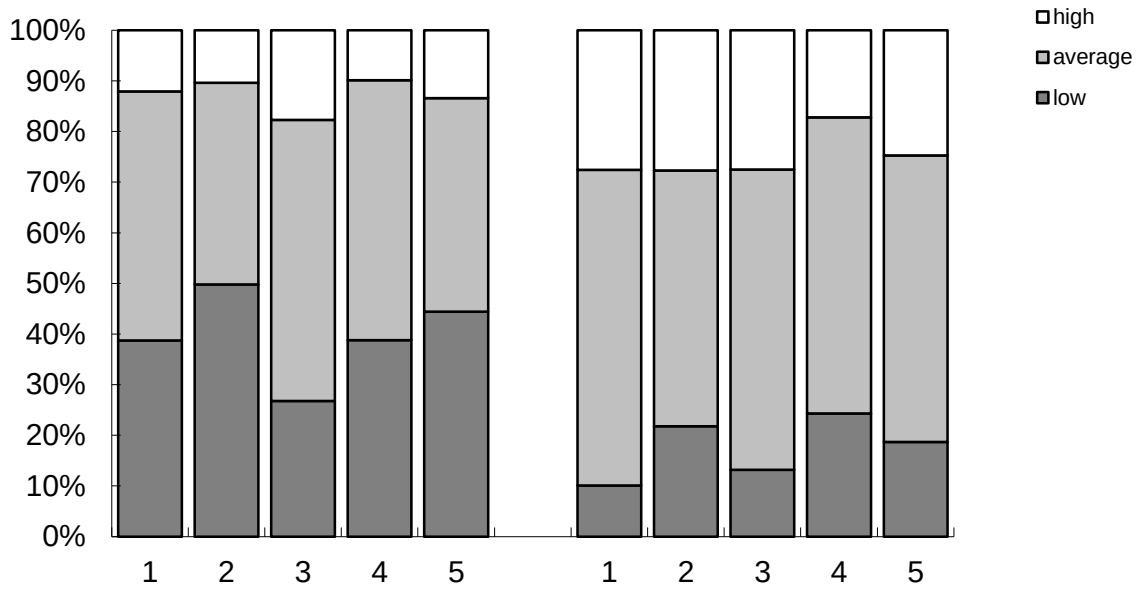

Figure 4: Distribution of students in terms of assessment of the formation of eco-vocational consciousness and its structural components before and after the introduction of the integration model

NOTES: Indicators: 1 - eco-vocational consciousness; 2 - knowledge; 3 - attitude; 4 - focus; 5 - intentions

It is noticeable that the indicators of the low level of development of eco-vocational consciousness are decreased; the average decline in groups is 28.6%.

It should be noted that the greatest splicing is observed among the 5 th year students from the humanitarian group, the students of the third year from the natural-scientific group, the students of the 5th course of economic orientation and the students of the first year of technical orientation.

It can be said with certainty that the results of the experimental study testify the effectiveness of the model of integration of ecological and vocational training developed with the aim of forming the eco-vocational consciousness of students.

DISCUSSION

The study of the works of leading researchers in the field of consciousness makes it possible to single out various aspects in the systematic formulation of the problem of consciousness.

Philosophical-psychological aspect: the main difficulty is in determining the essential characterization of consciousness, since it traditionally stands in binary opposition to matter and directly or indirectly participates in various derivatives of this opposition. The philosophical and methodological aspect: the most interesting solutions were defined by V.M. Bekhterev [17] (objectivist overcoming of ontological dualism by means of a substantial explanation of consciousness) and K. Jaspers (submission of rational thinking to existential thinking - contemplation). The general psychological aspect: consciousness is endowed with the utmost breadth, it includes mental processes, states, properties, on the one hand, and complete non-specific manifestations - on the other (in the educational literature on psychology, domestic and foreign, the mind is defined by several sentences and has many definitions). Psychological and Applied Aspect: Consciousness does not have a sufficient place in all possible branches of psychology, with the exception of psychotherapy and, in part, pathopsychology. At the same time, word combinations are very common: economic consciousness, political consciousness, electoral consciousness, legal consciousness, moral consciousness, vocational consciousness, consumer consciousness, ecological consciousness, etc.

By all accounts, priority, the leading role in the formation of a new ecological worldview, its dissemination and establishment in the public consciousness is given to education. The search for solutions in the field of formation the eco-vocational consciousness of students lies in the course of solving the problem of its structure and levels of development. Many aspects of ecological consciousness have received a sufficiently deep scientific understanding in the domestic psychology and pedagogy. In particular, well-known domestic scientists consider the ecological consciousness as:

– a set of: representations (both individual and group) on the relationships in the "human-nature" system and in nature itself; subjective (personal) attitude of man to the

world of nature; appropriate strategies and technologies for human interaction with the natural world; vital ethical values, dictating the need for ecological values [18, 19];

– the consciousness of a particular student, i.e. in its actual form, in which the structural components of the ecological consciousness contain the signs of its various types (anthropocentric, eco-centric, nature-centric) [20];

– integrative personality formation structurally represented by a combination of elements that can be combined into main groups reflecting aspects: cognitive, or intellectual-cognitive; perceptive-affective and emotional-volitional; motivational and behavioral; value-orientation [3, 21, 20];

– a deep understanding of the inseparable connection between man and mankind with nature, the dependence of people's well-being on integrity and the comparative invariance of the natural environment of human habitation [22];

– a continuously changing set of sensory and mental images directly reflected in analytically generated categories and phenomena that directly fix individual or public ecological experience that anticipates environmental practices [23], etc.

Critically reinterpreting and supplementing the existing definitions of the concept "ecological consciousness", we included in the concept of ecological consciousness the component "ecological intention".

The study found that the ecological intention in connection with and in relation to the overall level of formation of eco-vocational consciousness contributes to the effective transfer of ecological knowledge into ecological intentions and, subsequently, to ecological behavior.

As a result of the analysis carried out on the basis of the synchronous analysis of the content of professional consciousness, it is established that professional consciousness is understood as:

– the central category in higher education [24];

– vocational knowledge and skills, the development of individual - typological characteristics of the individual, style features of performance [25, 26];

– professional qualities, professional goals, plans, professional attitudes, forecasts, estimates [27];

– manifestations of the personality consciousness associated with its vocational activities, determined by the extent and significance of this occupation in the occupational structure of society; the attitude of the individual to the profession, its representatives and to itself as a professional; professional ideals; the level of vocational knowledge and skills; the expression of vocational abilities; professional perspectives, achievements; the experiences of successes and failures of vocational activity, etc. [2].

At the same time, by the beginning of the new millennium, it was evident that the existing ecological education was based on analytical knowledge about nature, narrowly

pragmatic and consumer-oriented, and therefore it could not radically change the world outlook of a significant part of the population. As a result, an objective need has arisen for a transition to a qualitatively new stage in its development. The methodological basis for the formation of a new paradigm of ecological education should be the ideas of co-evolution and sustainable development.

Of particular relevance from this point of view is the problem of integrating ecological and vocational training. The key tool for the paradigm of the transition of human civilization to the model of sustainable development is the formation of the eco-vocational consciousness of students, future specialists.

It is methodologically important to emphasize that, for psychology, eco-vocational consciousness is a developing phenomenon that has as its basis an opportunity for emergence and development. Therefore, as an object of psychology, eco-vocational consciousness can be the object of diagnosis of its presence or absence and the object of purposeful formation.

CONCLUSION

Eco-vocational consciousness is turning into the most "advanced" unit of innovative efforts in the field of education, a source of fateful transformations, since vocational consciousness, reflecting, transforming the surrounding space, often contributes to the imbalance in nature.

It can be said with certainty that the results of the experimental study testify the effectiveness of the model of integration of ecological and vocational training developed with the aim of forming the eco-vocational consciousness of students.

The problem of the formation of the eco-vocational consciousness of students in general and its structural components in particular has prospects for development. This should include the study of psychological and pedagogical mechanisms of correction of consumer attitudes towards nature among professionals. Of great interest is the modernization of vocational education in the context of the concept of sustainable development, as well as the construction of a system of continuous eco-vocational training that ensures the formation of eco-vocational consciousness. With the study of these issues, there may be prospects for further development of the problem.

REFERENCES

1. Cherdymova, E.I., & Sorokina T.M. (2013). Organizational and psychological support for the formation of eco-professional consciousness of students. Samara: Publishing House “Samara University”.
2. Akopov, G.V. (2010). Psychology of Consciousness: Issues of Methodology, Theory and Applied Research. Moscow: Institute of Psychology, Russian Academy of Sciences.
3. Panov, V.I. (2006). Introduction to environmental psychology: a tutorial. Moscow: School Technology.

4. Panov, V.I. (2011). Communication: ecopsychological approach. Psychology of communication. Encyclopedic dictionary. Moscow: Establishment of the Russian Academy of Education. Psychological Institute.
5. Yasvin V.A. (2007). Interaction with nature. Methods of diagnosing motivations. *Ecology and life*, 5, 37-39.
6. Yasvin, V.A. (2000). Psychology of attitude to nature. Moscow: Sense.
7. Deryabo, S.D. (1996). Ecological pedagogics and psychology, Rostov-on-Don: Phoenix.
8. Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 1, 110-211.
9. Fishbein, M. (2010). Predicting and changing behavior: The reasoned action approach. New York: Psychology Press.
10. Ganzen, V.A. (1989). Systematic of thought images. *Psychological journal*, 10(2), 12-21.
11. Rubinshtein, S.L. (1957). Genesis and consciousness: about the place of the psychic in the universal interconnection of the phenomena of the material. Moscow: Academy of Sciences of the USSR.
12. Vygotsky, L.S. (1983). Problems of psyche development, under ed. of I.M. Matyushkin. Moscow: Pedagogy.
13. Zinchenko, V.P. (2009). Psychology of consciousness: experience of understanding. Developmental and educational psychology: theory and practice: collection of scientific papers. Irkutsk: Publishing house of Irkuts State Pedagogical University, 2-32.
14. Ermolaeva, P. (2016). The Ecological Culture of Russian and American College Students. *Russian Education and Society*, 56(1), 19-33.
15. Sidelnikova, T.T. (2016). The Potential and Limitations of Visualization as a Method in Learning Social Sciences and Humanities. *Integration of Education*, 20(2), 281-292.
16. The Great Soviet Encyclopedia, 1969-1978, Moscow: Soviet Encyclopedia.
17. Bekhterev, V.M. (1888). Consciousness and its boundaries. Kazan: Printing house of the Imperial University.
18. Deryabo, S.D. (1995). Environmental education in an environmental crisis. Teacher about the ecology of childhood. Chernogolovka: The Center for Complex Formation of the Personality of the Russian Academy of Education, 16-31.
19. Jaspers K. (2012). Philosophical orientation in the world; Philosophy. Book 2. Enlightenment of Existence, Trans. from germ. A.K. Sudakova. Moscow: Kanon + ROOI "Rehabilitation".
20. Gagarin, A.V. (2000). Education by nature. Some aspects of humanization of environmental education and training. Moscow: Moscow City Psychological and Pedagogical Institute.
21. Ivashchenko, A.V., Panov V.I., & Gagarin A.V. (2008). Ecological-orientation world view of the person. Moscow: Peoples' Friendship University of Russia.
22. Reimers, N.F. (1992). Hopes for the survival of mankind: Conceptual ecology. Moscow: Young Russia.
23. Skrebets, V.O. (1998). Ecological psychology. Training manual. Kiev: Interregional Academy of Personnel Management (IAPM).

24. Nechaev, N.N. (1997). The concept of continuing education as a theoretical basis for innovations in pre-vocational and vocational training. *Innovations in vocational training of youth in Russia and Germany (experience and development trends)*, 1, 68-154
25. Yegorshin, A.P. (1997). Personnel Management. Irkutsk: Irkutsk State Pedagogical Yniversity.
26. Mitin, A.N. (2016). Mechanisms of management. Yekaterinburg: Publishing house "Ural State Law Academy".
27. Kibanov, A.Ya. (2005). Personnel management of the organization. Moscow: INFRA-M.