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**AN INNOVATIVE APPROACH TO EDUCATION IN THE
CONTEXT OF SUSTAINABLE DEVELOPMENT**

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Abstract

The article deals with the problem of introduction of the main ideas of sustainable development into the practical training of personnel in the Russian higher education institutions. The theoretical basis of the article is the works of famous American and British psychologists (Guilford, Maslow, Torrance, etc.). The authors also relied on the proceedings of the international summits on sustainable development issues. The principles of education for sustainable development which determine the crucial tasks for higher education system in the light of close links with innovations, economy and social sphere have been clarified. The authors have established the role of the innovative approach as a modern educational paradigm which makes changes in objectives, content, methods and tools, forms of organization of collaborative activities of students and instructors, monitoring system and qualitative assessment of educational progress for the benefit of sustainable development. They have substantiated the necessity of achieving two main objectives in the education system: to provide an algorithm for the application of knowledge and prepare students to function in ever-changing unpredictable environment. The importance of the personal fulfillment within a framework of sustainability concept has been maintained. The importance of the personal fulfillment within a framework of sustainability concept has been maintained.

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Keywords: Sustainable development; principles of education for sustainable development, higher education; innovative approach; creativity.



1. Introduction

The national strategy for higher education aimed at improving competitiveness of the country at the market of learning services identifies the importance of elaboration and implementation of innovative educational programs for training of upper level personnel. For the purpose of the necessity of education policy update by innovative means, we should characterize the content of the concept «innovation». Generally, the concept «innovation» means novelty or renewal. The founder of the theory of innovation was an Austrian economist Joseph Schumpeter who introduced the concept «innovation» as an economic growth in 1930s. Since then, the ideas offered by J. Schumpeter have exceeded the bounds of economic science but the analysis of different definitions of the term «innovation» has led to the conclusion that the content of innovations consists of changes and the main function of an innovative activity is the development function.

The strategic direction of the target-oriented development on the global and regional scale is sustainable development. The concept «sustainable development» was originally used in the ecological meaning in the report of World Commission on Environment and Development headed by the prime minister of Norway (1987). Gro Harlem Brundtland (1989) described sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

At the United Nations Conference on Environment and Development held in Rio de Janeiro (Brazil, 1992) and the World Summit on Sustainable Development held in Johannesburg (Republic of South Africa, 2002), this concept in addition to ecological meaning got economic and social backdrop. The ideas of the sustainable development concept have been changing for three decades, but the fundamental premise has always been the commitment to a balance between interests of participants and processes occurring in economy, society and environment. The United Nations Conference on Sustainable Development Rio+20 (Rio de Janeiro, 2012) became the third world summit for outlining the pattern of sustainable development. In accordance with its final declaration, Sustainable Development Goals had been set by 2015. The 70th session of the UN General Assembly (New York, 2015) adopted the 2030 Agenda for Sustainable Development including 17 Sustainable Development Goals.

At present, the world community admits that education is crucial in achievement of sustainable development. In UN papers, education refers to the determining factor of changes. UN representatives use the term «education for sustainable development» to mean the evolutionary concept which is aimed at promoting relationship between sustainable development and getting knowledge, skills, prospects and values. Acquiring knowledge, getting skills and awareness of prospects enable people of all ages to assume commitments of building up a sustainable future and its control.

1.1 Problem statement

Increasingly stringent requirements for training of graduates show the timeliness of the education strategy design for sustainable development (Schattle, 2008). The very core of the strategy is to turn from the transfer of knowledge and skills that are necessary for life in today's society to commitment to live and function in fast-changing environment, participate in planning of social and economic development,

anticipate and forecast consequences of the decisions made and take responsibility (Portnyagina, & Loshchilova, 2016).

The major international documents analysis (Strategy for Education for Sustainable Development (UNECE), Bonn Convention, Global Action Programme on Education for Sustainable Development, Incheon Declaration «Education-2030», The 2030 Agenda for Sustainable Development and so on) enables us to detail the principles of education for sustainable development for the system of higher education:

- lifelong learning opportunities;
- fundamentalization;
- system, multifaceted and interdisciplinary approaches;
- proactive training;
- competency building approach;
- active learning;
- development of critical and creative thinking;
- education informatization;
- monitoring the results of education for sustainable development;
- outreach of social partnership in education for sustainable development.

The analysis of the formulated principles as conceptual basis of education for sustainable development allows for the conclusion that higher education institutions oriented to sustainable development should prepare a new breed of specialists who think creatively, have a moral incentive and possess relevant knowledge and expertise to live and function in today's ever-changing world (Scott, & Gough, 2010). The education system continues to perform its task – to give an algorithm. Insofar as education for sustainable development focuses on preparation of people for doubtful and unforeseeable future we should use the «scheduling algorithm» that is the ability to act across the full range of contexts instead of the «algorithm of application of acquired knowledge». In this regard, the implementation of the principles of education for sustainable development requires innovative orientation of the organization of the learning process by means of introduction of changes in objectives, content, methods and tools, forms of organization of collaborative activities of students and instructors, monitoring system and qualitative assessment of educational progress.

In recent years, innovative orientation of education has taken attention of scientists in different areas of expertise: sociology, philosophy, pedagogics and economics (Stephanie, & Oleson, 2003). In 1979 in the report to the Club of Rome «No Limits to Learning» the ideas of the basic types of learning were defined. They were «supporting learning» and «innovative learning». The first type of learning is education that is aimed at support and reproduction of existing cultural values, social experience and the existing social structure. The second type of learning focuses on introduction of innovative changes to the existing cultural and social environment. This type of learning should stimulate an active response to challenges that an individual or society can face.

1.2 Research questions

In this article, we are going to consider implementation features of the principles of education for sustainable development in the context of innovative orientation of learning.

It is obvious that the education system is a unique guide for sustainable development of the society. On the other hand, the principles and ways of implementing education for sustainable development should be correlated with the ideological realities of the educational platform of the XXI century. It should be noted that competence-based learning outcomes are clearly reflected in UN and UNESCO papers on education for sustainable development. Since 2005, the Bologna process which was designed to create the European higher education area has started. In the same year, the Decade of education for sustainable development covering the period from 2005 to 2014 was declared. It is important to combine the development of the above mentioned processes to integrated education and even the education research system taking into account that the orientation to a competency-based format of education should ensure the formation of the ability of an individual to adapt to a rapidly changing environment.

In the context of the above-mentioned, we think that the research findings of the Russian scientist Ursul (2013) are significant. He emphasizes that an individual can overcome the problems of unstable civilizational development by means of consciousness, thinking and activity. An individual is able to anticipate and predict the consequences of his activities and if it becomes necessary to take preventive actions. In such a case, the author defines the changes in education and its purposes with a focus on the future as futurization and he describes self-education as a proactive process.

The Russian founders of the theoretical fundamentals of proactive professional training introduced the concept of transformative, humanitarian-oriented intelligence that is actualized in action. It indicates that they have clarified the outcome and purpose of proactive training. By the transformative intelligence, the scientists mean such development level of thinking that allows a person to go from a conceptual understanding of reality to handling of applied problems (social, managerial, organizational, technical and economic, production-economic problems and so on) on the basis of knowledge of the fundamental laws of nature and society. The transformative intelligence has a high level of ability to complex use of intuition, logic, quantitative assessment from formal processing that helps to solve challenging, semi-structured problems. This understanding of the purpose and outcome of proactive training determines the necessity of its creative nature.

Commitment of education to creativity that the graduates will be able to apply in a real market economy highlights the importance of possession of principles of thinking, ability to build and use mathematical models to describe and predict real-world processes (Loshchilova et al., 2015). The creative abilities of the graduates are intended to ensure the formation of a transformative intelligence as readiness for integrated use of intuition, logical thinking and quantitative assessments in order to solve vital and job-related problems under the conditions of multivariance and uncertainty.

The use of mathematical modeling as a means of implementing the principle of proactive education for sustainable development is a reasonable approach. Let's get down to the opinion of Ursul (2013). He writes that one of the most actively developing forms in the study of the global future and its implementation in the learning process is a simulation of what might happen in the future, i.e., forward modeling in its different forms and especially by using new information technologies. This method of entering the future in innovative learning process is inherent in informatization, because only at the information level it is possible to construct and study models of the future both normative and exploratory forecasts and predictions.

The principle of informatization as one of the conceptual foundations of education for sustainable development determines the new qualitative characteristics of education because it provides an opportunity for forward reality modeling. The concept «Smart education» that is in rapid evolution nowadays means flexible learning in an interactive education environment through the use of content from all over the world which is in free access. It involves the transfer of educational system to the electronic environment. The introduction of e-learning makes learning available at all times and in all places, outside temporal and spatial limits. It is obvious that e-learning extends the capabilities of instructional techniques in the development of students' knowledge, skills, competences, however, providing a variety of methods and tools for evaluation of individual achievements, their focus on the development of creative potential.

The importance of development of creativity of an individual within the concept of education sustainability is confirmed by the factors of socio-economic development and the need for professional and creative development of the future specialist. The term «creativity» describes the level of creative talent and the creative ability that is a relatively stable characteristic of personality. In scientific research there is the tendency to distinguish the concepts «creative work» and «creativity», where creativity takes the place of one of the main components of the category «creative work».

In Russian scientific discourse the categories «creative work» and «creativity» are separated, considering that «creative work» is a «divine» process of creation in art and science, where the creative product is an artistic image, an abstract idea, etc., «creativity» is a process of creating the new in an applied or social aspect. In this case, the product of the process is subjectified, socially oriented and has a pronounced communicative orientation. Thus, creativity is always interactive, communicative by nature, focused on the society but creative work can be personal. In the West creativity is the technological element of creative work, which is formed and manifested in activities.

The founder of the theory of creativity is the American psychologist, J.P. Guilford (1973), who defines creativity as a factor of social intelligence, which includes the cognitive ability for learning classes, systems, transformations, results of behavior, predicting consequences of actions, adequate reflection of verbal and non-verbal expression, understanding the logic of complex situations of interpersonal interaction. In other words, creativity improves the level of social intelligence and allows overcoming the passivity of thinking; thereby it expands the adaptive opportunities of an individual.

According to another American psychologist Torrance (1993), creativity is the ability of an individual to the productive thinking, which is manifested in the process of incorporation of information in new structures and links, in identification of insufficient information and looking for new ways of solution and their verification.

In Russian culture, creativity is perceived much more widely. Kholodnaya (2002) believes that creativity is the ability to take reasonable risk, willingness to overcome obstacles, intrinsic motivation, tolerance for uncertainty, readiness to confront the opinion of others. According to Druzhinin (2009), creativity is an integrative quality of the human psyche, which provides a productive transformation in the activities of an individual, allowing him to meet the demand for research activity. Druzhinin (2009) argued that the formation of creativity should take place under the influence of the environment.

In the education environment, creativity is considered as the ability to generate new knowledge through a technologically controlled expansion and transformation of the vision of reality as the future

that is able to organize the present in a consistent manner. In this context, creativity is different from creative work because the latter is characterized by uncontrollable spontaneity, but creativity has a controlled productive imagination.

The research papers of Maslow and Rogers were devoted to a creative attitude to life, behavioral creativity. So, Maslow (1997) defined creativity as a property of a self-actualized individual using his talents and abilities in the process of personal fulfillment to the full extent. The central concept of the theory of creativity of Maslow is the concept of motivation.

According to the results of the analysis, we can highlight the most important characteristics of the creativity:

the result of creativity has tended to focus on the society in contrast to the individual nature of creative work;

creativity of an individual is formed and manifested in activities;

the creative potential of an individual is developing in a creative environment;

motivation increases the level of creativity of an individual.

In the context of this research work, it is important to distinguish creativity from innovation. If creativity is generating ideas, then innovation is the practical application and adaptation of ideas. Cognition plays an important part in innovation. It is the ability to master the inoculation of novel ideas. Summarizing the above-mentioned, by the creativity we shall basically mean an individual's ability to research activity in anticipation of possible problems of innovative practices and the ways of their solution.

Any modern society which is oriented to a sustainable future is in great need of creative specialists who are well-versed in rapid flow of scientific information and able to think critically, to develop and defend their points of view. The increased requirements for development of the creativity of a graduate of the university is a socially significant need of the society that can be met only by using the appropriate learning technologies under the conditions of innovative education.

1.3 Purpose of the study

Considering the possibility of usage of an innovative approach in accordance with the principles of education for sustainable development in our research, we are going to analyze the training practice in higher education institutions.

According to most researchers, higher education innovations in the learning process are introduced through the changes in objectives, updating the content of education, usage of active forms of learning, creation of innovative education environment focused on personal development of graduates.

It seems appropriate to clarify the modern term of pedagogical science - the concept of an innovative education environment. Within the framework of our research, by the innovative education environment we mean a set of optimal training conditions focused on innovation content formation, use of innovative learning technologies, the system of requirements for education outcomes that improve personal development. In its turn, the formation of innovative education environment puts forward some new requirements to organization of the learning process and its results, including:

the change in the function of knowledge which becomes interdisciplinary, systematic and synthesized;

prioritizing of the social nature of learning (learning is the ways of social and interpersonal interaction);

development of student's personality (motivation increase, possession of effective methods of thinking, creative approach to problem solving);

formation of a new style of cognitive activity of a student on the basis of values and meanings, oriented to self-knowing and self-education.

It is obvious that innovative orientation of the learning process ensures the implementation of such principles of education for sustainable development as the use of systematic, comprehensive and interdisciplinary approaches, active forms and methods of training, and the development of critical and creative thinking.

The obtained results confirm that innovation orientation in higher education system is forming its new content, learning technologies, learning outcomes which are characterized by great social and market demand, the relationships of subjects of the learning process, is of great scientific and methodological potential for establishing education for sustainable development.

2. Research methods

To detail the principles of education for sustainable development and mainstream the role of an innovative orientation of their implementation in training practice in higher education institutions, we used the following methods: comparative theoretical analysis of Russian and foreign scientific literature on the investigated problem, scientific and practical interpretation of the results of the study.

3. Findings

Thus, the innovative potential of the Russian system of higher education, providing for the adjustment of objectives, reorientation of content of education, teaching methods and subject-specific learning environment in accordance with the principles of education for sustainable development shows its commitment to proactive learning, informatization, competency-based format, the use of active learning methods, the development of intellectual qualities and creative abilities. In its turn, the result of the implementation of these principles can help to reform the education policy in the field of higher education to meet current and future needs of individuals, society and the state.

4. Conclusion

In the conditions of increasingly stringent requirements for preparation of graduates, it is important to develop the strategy of education for sustainable development, the essence of which is to move from simple transfer of knowledge and skills necessary for existence in a modern society to readiness to live and work in a rapidly changing environment. In its turn, innovative nature of education, ensuring the preparation of creatively thinking and morally motivated graduates requires the restructuring of the

learning process in content-related, procedural and result-oriented aspects, in accordance with the principles of education for sustainable development.

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