
Sustainable Development Concept Implementation in Environmental Education

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Abstract

The urgency of the study is due to the fact that on the threshold of XXI, humanity faced a global civilization and environmental crisis caused by the spread of Darwinism, natural philosophy and anthropocentrism, the formation of techno-gene civilization and a consumer society. The solution of the problems connected with this is possible only on the basis of creating a new humanistic rational biosphere and noosphere-based world outlook and forming on its basis an individual and social consciousness. The primary role in this process is given to the education system, which must be appropriately reformed on the basis of sustainable development concept, reflecting the current trends in the development of human civilization in order to preserve its existence in harmony with the natural environment. The study purpose: this article is aimed at analyzing various approaches to modern environmental education, factors of its effectiveness in the context of sustainable development concept's implementation. The study results: it is established that modern environmental education should be focused on the formation of a humanistic co-evolutionary consciousness and spiritual and moral foundations of the noosphere era's human capable of creating conditions for the ecological, economic and social sustainable development of civilization with harmonious interaction with the biosphere and socio-sphere. Based on the analysis of the relevant scientific literature, the article highlights the main factors of the effectiveness of environmental education in the framework of sustainable development concept, such as integrity, humanization and environmental self-training and self-upbringing, as well as their content is disclosed. Practical significance: The materials of the article are of theoretical and practical value for the development of educational and methodical complexes on ecology and ecological pedagogy, teachers' training and retraining programs, as well as programs aimed at the formation of new environmentally appropriate ideological and value attitudes among modern youth.

Keywords: environmental education, sustainable development, biosphere, socio-sphere, noosphere, efficiency

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INTRODUCTION

Active human activity is directly related to the impact on the environment, since he seeks to obtain material and spiritual values from nature, by no means always predicting the consequences of sometimes ill-considered intervention and not taking into account the fact that the environment responds accordingly on such intervention, influencing the development of society

(Firsova et al. 2018, Lubnina et al. 2016, Sudarikov et al. 2017, Tyurikov et al. 2018, Velieva et al. 2018). The irrational and consumer attitude of humanity to nature led to the fact that an ecological crisis became an essential part of the modern civilization crisis, the causes of which confidently are dehumanization of society, moral degradation, loss of needs in perception of the beautiful and the lack of necessity in sensation of harmony life with the surrounding world. To overcome

this crisis successfully and effectively, it is necessary to vitalize the humanization processes of modern education, to restore the importance of upbringing activities in the process of education at all levels (Faleeva et al. 2017, Ju et al. 2017, Mironova et al. 2017, Shcherbakov et al. 2017, Wang et al. 2018, Voronina et al. 2017, Zaitseva et al. 2017).

The processes of social, economic, political and cultural globalization occurring in the modern world have actualized a number of problems, the solution of which is possible within the framework of the concept of sustainable development (Sudarikov and Merkulova 2017). At the level of the biosphere, the globalization of human civilization life has led to climate change, biodiversity impoverishment, natural resources' scarcity and depletion, and therefore it is necessary to compensate for the damage caused to nature. At the ecological and economic level, the tasks of preventing hunger, the development of environmentally safe technologies, the manufactures of environmentally friendly products, and not only in agriculture, have arisen. At the socio-legal level, the need arose for political stabilization in the world and consolidation of the efforts of the entire world community to prevent the destruction of the natural environment. At the scientific and technical level, there was a question about the development of environmentally acceptable technologies and technical means that meet environmental requirements. At the moral, ethical and educational level, it has become vital to give maximum attention to the formation of public environmental awareness, creating a system of effective environmental education (Khusainova et al. 2018, Koryakov 2012, Vinogradova et al. 2018).

The beginning of the XXI century is associated with the beginning of a change in the paradigm of education, both in Western countries and in Russia. The model of a complete education, the main goal of which is to transfer experience and knowledge historically accumulated by mankind for learners, is replaced by a model of continuing education, the key element of which is human development, and the main task is to form critical thinking, independence in decision-making and activity in social activities. Such a change in education models is determined by a change in the global model of human development. The industrial and techno-gene civilizational paradigm is changed into the paradigm of civilization existence based on new knowledge and global principles of thinking, on the concept of sustainable development. Sustainable development is a multi-level hierarchically controlled

process of co-evolutionary development of the biosphere and socio-sphere, the goal of which is to ensure a healthy, productive life in harmonious coexistence with nature for modern people and future generations, which is based on the preservation and enrichment of cultural and natural resources (Cherdymova et al. 2018, Markina 2009, Ochirova et al. 2018).

Environmental education, which is developing at a faster pace, should become the basis of the modern education model as the most important element of modern society's transition to the path of sustainable development. The education system should be focused on the future and work towards determining the personal qualities of each person, his knowledge and skills, as well as the economic, spiritual and material potential of society as a whole. Environmental education is a lever that allows reformatting the concept of sustainable development into the system of spiritual and professional value development of humanity, which will allow preserving modern civilization, ensure its progressive development and preserve the biosphere as a whole (Kaverin and Masserov 2014).

In accordance with the new paradigm of environmental education, the importance of environmental education and upbringing models' developing is being affirmed, which are considered to be the leading mechanisms for creating a personality capable and ready for self-educating themselves to be responsible for the environment, focused on environmental protection and environmental management, ensuring effective control over environmental problems. The priority of developing methods for effective environmental education is determined by the need to improve human health indicators, as well as to ensure the stability of biosphere processes within the global ecosystem that has a direct and global impact on the quality of life of the population and the state of the environment (Kirillov, Ikonnikova and Nazarenko 2015).

LITERATURE REVIEW

Basic Modern Approaches to Environmental Education

One can consider the basic modern approaches to environmental education.

The philosophical approach to environmental education is based on the need to create a system of upbringing and education as a single, interconnected, interdependent and mutually complementary one. With

regard to environmental education, this is important because when educating without upbringing, a person learns vital skills, gains technical knowledge and skills, but begins to abuse them, mindlessly conquering and destroying nature, thereby destroying himself and losing spirituality and conscientiousness. All problems related to ecology are rooted in the problems of the inner world of the person himself. In order for the eternal problem of harmonious interaction between nature and man to be solved successfully and effectively, it is important first to study man, to form axiological thinking, ability and readiness to take responsibility not only for one's future, but also for the future of human civilization (Zhernakova 2008).

An integrative approach to environmental education focuses its attention on the need to form an open, multifunctional and multicomponent personality system consisting of integral holistic features characterizing a socially mature personality, an adequate member of society, determined by a focus on sustainable development regardless of belonging to a particular social or professional group. These properties are determined by the orientation of the individual's needs, interests, attitudes, assessments and behavior, moral and aesthetic orientations, readiness for environmentally appropriate social activity and critical perception of reality. These personality traits are the basis of its ecological culture. The personality should be formed as a complete open system of external and internal relations, which has, on the one hand, a unique, and on the other hand, a regular and typical structure (Nesgovorova and Savinykh 2009).

Competence-based approach is an effective target basis for environmental education. Environmental education is considered as a holistic process consisting of three interacting and interdependent components: training, upbringing, creative development and self-development, the purpose of which is to form the human ecological culture based on the integration of such key competencies as: general cultural, educational and cognitive, information, social and civic, communicative, competence of personal growth and development and particularly ecological competence expressed in the ability of system-based application of environmental knowledge and skills in all spheres of life activity (Stepanets 2011).

In the substantive aspect of the practice-oriented approach to environmental education, emphasis is made on the areas of human activity in the urban or rural environment, which pose risks of environmental

problems and on ways how to solve them in various fields of practice, taking into account the relief, natural climatic features and spatial infrastructure. The importance is stressed of obtaining knowledge about the features of a particular urbanized or non-urbanized territory, about specific factors determining the ecological situation, existing or potential environmental problems of a particular territory, as well as ways and means of solving these problems in the course of practical activities (Trubina et al. 2015).

The organization of environmental education in the framework of the activity-based approach is characterized by the consistent inclusion of students into various types of active independent activities, one of the characteristics of which is the focus on understanding environmental problems and finding ways to solve them. Such activities include direct environmental protection activities. The nature-oriented activity is aimed at the realization of students' internal creative abilities, at the formation of their ecological consciousness. The task of the educational organization in this case is not only the development of a certain amount of environmental knowledge by students, but also the formation of their skills in the scientific study of natural phenomena. These skills, as well as the system of scientific ecological knowledge, are especially efficiently formed in the process of independent research and analysis (Beneditskaya 2017, Merkulova and Sudarikov 2017).

There are several more approaches to environmental education:

- Culture study- based approach, the main component of which is the ecological culture of the individual and society. Ecological culture is considered as the main condition for ensuring the progressive development of society in unity with nature, and as a global self-regulatory mechanism of successful adaptation of an individual and society to the natural and social environment.

- Noosphere approach based on the concepts of anthropo-cosmic ecological consciousness. Noosphere education is considered by many as one of the types of environmental education, which differs from the classical one in the following parameters: a humanitarian component, which ensures the formation of a coevolution-based world view and the spiritual and moral foundations of the personality, as well as an orientation to the formation of a person corresponding to the noosphere era that is it is oriented not so much

on the realities of today as on what will and should be in the future.

– A network approach in the framework of the ideas of the Bologna process, which envisage the development of educational programs by students using the resource potential of various educational organizations, both domestic and foreign, and, if necessary, the resources of non-educational organizations, such as production organizations (Belyaeva 2014).

Factors of Modern Environmental Education Effectiveness

A number of researchers have identified the following as factors of environmental education effectiveness in accordance with the results of their experimental research:

– the integrity of environmental education should be ensured by the unity of education, the purpose of which is to form a system of special ecological knowledge, and upbringing, designed to form nature-like behavior in relation to the environment;

– a single process of environmental education should be aimed at the spiritual and moral development of the individual as a basis, which will allow changing human attitude to nature from the consumer attitude into a defensive and protective one;

– The educational-upbringing environment should be organized in such a way as to ensure the possibility of effective environmental education and upbringing (Kirillov et al. 2015).

One of the main conditions for improving the effectiveness of environmental education is its humanization. Along with the fundamental natural science and engineering elements, a subsystem of socio-humanitarian elements should be included in a single full-scale system of environmental training. The most important function of such a system is not only the development of scientific knowledge, skills and environmental practices, but also the humanitarization of environmental education, which should form an ecological culture, a set of environmentally oriented values, attitudes and behavioral norms, as well as relevant cultural, ethnic and religious traditions. The students should form a value attitude to the surrounding nature in all its diversity, which is necessary not only for its preservation, but also for the preservation of man as a part of nature, for creating

conditions for the sustainable development of mankind. It is important to create an understanding that nature is an independent value, and not just a reservoir of resources for the sustenance of society, which will help to overcome the historically established anthropological and socio-centric attitudes with attitudes oriented toward the unity of nature and man (Rebeshchenkova 2010).

Another important factor in improving the effectiveness of environmental education is the formation of the ability and readiness for environmental self-education. It creates personal norms and mechanisms of interaction regulation with the outside world, both at the global level, harmonizing the world view and attitude to the natural environment, and on the everyday-life right up to human behavior in nature. Ecological self-education forms practical readiness for the implementation of activities aimed at defending and protecting nature, contributes to the concretization and clarification of the environmental activities' content, provides personal orientation to the preservation of the natural habitat and natural objects of environmental, cultural and historical significance. Environmental self-education is a tool that complements, expands and deepens the theoretical and practical preparation for rational interaction with the environment, awareness and development of its regularities (Nazarenko and Kolesnik 2013).

Socio-Philosophical Foundations of Sustainable Development Concept and its Implementation in the Education System

The concept of sustainable development was formulated at the end of the twentieth century as a response to the main causes of the civilizational and ecological crisis, the dominant consumption philosophy, resource-destructive technologies, and inadequate pricing mechanisms for natural resources. This has led to the depletion of natural resources and the degradation of the natural environment. The concept of sustainable development is based on the priority of the integrated development of mankind, on the principles reflecting expedient existence, rational nature management, economic efficiency and social justice. This contributes to maintaining the ecological, social and life-supporting systems in a state of stability and contributes to the achievement of the goals of meeting the adequate material and spiritual needs of humanity both at the present stage of existence and in the future (Beketova 2012).

The concept of sustainable development is based on the philosophical theory of co-evolution and the formation of the noosphere. Coevolution is based on the principle of the elementary mechanism of matter motion, which consists in the fact that natural processes include their own fluctuation-based deviations corresponding to the influence of external factors on them. In order for this mechanism to automatically contribute to the adaptation of each other of closely interacting nature and man and create the noosphere, it is necessary to compensate damage to ecosystems and to stop activities, the damage from which is irreversible. The real implementation of this principle in human activity is guaranteed only if the human mind manifests itself in the process of evolution of the biosphere, with the result that the noosphere can fully develop, which is a necessary condition for the sustainable development of society in the future (Petraşov 2012).

The concept of sustainable development is systemic in nature due to the unification of different-quality and independently existing components which are developing according to their own economic, social and environmental laws. Such system integrity is characterized by dynamism, variability and processual nature and has a resource base for solving global problems. From an environmental point of view, sustainable development consists in ensuring the integrity of biological and physical ecosystems. But human activity can disrupt their balance; therefore, it is necessary to preserve the ability of natural and anthropogenic systems to self-repair and dynamic adaptation. When analyzing social factors in the concept of sustainable development, the inherent ability to comprehensively analyze the trends and prospects for the development of the world in all its diversity and inconsistency is most evident. The social factor in this case, being a backbone, indicates the historicity of the concept under consideration. Ideas embedded in the concept of sustainable development, must go a long way from the formation through scientific research to the adoption and assimilation by public consciousness. Therefore, the basis of global sustainable development in the modern world will be the problem of noosphere-ecological education, that is, the formation of consciousness adequate to the *man-society-nature* system (Rohm 2009).

The modern paradigm of education based on the concept of sustainable development, proceeds from the understanding of education as an activity, the purpose of which is to develop the personality in the process of education and training, and is built on the basis of such

modern values as subjectivity, dialogue, existentiality, developmental orientation, integration and fundamentality. Its qualitatively new features are as follows:

- The semantic sign of education changes from rationalism to culture;
- the reproductive model of education, which reproduces and reinforces the existing social relations, changes into a productive, humanistic and culturally oriented one;
- The content of education is updated due to the rise from the contemplative to the activity level, from the empirical to the conceptual, from thematic to the problem;
- The educational and disciplinary model of education is changing into the personality-oriented (Markina 2009).

In order to implement the concept of sustainable development, education is faced up the issue of training and education of citizens with orientations on the knowledge and skills necessary to ensure harmonious coexistence within the ecosphere and socio-sphere. Such education should be continuous throughout life, from preschool to adult education. The historical basis for the formation of education in the framework of the concept of sustainable development is environmental education, which has a complex interdisciplinary nature and combines traditional educational methods with the active participation of the student in the educational process. In this process, the learner must go through a number of stages: to realize the existence of environmental risks, to fully grasp these risks, give their assessment and make decisions about measures to minimize them. It is within the framework of environmental education where the fundamental elements for the implementation of sustainable development concept are found, due to its ideological nature and the real complex potential that other natural, social and technical sciences do not have (Folomkin and Voronina 2017, Kaverin and Masserov 2014).

The modern concept of sustainable development sets before the education system, as the most important institution of socialization, the problem of solving a number of fundamental tasks:

- In the field of economics, education should ensure the qualification reproduction of professional social groups and the formation of competencies

contributing to effective participation in social production;

– In the cultural sphere, education should begin to stimulate intellectual and critical reflection on the experience gained by mankind to create new ideas and value orientations;

– In the sphere of politics, education should ensure political socialization and promote the formation of a new political model of social existence and development;

– In the field of ecology, knowledge and skills should be formed to preserve and improve the quality of the natural environment, to preserve as much as possible the existing and to restore the affected ecosystems;

– In the scientific sphere, fundamental research and applied research should be developed to create nature-preserve production technologies;

– in the field of training and education, it is important to provide access to information on the possibilities of solving the challenges of sustainable development, the main provisions of the concept of sustainable development should be integrated into educational programs, students' environmentally oriented outlook should be formed at all levels and a system of continuous universal environmental education should be created (Sevastyanova and Oshchepkova 2015).

RESULTS

The concept of sustainable development is formulated as a reaction to the civilizational and environmental crisis caused by the philosophy of consumption and resource-destructive technologies. It is based on the priority of the integrated development of mankind, on the principles reflecting expedient existence, rational nature management, economic efficiency and social justice. Based on the philosophical theory of co-evolution and the formation of the noosphere, the concept of sustainable development is systemic due to the unification in it of different quality economic, social and environmental components which are independently existing and developing according by their own laws. Such system integrity is characterized by dynamism, variability and processual nature and has a resource base for solving global problems.

The modern paradigm of education based on the concept of sustainable development, proceeds from the

understanding of education as an activity, the purpose of which is to develop the personality in the process of education and training, and is built on the basis of such modern values as subjectivity, dialogue, existentiality, developmental orientation, integration and fundamentality. Its qualitative novelty lies in the fact that the semantic sign of education changes from rationalism to culture; the reproductive model of education, which reproduces and reinforces the existing social relations, changes into a productive, humanistic, and culturally oriented one; the content of education is updated by raising from the contemplative to the activity level, from the empirical to the conceptual, from thematic to the problem-based; the teaching and disciplinary model of education is changing into personality-oriented.

Based on the analysis of various approaches to environmental education, it was concluded that the most promising for the implementation of the concept of sustainable development in the system of environmental education is the noosphere approach which allows creating educational models based on a humanistic and co-evolutionary world view, aimed at creating the spiritual and moral foundations of a new human noosphere epochs, as well as the competence-based approach, in which models for the formation of competencies corresponding to sustainable development concept and related to the ability of the system application of environmental knowledge and skills in all areas of life, to the implementation of environmental activities to conserve existing and to restore damaged components of the biosphere and socio-sphere, to the ability and willingness to harmonious coexistence and interaction with the biosphere and socio-sphere.

The effectiveness of modern environmental education in the implementation of sustainable development concept is determined by the following factors:

– integrity of environmental education based on the integration of education and training, the integration of scientific knowledge and practical skills of various humanitarian, natural and technical sciences;

– humanitarization of environmental education: the formation of ecological culture, a set of environmentally oriented value orientations, socio-psychological attitudes and norms of behavior, the preservation and development of existing nature-safe cultural, ethnic and religious traditions;

– development of an element of ecological self-education and self-upbringing as indispensable tools that complement, expand and deepen theoretical and practical preparation for rational interaction with the environment, awareness and development of its laws, as well as contributing to the formation of consciousness that is adequate to the sustainable development of the *man - society - nature* system.

CONCLUSION

The relevance of the research is connected with the need to overcome the global civilization and environmental crisis, which is impossible without effective training and educational activities aimed at creating a new humanistic rational biosphere and noosphere world view and the formation on its basis of individual and social consciousness. The primary role in this process is given to the education system based on environmental education, which should be appropriately reformed based on the concept of sustainable development, reflecting the current trends in the development of human civilization in order to preserve its existence in harmony with the natural environment.

It has been established that modern environmental education should be focused on the formation of a humanistic co-evolutionary consciousness and spiritual and moral foundations of a person of the noosphere era capable of creating conditions for the ecological, economic and social sustainable development of

civilization with harmonious interaction with the biosphere and socio-sphere. The qualitative novelty of the new paradigm of education lies in the fact that the semantic sign of education changes from rationalism to culture; the reproductive model of education, which reproduces and reinforces the existing social relations, changes into a productive, humanistic, and culturally oriented one; the content of education is updated by raising from the contemplative to the activity-based level, from the empirical to the conceptual, from thematic to the problem-based; the teaching and disciplinary model of education is changing into personality-oriented. The most promising for the implementation of sustainable development concept in the system of environmental education are the noosphere and competence-based approaches, and the main factors for the effectiveness of environmental education in the framework of the concept of sustainable development are its integrity, humanization and environmental self-education and self-upbringing, contributing to the harmonious development of man and society in harmony with the natural environment of their existence.

– The materials of the article are of theoretical and practical value for the development of educational and methodical complexes on ecology and ecological pedagogy, teachers' training and retraining programs, as well as programs aimed at creating new environmentally friendly ideological and value attitudes among modern youth.

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