

HPEPA 2019**Humanistic Practice in Education in a Postmodern Age 2019****ENVIRONMENTAL EDUCATION FOR SUSTAINABLE SOCIO-
ECONOMIC DEVELOPMENT**

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Abstract

The problem of ensuring the sustainable development of civilization arose from the middle of the 20th century, when the anthropogenic load on the environment increased as a result of the growth of industrial production and an increase in the population. Environmental education is considered one of the main factors ensuring sustainable development. The purpose of the study is to develop a project of environmental education - a factor in ensuring sustainable socio-ecological-economic development of the region. To achieve this purpose, the following tasks are consistently solved: analysis of the development of environmental education; analysis of environmental education in Russia; socio-ecological-economic characteristics of Samara region; analysis of the work of UNESCO Chair «Study and Conservation of Biodiversity of the Volga River Basin», founded *on the basis of the Institute of Ecology of Volga River Basin of RAS (which is involved in the creation of the «Research and educational environmental center»)*. The Center will promote environmental education in the region. Students and schoolchildren of Togliatti and Samara region will have the opportunity to get acquainted with nature through the methods of contact interaction with living organisms, join the research activities in the field of ecology, get the skills of project activities, can participate in scientific, local history and research expeditions, seminars and conferences. The creation of a research and educational environmental center aimed at the realization of innovative possibilities of environmental education is undoubtedly a factor in the sustainable development of Samara region.

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1. Introduction

Today it is difficult to say whether environmental education originated under the influence of the philosopher Jean-Jacques Rousseau (1712-1778) and his pedagogical treatise «Emile, or about education», or scientists such as Luis Agassiz (1807-1873) who encouraged students to «Learn nature, not books». We believe (Rozenberg, Hasaev, Gelashvili, Saksonov, & Shljahtin, 2017) that the foundation of the Western European model of environmental education was laid in the 20s of the last century by the professor of botany from Scotland, sociologist and city planner Patrick Geddes (many foreign experts call him the «father of environmental education», although his predecessors can be considered I. Pestalozzi, A. Humboldt, K.D. Ushinsky, D. Dewey and many others.). Perhaps he «was the first to mark the vital, fundamental relationship between the quality of the environment and the quality of education of the younger generations». He was keenly interested in ecology, strongly opposed to environmental pollution, expressed a number of interesting ideas about the goals and objectives of environmental education. Geddes suggested a number of innovative methods and technologies for teaching children in nature and through nature, actively advocated the idea of developing a student as a whole person.

After analyzing the scientific literature on environmental education, we would like to particularly note the article by the American scientist McCrea (2006), which traces the origin and evolution of views on environmental education in the United States of America from early 18th century thinkers to the present day (Rozenberg, Hasaev, Gelashvili, Saksonov, &, Shljahtin, 2017).

In the UN system, a key organization for environmental education is UNESCO. As early as 1956 it defined the role of education, noting that it «is designed to help gain an understanding of environmental issues, their rights and obligations as citizens and individuals, to obtain a set of skills and knowledge for the gradual improvement of living conditions and more effective participation in economic and social development of society».

One of the first definitions of the concept of «environmental education» was proposed, apparently, at the first conference on this topic - IUCN World Seminar on Environmental Education in School Curricula, held in 1970 in the capital of Nevada (USA), Carson City (Carson City, Nevada, USA, 1970): «Environmental education is a process of awareness by a person of the value of the environment and clarification of the basic provisions necessary for obtaining knowledge and skills necessary for understanding and recognizing the mutual dependence between a person, his culture and his biophysical environment. Environmental education also includes the inculcation of practical skills in solving problems related to the interaction with the environment, developing behaviors that contribute to improving the quality of the environment» (Hume & Barry, 2015).

Since the 1970s, international environmental education initiatives have been regulated according to a different set of guidelines. The key UNESCO documents are the Belgrade Charter and the 1977 Tbilisi Declaration adopted in 1975.

In 1975, an International Workshop on the Environment organized by UNESCO was held in Belgrade (Yugoslavia), which resulted in the adoption of the Belgrade Charter, which defined the «Global Framework for Environmental Education» (Semenov & Solovyova, 2014). The vision approved by the participants of the workshop was as follows: «In a proper understanding, environmental education should be a comprehensive lifelong education that meets the requirements of a changing world. It should prepare

the individual for life by communicating to him an understanding of the main problems of the modern world, providing the skills and qualities necessary to perform a productive role in improving life and preserving the environment as a result of taking certain ethical principles into account. The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones» (Richter & De Sousa, 2019).

UNESCO organized a conference on Environmental Education in Tbilisi in 1979, just two years after the above mentioned seminar in Belgrade. There were stated three main goals and defined five main categories one required. They are still relevant today.

Although the Russian Federation had no specific federal law on environmental education for quite a long time, its support existed formally and informally at both regional and local levels thanks to the efforts of schools, teachers, governmental and non-governmental organizations. In primary and secondary schools, many teachers complement the compulsory curriculum with environmental activities. Regional environmental societies can support environmental education by offering seminars and advanced training conferences for teachers. Large environmental non-profit organizations are also working to promote environmental education in Russian Federation.

2. Problem Statement

At present, widespread concerns are related to the problem of overpopulation of the Earth and the depletion of natural resources. Humanity has serious concern for the sustainable development of civilization since the mid-20th century, when the anthropogenic pressure on the environment has increased many times as a result of the growth of industrial production and an increase in the population of the planet. Academician V.I. Vernadsky, anticipating the possible consequences of a person's invasion of nature, wrote: «Man becomes a geological force capable of changing the face of the Earth» (as cited in Semenov & Solovyova, 2014, p. 110).

Nevertheless, the probability of the collapse of modern society, which can be represented in the form of a socio-ecological-economic system (SEES) is very controversial. Social, economic and environmental subsystems are constantly in interaction and development aimed at preventing the collapse and ensuring sustainable development (SD) of civilization. It is usually accepted to depict the history of mankind as a continuous movement to higher levels of social organization, a more sophisticated political and economic system, the development of new, high technologies that support an ever-growing population by mobilizing more and more resources, energy and information. To ensure SD, one of the significant factors is environmental education, which allows adapting the developed and implemented technological processes to preserve the environment for present and future generations.

3. Research Questions

Environmental education contributes to the establishment of the relationship between man and the environment. It leads to the realization of the need for a gradual transition to sustainable development and

recognition of the importance of taking responsibility for the actions of society as a whole and each person individually. Environmental education is an interdisciplinary trend that helps students to trace and understand the dynamics of human relations with the environment by studying environmental, economic, scientific, technical, political and civil aspects not only in time (our attitude to the future), but also in space (the relationship between local, regional and global issues), and also considers various options for solving environmental problems. Environmental education is designed to promote the active participation of people in environmental protection measures and changes in their lifestyles and values in accordance with the interests of the sustainable development of human civilization (Bychkova, 2019; Crespo, Míguez-Álvarez, Arce, Cuevas, & Míguez 2017; Franco et al., 2019; Ursul & Ursul, 2018).

4. Purpose of the Study

The purpose of the study is to develop a project of environmental education - a factor in ensuring sustainable socio-ecological-economic development of the region. To achieve this purpose, the following tasks are consistently solved:

- analysis of the development of environmental education;
- analysis of environmental education in Russia;
- socio-ecological-economic characteristics of Samara region;
- analysis of the work of the UNESCO Chair «Study and Conservation of Biodiversity of the Volga River Basin», founded on the basis of the Institute of Ecology of Volga River Basin of Russian Academy of Sciences (IEVRB RAS) which is involved in the creation of the «Research and educational environmental center» (Richter & De Sousa, 2019, p. 721).

5. Research Methods

The following research methods were used: 1) consistency; 2) the unity of theory and practice; 3) historicism; 4) activity in the full structure of a scientific subject, from problems to tasks, from empirical material to theoretical positions; 6) the configuration of various types of knowledge; 7) the synthesis of the epistemological programs of natural science and pedagogical sciences.

6. Findings

Most European countries have adopted state-owned national strategies for education for SD, the implementation of which is coordinated at the state level and is assessed according to international indicators of sustainable development. Let us quote some federal laws concerning to some extent the issues of environmental education:

In the Decree of the President of the Russian Federation B.N. Yeltsin of the 1st of April 1996 N. 440 «On the Concept of Transition of the Russian Federation to Sustainable Development» states that «... following the recommendations and principles set forth in the documents of the UN Conference on Environment and Development (Rio de Janeiro, 1992), and following them it seems necessary and possible to implement in the Russian Federation a consistent transition to sustainable development, ensuring a balanced solution of socio-economic problems and the problems of preserving a favorable environment and

natural resource potential in order to meet the needs of the present and future generations of people» (Josa & Aguado, 2019).

In the Federal Law No. 7-FZ of January 10, 2002 «On Environmental Protection», Art. 71, Ch. XIII «Basics of the formation of ecological culture» states that in order to form an ecological culture and professional training of specialists ... a system of universal and integrated environmental education is being established, including pre-school and general school education, secondary and higher vocational education, post-graduate education and professional retraining, advanced training of specialists, and the dissemination of environmental knowledge, including through the media, museums, libraries, cultural institutions, environmental institutions, etc.» (Bychkova, 2019, p. 105).

Thus, since January 2002, the compulsory environmental education of schoolchildren, students and basically the entire population of the Russian Federation have been established by law (Crotty & Hall, 2014).

Environmental education contributes to the establishment of the relationship between man and the environment, leads to the realization of the need for a gradual transition to SD and recognition of the importance of taking responsibility for the actions of society as a whole and each person individually. Environmental education is an interdisciplinary subject that helps students to trace and understand the dynamics of human relations with the environment, by studying environmental, economic, scientific, technical, political and civil aspects not only in time (our attitude to the future), but also in space (the relationship between local, regional and global issues), and also considers various options for solving environmental problems. Environmental education is designed to promote the active participation of people in environmental protection measures and changes in their lifestyles and values in accordance with the interests of the sustainable development of human civilization.

The implementation of this interdisciplinary subject includes the study of a large number of academic subjects. The multidimensional nature of the interaction between society and nature determines the complexity of environmental education.

Environmental education contributes to:

- establishing interconnections: humanity is the environment, within ecosystems in particular, and the biosphere as a whole,
- identifying the effects of human activities on the environment;
- understanding the relationship between local and global problems of the modern world and the responsibility of each person in the field of environmental protection;
- assessment of the objectivity and relevance of information on environmental issues;
- motivating direct participation in addressing issues related to environmental protection.

In the «Fundamentals of the state policy in the field of environmental development of the Russian Federation for the period until 2030" D.A. Medvedev set a number of specific tasks related to the development of environmental education and awareness, including (as cited in Bychkova, 2019, p. 107):

- ensuring the focus of the process of education and training in educational institutions on the formation of environmentally responsible behavior, including through the inclusion in federal state educational standards of the relevant requirements for the formation of the foundations of environmental literacy among students;

- development of a system of training and advanced training in the field of environmental protection and ensuring the environmental safety of heads of organizations and professionals responsible for making decisions in economic and other activities that have or may have a negative impact on the environment;
- inclusion of the issues of the formation of ecological culture, environmental education and upbringing in state, federal and regional programs.

The state policy in the field of environmental education in the interests of sustainable development should be implemented at the federal, regional and local levels, affecting all parts of the educational system (preschool, school, secondary vocational, higher, etc).

However, it should be noted that in responding to the demands of modern society and a mixed economy, education in Russia is in the process of deep reform, a gradual transition to an innovative development path. Today, approaches to teaching methods are changing. The rapidly developing modern educational technologies require new forms and methods in teaching and organizing the educational process both inside and outside the schools.

In accordance with the «Strategy of Social and Economic Development of Samara Region for the Period up to 2030», the Resolution of the Government of Samara Region dated July 12, 2017, the Regional Ministry of Natural Resources and Environmental Protection developed the Concept of Effective and High-Quality Environmental Management and Protection of the Region (Semenov & Solovyova, 2014, p. 111). The document defines in a separate block the provisions of environmental education, education and awareness of the population based on the formation of a system of continuous environmental education and raising the level of environmental culture.

Samara region is a highly urbanized region. Most citizens of Samara region live in urban areas (83.4% of the region's population). On the territory of Samara region there is a unique dual-core Samara-Togliatti Statistical Area, in which more than 85% of the region's population lives. About 60% of the residents of the region are citizens of working age. The average age of citizens is 40.3 years. About 15% of them are young people (age younger than able-bodied).

With regret, we are compelled to note the fact that the proportion of young people is declining, which is connected both with the demographic processes in the whole country and with the natural migration movements of the population.

However, in Samara region there still exists a high educational potential, which is the most important factor determining the competitiveness of the region. According to the education index (a component of the human development index) the region ranks 9th in Russia.

The second largest city in the Samara region is the city of Togliatti, which is one of the major industrial centers of the country with a population of over 700,000 people. The city developed as a large industrial center, the so-called single-industry city, and therefore little attention was paid to issues of sustainable development, environmental safety, environmental education and awareness. Currently, the city requires environmental specialists. Today, higher educational institutions of the city of Togliatti and Samara region as a whole prepare specialists in the field of technical sciences and humanities, management, and service. Unfortunately, none of the educational institutions in Togliatti trains specialists in the field of biology. This is happening against the background of a reduction in the volume of teaching biological disciplines in high school.

The lack of lessons in ecology in schools also does not contribute to the formation of skills of environmental culture and education; does not encourage receiving secondary specialized and higher education in the field of ecology and environmental protection. Those students who nevertheless chose a profession related to ecology, environmental protection and life safety, face the problem of lack of places of practice and obtaining relevant competencies, skills and abilities. Moreover, the educational programs of universities and colleges do not allot hours at all to engage in innovative projects and basic research.

In this regard, the creation of a research and educational environmental center, which would unite under its own beginnings a number of institutions and structures of environmental profile (the public organization «Environmental Academy», Environmental Museum, Arboretum, Institute of Ecology of the Volga river Basin of RAS and UNESCO Chair "Study and Conservation of Biodiversity of the Volga River Basin). In such an environmental center (hereinafter - the Center), students and schoolchildren will be able to obtain the relevant skills and abilities of research and project activities, system description of the processes of social, economic, and ecological development of ecosystems different in their genesis (man-made and natural), natural-territorial complexes, to get acquainted with international experience in the field of environmental education, culture and education.

The most important link in the creation of the Center and the development of environmental education in Togliatti are the Arboretum and the Environmental Museum located at the IEVRB RAS.

Arboretums are objects of particular cultural and historical value and constitute the national treasure of Russia. Arboretum of IEVRB RAS (S = 4 hectares) was founded in 1964 and is the only institution of its kind in the city. In 2004 it became a member of the Council of Botanical Gardens of the Urals and the Volga Region. It is a conservation and educational center, which tasks include the creation of special plant collections in order to preserve the diversity and enrichment of flora, as well as the implementation of scientific, educational and outreach activities. It organizes botanical exposition, herbaria, expeditions to study and mobilization of plant resources and replenishment of collection of funds created by banks of seeds, exchange seeds and living plants, scientific conferences and meetings, and so forth. There are 537 plant species, including 218 exotic species and 36 species listed in the regional Red Data Books and 8 - in the Red Book of the Russian Federation. On the territory of the Arboretum grow 161 species and 11 forms and varieties of trees and shrubs and 81 species of ornamental plants. Arboretum is a base for training and university practices of Togliatti State University and the Volga University named after V.N. Tatishchev, as well as a center of excellence for biology teachers in Togliatti and Samara Region. Every year it is visited by more than 1000 tourists (the residents of Samara region and visitors from other regions and from abroad) of different age groups and with different basic training and environmental knowledge (Semenov & Solovyova, 2014).

The IEVRB RAS with the participation of UNESCO Chair members maintain the work of Environmental Museum - the only one in the Middle Volga Integrated Research and Education Center, which includes not only various collections (paleontological, zoological, botanical and others), and permanent exhibitions, but also open-air and live expositions. In the Environmental Museum take place meetings, round-table discussions, conferences and exhibitions. We have permanent exhibitions, themed exhibitions, guided tours for schoolchildren of secondary schools, lyceums, gymnasiums, college students,

higher education institutions and other organizations. Museum initiates urban competitions and exhibitions. Annually, there are more than 200 excursions, exhibitions; the museum is visited by about 2,000 people.

One of the most important goals of sustainable development is the following: «Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all». We would like to add - environmental education, since it would be more in line with the five main objectives of education for sustainable development (ESD), adopted at the 171st session of the Executive Board of UNESCO (Paris [France], 11 April 2005). UNESCO Chair «Study and Conservation of Biodiversity of the Volga River Basin» at the Institute of Ecology of the Volga River Basin of Russian Academy of Sciences (IEVRB RAS) founded in 2012, implement these objectives in full.

For the time the members of the UNESCO Chair «Study and Conservation of Biodiversity of the Volga River Basin» carried out 15 scientific events: - both International and All-Russian conferences, including 2 International Youth Scientific Conferences «Actual Problems of Ecology of the Volga River Basin». There were published 22 monographs and collections of works. Members of the Chair defended 4 theses (1 doctoral and 3 candidate) directly connected with the goals of the Chair. We publish a scientific journal «Phytodiversity of Eastern Europe».

The UNESCO Chair «Study and Conservation of Biodiversity of the Volga River Basin» are involved in the creation of the «Research and educational environmental center» on the basis of the Institute of Ecology of Volga River Basin of Russian Academy of Sciences (IEVRB RAS) and Togliatti scientific public organization "Environmental Academy". The project was supported by the Russian Humanitarian Scientific Fund (project № 16- 16-63003 "Innovative features of environmental education for sustainable development on the example of Samara region) (Bychkova, 2019, p. 107).

In order to improve the education of employees in the field of nature conservation G.S. Rozenberg, S.V. Saksonov and Ju.K. Roshhevskij developed the following training programs: 1. «Fundamentals of management of recreational activities on valuable natural areas»; 2. «Basics of management of ecosystems and landscapes of natural areas»; 3. «Fundamentals of stabilizing control of valuable natural areas».

Chair members developed the educational program «Basics of tourism and regional studies on the study of the native land» in order to improve ecological competence of schoolchildren and students.

Members of the UNESCO Chair held seminars (2012 - 2018) with the participation of biology and geography teachers of the secondary educational institutions in the city of Togliatti. There was held a seminar (2013) on the topic of «Management of Protected Areas» to the employees of state nature reserves and national parks in the Middle Volga region. On the basis of Arboretum and Environmental museum of IEVRB RAS the Chair members regularly host exhibitions, tours, lectures, seminars, conferences, introduction to the scientific and research activities of school children of Togliatti and Samara region, students of colleges and universities, as well as general public. During the period from 2012 to 2018 in the Environmental Museum and Arboretum of the Institute of Ecology of the Volga basin there were conducted more than 260 trips covering more than 3.5 thousand people for students, residents and guests of Togliatti. One should mention that UNESCO Chair at IEVRB RAS is a base for training and university practice for students (Hume & Barry, 2015).

Annually (2012-2018) members of the UNESCO Chair hold public lectures on the issue of preserving the natural environment and biodiversity for the citizens of Togliatti. Also annually in the media

we cover the issues of environmental education and safety of Samara region, environmental education and issues related to the safeguard of biological and landscape diversity (5-7 events on television, 3-5 performances on radio and 3-7 newspaper materials). This allows both young and older to have an idea about the environmental situation in the region, the possibility of getting some knowledge about nature, flora and fauna of Samara Region and the Volga region.

Chair members regularly organize and conduct ecological and local lore expeditions, involving schoolchildren and students of Togliatti and Samara Region.

Chair members carry out consultations with specialists, students, pupils, teachers and amateur gardeners. They developed the layout of the new information and analytical edition of the magazine «The Big Volga»; held a study to clarify the boundaries of the Mid-Volga complex biosphere reserve, established by UNESCO in 2006; held two (2012, 2013) expedition conferences to study the vegetation of the Middle Volga. We annually hold the city competition of children's creativity «Save the nature together»; which involves not only schoolchildren, but also kids of pre-school institutions. The submitted drawings show an interest in children of all ages to the nature of the native land and concern for its conservation. In this contest all the drawings are drawings of the winners! (Semenov & Solovyova, 2014)

Members of the UNESCO Chair «Study and Conservation of Biodiversity of the Volga River Basin» at the Institute of Ecology of the Volga River Basin of Russian Academy of Sciences (IEVRB RAS) illustrate one of the most important objectives of sustainable development «Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all» (Semenov & Solovyova, 2014). This allows starting environmental education in preschools and continuing it throughout ones lives, to have access to all available information on the ecology, to acquire knowledge and practical skills to implement them.

When founding a research and educational environmental center, the following tasks will be solved:

- the formation and development of environmental knowledge;
- the development of special knowledge and skills through the introduction of research activities in the field of ecology, the acquisition of skills of project activities, participation in scientific research expeditions, seminars and conferences;
 - improvement of career guidance and quality of education in environmental specialties;
 - organizing and conducting training and workshops with the teaching staff Samara region;
 - preparation, publication and distribution of textbooks, methodical recommendations, popular science brochures in the field of environmental education and awareness;
 - holding regional environmental conferences and press conferences on topical issues of environmental safety;
 - replenishment of a collection of rare and unique plants of the arboretum, as well as collections typical of the Middle Volga region;
 - conducting scientific, local history and research expeditions with the involvement of schoolchildren and students in order to obtain new ecological knowledge about the nature of the region;
 - implementation of excursions in order to know the vegetation cover;

- preservation of the existing living collection of trees, shrubs and herbaceous plants, its replenishment using ex situ methods from the territory of the region of rare and endangered plants and the acquisition of exotic species;

- maintenance and replenishment of the herbarium in the Arboretum;

- the creation of new stationary expositions in the Environmental Museum that meet the current level of environmental education;

- holding of thematic exhibitions and excursions, as well as competitions and quizzes on the topic of biodiversity conservation and the basics of sustainable development;

- development of environmental education in the region, improvement of environmental culture and education of students in schools, colleges and universities;

- implementation of innovative opportunities for environmental education in the interests of sustainable development of the region.

The Center plans in the future to remain public organization that contributes to the study and preservation of ecosystems, biodiversity, sustainable development and lifelong environmental education in Samara region and the Volga basin.

7. Conclusion

The educational and social effect of the Center will be to develop environmental education in the region, improve environmental culture and educate students in schools, colleges and universities, improve career guidance and the quality of education in environmental specialties. Students and schoolchildren of Togliatti and Samara region will have the opportunity to get acquainted with nature through the methods of contact interaction with living organisms, join the research activities in the field of ecology, get the skills of project activities, can participate in scientific, local history and research expeditions, seminars and conferences. The creation of a research and educational environmental center aimed at the realization of innovative possibilities of environmental education is undoubtedly a factor in the sustainable development of Samara region.

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