

Article

Environmental Education for Sustainable Development in Russia

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Abstract: The article is devoted to one of the crucial aspects of sustainable development, with the example of analyzing the possibilities for the development of environmental education in the Russian Federation. The article analyzes the possibilities of the current Russian Federal State Educational Standard for general and higher education in implementing the ideas of education in the interests of sustainable development. The methodological principles and philosophical foundations of environmental education are considered to designate the worldview guideline of ecological thinking. The tasks of the state educational policy of the Russian Federation in the field of environmental education and the implementation of the concept of sustainable development are considered. The article describes the representation of the concept of sustainable development in the state policy of the Russian Federation, in the field of environmental education in the requirements of the Federal State Educational Standard for various subject areas and training courses related to the topic of environmental development in school and university education. The strategic goal of environmental education in Russia is the formation and development of an environmental outlook among students of all ages, which is based on scientific knowledge, environmental culture, and ethics. The continuity, basic principles, and trends of the implementation of environmental education in the Russian Federation are shown.

Keywords: environmental education; sustainability; education for sustainable development; Russian Federation; Federal State Educational Standard; school education; university education; interactive learning

1. Introduction

For the international scientific community, the conditions for the transition of a society to the regime of sustainable development are economical and technical achievements, as well as advanced education in its new global vector, namely, education for sustainable development. Discussion of the sustainable development concept and education issues were reflected in the Millennium Development Goals “The Future We Want”, adopted at the UN Conference on Sustainable Development “Rio + 20”

(2012), as well as in the Agenda for Sustainable Development for the period until 2030, adopted at the 70th Anniversary UN General Assembly (2015).

UNESCO documents [1–3] emphasize that education for sustainable development is a mandatory direction of the citizen education of each country throughout life. At present, the most crucial task of states is to improve the ecological culture of the population, educational level and professional skills and knowledge in the field of ecology. Environmental education is a platform for sustainable development [4,5].

Sustainable development is a concept that includes finding ways to meet the needs of living people that do not deprive future generations of the opportunity to live and meet their needs. Such thinking presupposes the priority of environmental imperatives in life and production, alignment of people's lifestyle with the ecological capabilities of the region and the productive potential of the ecosystem. Certain restrictions in the exploitation of natural resources are associated with the ability of the biosphere to cope with the consequences of human activity.

L. Sauvé notes that the concept of sustainable development implies environmental education to promote development models [6]. The need for environmental education for sustainable development is due to the challenges to human survival and prosperity arising from the scarcity and lack of necessary natural resources, the deterioration of the ecological state of the environment, climate change [7,8]. Humanity is a part of the biosphere, which is common for everyone, and any changes in the biosphere lead to changes in the immediate environment of a person. Therefore, the ideas of the relationship of all living beings are of particular importance in modern education for sustainable development [9,10]. However, it is one thing to gain knowledge and another thing to act following this knowledge. We claim that ecological education presupposes the purposeful pedagogical influence of the teacher on the formation of the foundations of ecological culture in children and adults. Ecological culture consists of understanding the specifics of living things, interest in natural phenomena, the desire to preserve it, and emotional response to the manifestations of nature and its beauty. Today, environmental education in world practice is a purposeful, systematic pedagogical activity, the purpose of which is the development of environmental education and environmental culture of children and adults [11,12]. Environmental education gives a person environmental knowledge, skills, and abilities to work in nature. Moreover, environmental education helps to awaken in people high moral and aesthetic feelings, highly moral personal qualities, and a strong will in the implementation of environmental work [12].

Representatives of the North American Association for Environmental Education [13] believe that environmental education should enable people to understand and respond to environmental processes. Therefore, people should possess environmental and socio-political knowledge, which implies an understanding of the political, cultural, and social aspects of the environment, an understanding of environmental problems, and the presence of cognitive skills. In other words, environmental education is the foundation for realizing people's ability to analyze, synthesize, and evaluate facts and data. On this basis, it is possible to form the environmentally responsible behavior of people.

The importance of environmental education is confirmed by the fact that the implementation of national education strategies for sustainable development is coordinated at the state level. Most European countries have national strategies for education for sustainable development. In connection with the concept of sustainable development, it became necessary to create a useful model of environmental education in order to achieve the goals of environmental education within the framework of state policy. One of the first attempts to develop such a model was made in Europe in the 1970s [14]. In 1974, the Council of Schools of Great Britain proposed a model of environmental education, which includes three components: education about the environment, for the environment, and through the environment [15]. A.M. Lukas believed that environmental education is a holistic education in which understanding the environment presupposes the inclusion of students in it, which was a new direction in the understanding of the educational process [15]. In subsequent years, scientists have paid significant attention to the development of various models of environmental education,

which emphasize the cognitive, normative, and activity personality traits [16,17]. J. Palmer [18] was the first to point out that for the development of environmental education it is necessary to use not a static, but a dynamic version of the model, which considers the individual characteristics and personal experience of students. According to J. Palmer [18,19], the educational model should consist of two subsystems and include formal and nonformal education. Both subsystems include components of teaching knowledge about the environment, which contribute to the preservation of the environment and in which the student has direct contact with the environment.

Social actions and personal behavior are significant tasks of educating an environmentally responsible citizen. They correlate with environmental values for sustainable development. Researchers [20,21] justly noted that a citizen could predict the consequences of people behavior and personally interested in solving environmental problems. The basis for such action is possessing fundamental knowledge, knowledge of the experience of using the strategy for environmental protection.

The concept of ecological behavior is at the heart of the “onion model”, which is focused on revealing cultural meanings through emotions and attachments [22,23]. The “onion model” is based on an individual with pre-existing experience, which cannot be divided into physical and spiritual components, because human beings see the essence of the problem, not the physical shell. The “house model” of environmental education is based on the idea that the development of feelings and emotions is critical in environmental education [24]. These models raise the question of increasing the level of susceptibility to environmental problems, environmental awareness, and responsibility in solving environmental problems.

One of the clearest trends in the development of the concept of sustainable development are examples of studying the practice of implementing environmental education in different countries. W. Scott and P. Vare studied environmental education in schools in England in terms of 21st century challenges. W. Scott and P. Vare suggested that environmental education seeks to develop an understanding of the relationship between human culture and life support system and emphasizes the environment through social action and personal behavior [20]. A. Paredes Chi and Viga de Alva [25] presented a study of the Mexican environmental education program. There are many studies on the implementation of environmental education in Germany and the USA [26], the development of environmental education in India [27], environmental problems and ways to solve them through education in Bangladesh [28], environmental culture and education in Romania [12], trends development of environmental education in Sweden [29], environmental education in Bulgaria [30], trends in the development of environmental culture and environmental education in Russia [31–33], and other countries.

Existing research focuses on specific areas of implementation of environmental education in Russia. It is necessary to understand the current situation and further prospects for the development of environmental education from a holistic view. The result of scientific discussion of the Scientific Council on the problems of environmental education under the Presidium of the Russian Academy of Education was a recommendation for teachers to rely on the content of general environmental education to promote ideas of sustainable development. The basis of this recommendation is the fact that in the Russian Federation already in the 1990s of the twentieth century, environmental education included the ecology of natural systems, elements of social ecology, human ecology, and the foundations of global studies.

The Scientific Council on Environmental Education under Presidium of the Russian Academy of Education proposed using the term “environmental education for sustainable development”. In subsequent years, the content of this concept was developed and consolidated in the concept of general environmental education for sustainable development, approved by the Presidium of the Russian Academy of Education in 2010 [34]. According to the concept, sustainability is fundamental to the development of natural science and socio-humanitarian education. Since it should be aimed at the formation of global scientific ecosystem thinking of people whose activities in the professional and

everyday spheres are consistent with the ecological imperative and the values of the moral imperative. The value component is considered as a pivot for the development of ecological economics, ecology of culture, ecological sociology, and other sciences.

The current state of environmental education in Russia cannot be characterized as satisfactory; it does not fully meet the realities of the acuteness of environmental problems existing in Russia. Projects such as the “National Education Strategy for Sustainable Development in the Russian Federation” and “Action Plan for the Formation and Development of Education for Sustainable Development in the Russian Federation” have been implemented. However, there are problems in the formation of environmental education for sustainable development in society and the dissemination of environmental innovations in education for sustainable development.

Today, the subject of research of lawmakers, teachers, philosophers, sociologists, and economists is the development of a methodology and theory for the implementation of the sustainable development and the spread of environmental education in Russia. Despite the successes of the theoretical and practical works contributing to sustainable development advancement, there are many problems in its implementation. The spread of environmental education in Russia is a complex, contradictory process. The contradiction in the embodiment of environmental education is associated with organizational, administrative, and political difficulties and with a superficial understanding of the importance of environmental values in Russian society. Often, economic interests remain a priority for business and production representatives compared to environmental needs. There is a need to raise awareness of the general population about the state of the natural environment, the formation and development of environmental culture. This fact means that in current conditions, primary social institutions must develop and improve in order to form the level of environmental literacy of the population necessary for the transition to a co-evolutionary (sustainable) path of development. On this basis, the analysis of the modern system of Russian environmental education and the compliance of State Educational Standards with the ideas of environmental education for sustainable development is relevant. This analysis allows for identifying its strengths and weaknesses and how it meets the challenges of our time.

The article aimed to analyze the current Russian Federal State Educational Standard for general and higher education for the implementation of the ideas of education in the interests of sustainable development.

The results of this study make it possible to identify the compliance of the requirements of the Federal State Educational Standard of the Russian Federation to different subject areas and training courses related to the topic of environmental development in school and university education. This study has the following structure. Section 2 presents the basic theoretical principles and research methods. Section 3 shows the results of this study. Section 4.1 provides an overview of the main legislative principles of the laws of the Russian Federation governing the field of environmental education. Section 4.2 presents the ideas and principles of a multilevel approach to the implementation of environmental education in the interests of sustainable development. The multilevel approach allows organizing a system of continuous environmental education in the Russian Federation. The analysis of the level of education implementation and the formation of personality skills necessary for a sustainable lifestyle is carried out. Section 4.3 presents a summary of the Federal State Educational Standard for different school levels in the implementation of subject areas related to education for sustainable development. Analysis of the features of the reflection of environmental issues in the Federal educational standard and the characteristics of its practical implementation at the levels of primary and secondary schools allows identifying the tasks of environmental education of children at the school level. This section contains a review of environmental issues in the Federal educational standard and the characteristics of its practical implementation at the levels of primary and secondary schools. This analysis allows for identifying the tasks of environmental education of children at the school level. This section discusses the introduction of courses on urban ecology and sustainable development as one of the trends in the development of environmental education in schools in different Russian cities. Section 4.4 is devoted to the activities of environmental organizations in the education of

schoolchildren; great attention is paid to interactive environmental lessons for schoolchildren, offered by environmental organizations. Section 4.5 discusses the main problematic issues of environmental education in Russian universities and options for their solution in connection with the concept of sustainable development.

2. Methods

The article is devoted to the study of one of the crucial aspects of sustainable development, namely, the state of environmental education and its development in the Russian Federation.

The methods of research are a theoretical analysis of philosophical, sociological, pedagogical, and psychological literature, regulatory and legislative documents of the Russian Federation, analysis of monographic works and articles reflecting the results of theoretical and practical studies of environmental education in different countries. Literary reviews were used in this research to study international and Russian theory and practice of implementing the principles of sustainable development and environmental education for sustainable development. Literature reviews were conducted in three main directions: (1) research in the field of theory and practice of education for sustainable development, (2) the current Federal State Educational Standards of general and higher education for the implementation of the ideas of education for sustainable development [35], (3) representation ideas of environmental education in the state educational policy of the Russian Federation [36,37], and Federal Laws in the field of education [38,39].

The search for a legislative framework, federal educational standards, and educational practices reflect current Russian trends in the field of sustainable development. A search on the Internet and analysis of documents was carried out in the period from January to June 2020. Thus information on the representation of environmental education issues in Russia is relevant.

The analysis of environmental education in Russia follows five basic principles:

- the principle of continuity reflects the continuity of all stages of environmental education, as well as the relationship of educational institutions with public and state structures related to environmental problems; every person is involved in the field of environmental education throughout life;
- the principle of progressiveness reflects the developing nature of the educational process at all stages of the educational process;
- the principle of planning, following which the planning principle is included in the continuously developing educational process based on the creation of an environmental education system as an integral whole;
- the principle of integration presupposes the flexibility of the structure of lifelong education, presupposes the distribution of general and particular educational tasks between different stages of the educational process;
- the principle of continuity indicates the use of the learning outcomes of previous levels at subsequent levels of education, the sequence of studying individual disciplines, sections, and topics of an environmental nature.

Continuity and internal consistency of the content of environmental education at all its levels and in all its links are provided by the developing nature of training and education, the support of the idea of the creative activity of the individual [40,41], the unity and co-evolution of nature, people, and society [42,43], the inseparable connection of the spiritual life of man with nature [44,45], the unity of being and consciousness [45–47], the developmental nature of training, based on the idea of the creative activity of the individual [48–50], that the technologies and methods used in the educational environment are factors of the personal and professional self-determination of students [51–53], the dynamic development of science and rationality [54–56], the responsibility of man for the preservation of the environment before future generations, expressed in the awareness of nature

as a universal human value, respect for it, reasonable consumption, participation in environmental protection [7,19,57].

We proceed from the concept of human ecological education as a complex biosocial and socio-historical phenomenon in various aspects of manifestation:

- as a characteristic of human activity;
- as a social manifestation of certain personality traits in specific historical conditions;
- as a subject of formation and development using educational technologies and methods.

The place of environmental education in the formation of a person's worldview of the 21st century is changing dramatically. The environmental imperative is gaining momentum. Problems of human ecology become problems of human existence since these are questions of the possibility of the very existence of humanity. Education for sustainable development forms a culture of sustainable development in society, based on the moral imperatives of the new humanism, stemming from the essence of the imperatives of the objective laws of interaction between society and nature, social, and biological spheres. Education for sustainable development is designed to solve the modern ideological problem of overcoming the opposition of culture to the laws of nature. In the modern Russian educational tradition of teaching the course "Social Studies", culture is presented as second nature, a reality that a people creates, according to their standards, guided by the idea or motive of human realization [58,59]. Thus, the idea of the German philosopher F.W.J. Schelling, who called the world in which we live, "second nature", is realized.

Russian education is based on a holistic approach to the relation of people and society, which is expressed in the postulation and disclosure of the essence of people as having biological and social principles. When presenting various concepts of culture, it is essential for sustainable development that in the course "Social Studies" culture is presented as a way of accumulating social experience to ensure the adaptation of society to socio-natural living conditions. Therefore, the task of education for sustainable development and the Federal State Educational Standard of School Education in the Russian Federation implies a single task of purposeful formation of culture as a way to harmonize human needs with the capabilities of nature without the threat of destroying the ecological quality of the environment. Therefore, pedagogical technologies should be based on the following educational principles: fundamentality, comprehensiveness, interdisciplinarity, continuity, and humanity.

The data and theories of modern science have an impact on the content of the courses taught at school and university. The objects of the study of modern science are historically developing systems, the direct component of which is the person. Examples of these systems are environmental objects, including the biosphere (global ecology), biomedical and biotechnological (genetic engineering) objects, people-machine systems, Earth as a system of interaction of geological, biological, and technogenic processes, the universe as a system of interaction between the micro-, macro- and mega world.

In this regard, the concept of "co-evolution" is relevant for the development of the content component of educational courses. This concept is universal, as it refers to both material and ideal, spiritual systems. Co-evolution assumes the unity of natural and social processes. Co-evolution is associated with the concept of "self-organization". However, self-organization characterizes the study of the structures and states of the system. Co-evolution describes the relations between developing systems, correlations of evolutionary changes, the connections between which are conjugated, mutually adapted.

Modern science postulates the transformation of the relationship between people and nature. The person who carries out cognition becomes the main participant in the ongoing events. That is, people are not an external observer, whose existence is indifferent to the reality they are studying. On the contrary, each time they modify the field of possible states of the system with its influence. Thus, I. Prigogine and I. Stengers draw attention to the fact that the experimental dialogue with nature opened by modern science implies active intervention, not passive observation [43]. Already at the stage of development of science at the beginning of the twentieth century, it became evident that "the stamp of subjectivity lies on the fundamental laws of physics" (A. Eddington). Consequently, an

objective explanation and description of such systems presuppose the inclusion of assessments of a socio-social, ethical nature. The ideal of value-neutral research turns out to be unacceptable in the study of complex systems involving humans.

In this cognitive model, a different initial frame of reference is set for considering natural reality. The principle of organic integrity concerning the whole of nature and its various subsystems becomes central. The approach to nature as an integral living organism is characteristic of Eastern philosophy. In the Western tradition, the explanation of nature as a whole based on the principle of expediency underlying a living organism allowed F.W.J. Schelling and G.V.F. Hegel to designate an ascending hierarchy of empirical forms observed in nature, from inorganic nature to organic and further to individuals. In the Russian tradition of environmental education, ideas about the relationship between people and nature are presented in the works of such Russian scientists as M.I. Lomonosov, V.V. Dokuchaev, V.I. Vernadsky, D.S. Likhachev, L.N. Gumilev, and N.N. Moiseev.

The philosophical principles of the concept of sustainable development are universal. They are also focused on cognition and assertion of values as forms of reconciliation of human thought with the existence of nature. The concept of sustainable development is value-oriented, and the content of the taught courses should be value-oriented [15,16]. On this basis, such concepts of environmental education have methodological significance in this study:

- a cognitive component that includes environmental knowledge and skills that can help to understand and preserve the environment;
- a value component, which includes, as a basic understanding of people, the value of nature as a universal value;
- a normative component, which includes mastering the norms of behavior in the natural environment;
- an activity component, which includes the development of particular models of behavior and a positive attitude towards the environment.

3. Results

The results of the study show that modern Russian education at all levels is aimed at forming in students a set of ideas about the relationships in the “people–nature” system and the corresponding technologies and strategies for interacting with it, i.e., the formation of environmental awareness.

The state policy of the Russian Federation in the field of the environmental education system within the framework of sustainable development of different regions of the Russian Federation is based on the following principles:

- the Analytical Center for the Government of the Russian Federation [37];
- the continuity of the educational process;
- integration of various levels of education;
- practice orientation and project orientation of the educational process;
- active social interaction of nature conservation organizations and schools;
- broad informational and stimulating support for environmental education.

The principles of multilevel and continuity of environmental education are associated with a certain specific content of environmental education, its focus and objectives at each stage of education, taking into account the subject features. However, the system of continuous environmental education, upbringing and enlightenment in the Russian Federation has not yet been finally formed, and it is developing. The vector of development of environmental education in Russia is set by international, national, and regional environmental and natural resource characteristics in the context of the country’s modernization.

Despite all the problems of social, economic, and managerial nature that teachers face, education for sustainable development is being implemented at all levels of education. At the school level of

education, it is provided for in the documents of the Federal State Educational Standard, although it is not called that. So, the problems of interaction between society and nature are considered in many basic school courses:

- in chemistry, physics, technology, issues of environmentally friendly technologies are discussed;
- issues of human ecology are taught in biology, geography, protection, and safety of life;
- in economic geography and social studies, issues of an environmentally friendly economy and the global structure of consumption are taught;
- in the literature, a value attitude towards nature, the comprehension of moral values is formed.

It can be argued that the issues of greening all spheres of society and the problems of sustainable development are manifested in the content of various training courses. In recent years, one of the essential instructions of the Government of the Russian Federation is the development of “methodological, software and educational and methodological support for the implementation of the environmental component of Federal State Educational Standards for primary, basic and secondary (complete) general education on theoretical based on the Concept of General Environmental Education” (paragraph 72, Action Plan for the implementation of the Fundamentals of State Policy in the Field of Environmental Development of Russia until 2030) [60]. This instruction was formed in connection with the need to implement the concept of sustainable development in Russia, which requires young people with professional and general cultural training in the implementation of state tasks in the field of an economy that is environmentally safe, socially oriented, and competitive.

Education for sustainable development is a social institution necessary for the sustainable development of society. According to the UN Incheon Declaration (2015), lifelong learning, high-quality education, inclusion, gender equality, and other conditions for a dignified life of people should be guaranteed for all [61]. In Russia, these requirements are feasible and are fulfilled in connection with the universal compulsory education of school-age children proclaimed at the beginning of the twentieth century.

The modern Federal State Educational Standard of School Education does not contradict the theses of the UN Incheon Declaration, but the topic of their implementation requires many explanations. The Russian Federation also adopted the 2005 UNECE Strategy (Vilnius). According to the UNECE Strategy, obligatory education for sustainable development should include 19 topics of discussion: poverty reduction, citizenship, peace, ethics, responsibility in a local and global context, democracy and governance, justice, security, human rights, health, gender equality, cultural diversity, development rural and urban areas, economics, production and consumption patterns, corporate responsibility, environmental protection, natural resource management, biological and landscape diversity. These topics are reflected in the content of different subject areas of disciplines that are included in general education in Russia.

Summing up the results of the World Decade for ESD (2005–2014) led to the designation of the topics that have become priorities in the implementation of the concept of sustainable development. These topics are present in the content of Russian school education:

- the topic of climate change, identified in Article 6 of the Framework Convention on Climate Change, UN FCCC (1992) [62];
- the topic of biodiversity identified in Article 13 of the Convention on Biological Diversity (1992, 2020) [63];
- the topic of disaster risk reduction in Hyogo Framework for Action 2005-2015 (2005) [64];
- sustainable consumption and production patterns (Program on sustainable lifestyles and education within the framework of ten-year programs on sustainable production and consumption) [65];
- the rights of the child (Articles 24, paragraphs 2, 28 and 29 of The UN Convention on the Rights of the Child) [66].

UNESCO documents [1–3] argue that an individual should possess a set of skills necessary for a sustainable lifestyle and be ready to act in the interests of sustainable development based on self-determination as a citizen of the planet, i.e., with global citizenship.

The first group of skills necessary for a sustainable lifestyle is the ability to learn, the ability to act, the ability to be (self-determination), the ability to work in a team, the ability to develop oneself and the world. The Federal State Educational Standard of the Russian Federation includes the requirement for schoolchildren to acquire such skills, which is reflected in the list of universal educational actions at all levels of implementation: primary general education (4 years, 1–4 years of schooling), primary general education (5 years, 5–9 years of schooling), secondary general education (2 years, 10–11 years of schooling).

The second group of skills necessary for a sustainable lifestyle includes the ability to identify relationships in the world around them and any human activity:

- social, economic, environmental aspects;
- past, present, and future;
- global, regional, local, and personal;
- citizenship, human rights, and responsibility;
- needs and opportunities to satisfy them;
- cultural, social, and biological diversity;
- quality of life, equality, and social justice.

From a pedagogical point of view, the formation of such skills does not occur spontaneously. The acquisition of such skills requires the construction of unique intersubject and transdisciplinary educational content. Only an integrated form of teaching and activity can lead to the formation of these skills in schoolchildren.

Integrated forms of education are present in school and university education, which make it possible to form the ecosystem thinking of a new personality. Education for sustainable development includes a set of topics and contains a new quality of educational content aimed at the formation of new thinking. The Russian system of education and culture of the population is developing a version of its content, structure and forms of implementation, which correlates with national cultural and educational traditions. In the “Report on Human Development in the Russian Federation” [37] (p. 244) it is noted that culture becomes a benchmark for the development of environmental education, where the decisive role is associated with the national traditions of specific territories. In many constituent entities of the Russian Federation, specialized institutions are being created: environmental colleges (Stavropol), gymnasiums (Voronezh, Volgograd), lyceums (Barnaul, Ekaterinburg, Chelyabinsk, Moscow), specialized schools (Belgorod, Ekaterinburg, St. Petersburg, Chelyabinsk) and specialized classes in educational institutions (Kaluga, Moscow, Perm, and Tambov regions).

An analysis of the current Russian Federal State Educational Standard of General and Higher Education for the implementation of the Ideas of Education for Sustainable Development has identified the problematic aspects and strengths of the existing educational system. The concept of sustainable development is linking the subjects of study into a single system. In Russia, the mixed model of environmental education involves strengthening the environmental component in all academic disciplines on a broad interdisciplinary basis, as well as the introduction of a separate integrated environmental course that plays a coordinating role.

The formation of the environmental culture of the population requires an integrated content and metasubject, new educational technologies of environmental education, which is reflected in the existing Federal standard of school education. However, only in high school (the standard of secondary complete general education) is it possible to study ecology as an independent subject (basic level). This fact makes the formation of the ecological worldview of children and youth problematic.

Nonprofit organizations offer their materials for additional classes in the school on environmental topics. There are references to examples of interactive lessons offered by environmental organizations

that exist in the Russian educational space. These examples show how the use of interactive methods has a positive impact on the environmental education process.

The modern Federal State Educational Standard of Higher Professional Education is aimed at developing students' specialized competencies in the field of ecology, as well as in the field of environmental protection in specialties and areas of training. In comparison with the previous educational standard, in the current standard, the number of environmental directions has been significantly reduced. In the current standard, the tasks of developing such competencies among university graduates are not entirely unclear. The same remark applies to the problems of sustainable development at the local level and in professional activity. Despite some points in the field of higher education standards that require discussion, the real situation is that higher education programs related to ecology and sustainable development are present in universities and are popular among students. The popularity of these programs is due to the need of the labor market for specialists of a new generation, capable of solving nonstandard and innovative tasks in the context of globalization of environmental problems and the widespread growth of anthropogenic pressure on the territory.

4. Discussion

4.1. The State Policy of the Russian Federation in the Field of Environmental Education

In the Russian Federation, the development of environmental education and sustainable development has been actively discussed since the mid-1990s. At that time, the first steps in the transition to sustainable development were made. In the Russian Federation, many official documents emphasize the need to form a system of continuous environmental education, starting with preschoolers. State policy in the field of environmental education in the interests of sustainable development should be implemented at the federal, regional, and local levels, affect all links of the educational system (preschool, school, secondary vocational, higher, additional).

The supreme law of the Russian Federation is the Constitution of the Russian Federation, its articles, make it possible to judge the attitude of the authorities to global issues of the planet's ecology, about the state's concern for its citizens. Article 7 states: "the policy of the state is aimed at creating conditions that ensure a dignified life and free development of a person." Particularly important for the issues of environmental education are the articles that prescribe the rights and obligations of people; it says: "Everyone has the right to a favorable environment, reliable information about its condition and to compensation for damage caused to its health or property by an environmental offence" (Article 42, Constitution of the Russian Federation), and "Everyone is obliged to protect nature and the environment, to take care of natural resources" (Article 58, Constitution of the Russian Federation).

The basis for the transition to sustainable development was the Decree of the President of the Russian Federation "On the Concept of the Transition of the Russian Federation to Sustainable Development" (April 1996), the Decree of the Government of the Russian Federation "On Measures to Improve the Environmental Education of the Population" (1994), the Decree "On the Environmental Education of Students in Educational Institutions of the Russian Federation" (1994). The draft "National Strategy in the Field of Environmental Education of the Russian Federation" has been developed. In the "Concept of Sustainable Development of Russia" the section "Environmental Education, the Greening of Public Consciousness" is highlighted. In the Russian Federation, the concept of the transition to sustainable development was approved by Presidential Decree No. 440 of April 1, 1996. It emphasizes the importance of shaping the ecological worldview of Russian citizens, primarily children, by all available means.

The Federal Law No. 7-FZ of January 10, 2002 "On Environmental Protection", Article 71, Chapter XIII "Fundamentals of the Formation of Environmental Culture" of the law states that in order to form environmental culture and professional training of specialists, a system of universal and comprehensive environmental education is established. This system includes preschool and general school education, secondary and higher professional education, postgraduate education and professional retraining,

advanced training of specialists. Moreover, the system of comprehensive environmental education includes ways to disseminate environmental knowledge through the media, museums, libraries, cultural institutions, and environmental institutions.

The Law “On Environmental Protection” postulates that teaching the basics of environmental knowledge is carried out in preschool, school general education institutions, and institutions of higher and additional education, regardless of their profile and organizational and legal forms (Article 72, paragraph 1). This law defines the need for general environmental education of the population, in which all levels of Government of the Russian Federation, local self-government bodies, and the media should take part (Article 74).

Since January 2002, at the legislative level, universal compulsory environmental education and education of the younger generation, student youth and environmental education of the entire population of the Russian Federation have been established.

In 2006, the decision of the Parliamentary Hearings of the State Duma of the Russian Federation “On the participation of the Russian Federation in the Implementation of the Strategy of the UN Economic Commission for Europe for Education for Sustainable Development” was published. This decision notes that Russia has favorable prerequisites for the development of a new direction of education for sustainable development, based on existing scientific schools in the field of environmental education.

On 30 April 2012, Dmitry Medvedev approved the Fundamentals of State Policy in the Field of Environmental Development of the Russian Federation for the Period up to 2030. This document identifies the following tasks for the development of environmental education and awareness:

- ensuring that the process of upbringing and training in educational institutions is focused 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 environmental safety of heads of organizations and specialists responsible for decision-making in the implementation of economic and other activities that have or may have a negative impact on the environment;
- inclusion of issues of formation of ecological culture, ecological education, and upbringing in state, federal, and regional programs.

In this regard, the amendments to the Constitution of the Russian Federation in 2020 are necessary to implement the concept of sustainable development. These amendments oblige the government to take measures to preserve the natural wealth and biological diversity of Russia, to reduce the negative impact on the environment. In the Constitution of the Russian Federation, it is proposed to consolidate the need for a responsible attitude towards animals. According to the proposed amendments to Article 114 of the Constitution of the Russian Federation, the Government of the Russian Federation must do the following:

- take measures aimed at creating favorable living conditions for the population, reducing the negative impact of economic and other activities on the environment;
- create conditions for the development of the system of environmental education of citizens, the upbringing of environmental culture.

Environmental education is a priority for education. However, the existing legislative practice of various regions of Russia in the development of the law “On Environmental Education” shows that the definitions of environmental culture are clear, but reflect the social aspect of its implementation. The task of the teacher in the field of ecology is to form personal responsibility for their actions in the younger generation.

4.2. A Multilevel Approach to the Implementation of Environmental Education for Sustainable Development in the Russian Education System

Education for sustainable development presupposes a systematic approach to the development and preservation of life on the planet. Therefore, environmental education is becoming a priority trend in the development of existing educational systems. The education of the present generation for the sake of the future of humanity needs the formation of environmental knowledge, skills, and the development of social and personal qualities of students, necessary for the implementation of the ideas of sustainable development.

The modern Russian education system is characterized by a multilevel approach to the implementation of environmental education in the interests of sustainable development. The system of continuous environmental education in the Russian Federation is included in the existing pedagogical vertical: preschool institutions–school–college(technical school)–university–postgraduate education.

The first stage of purposeful environmental education is preschool education and training. The foundations of a respectful attitude to nature, attention to the world around, love for all living things are laid precisely at the age of 4–6 years. Children with great pleasure perceive the basics of environmental knowledge, especially if the presentation of the material is visual, and allows them to communicate with living things. Environmental education in kindergarten takes place during games, walks, and classes. Educators are also involved in the ecological education of parents.

Even though there is practically no direct reference to ecology in the Federal State Educational Standard of Preschool Education, at the same time, in many preschool education programs there are subsections related to environmental education and upbringing of children. Such programs are “World of Discovery”, “From Birth to School”, and “Origins”. Every year, preschool educational organizations hold ecological holidays, create “ecological passports” for kindergartens, and form the “Green Kindergartens” movement.

In the general secondary school curriculum, special attention should be paid to the organization of students’ research work, during which students learn to set specific tasks for themselves and solve them. In the system of school education, within the framework of academic subjects, starting from the basics of environmental literacy (primary general education: grades 1–4) to the mastery by students of environmental thinking (basic general education: grades 5–9), and ecological culture of behavior in the world around (secondary general education: 10–11 grades). The training is aimed at primarily growing generation’s awareness of the rules of behavior in the world of nature and people. The purpose of training is also children’s understanding of the relationship between natural, social, economic, and political phenomena, their impact on the quality of human life and the quality of the environment. However, only in high school (the standard of secondary complete general education) is it possible to study ecology as an independent subject (basic level) as a subject of choice. This fact is instead a barrier to the formation of the ecological worldview of children and youth. In general, the analysis of domestic environmental education showed that environmental knowledge, realized in the content of academic subjects, is not able to form an environmental culture that requires integrated content and metasubject matter, new educational technologies of environmental education.

The next step in environmental education is teaching ecology in higher educational institutions. Many universities teach the basics of environmental protection, applied and particular ecology. Programs of higher professional education in an environmental direction are open in Russian universities almost everywhere. A maximum of environmental programs is being implemented in Moscow and St. Petersburg.

In the Russian Federation, state support is provided for additional environmental education conducted by children’s environmental organizations; ecological camps, ecological expeditions for children and adolescents, orphanages for creativity, ecological centers, museums, libraries, green circles, and stations for young naturalists.

The Law of the Russian Federation “On Environmental Protection” also states that the heads of organizations and specialists responsible for making decisions in the implementation of economic

and other activities that may hurt the environment must have training in the field of environmental protection and environmental safety. However, until now, the ecological education of the population has not received much distribution. Today, 168 universities in Russia are implementing training programs for specialists in the specialty of ecology and nature management (05.03.06). This specialty has the best result in the ranking of Moscow universities—the first place. In total, in Russia, the specialty “Ecology and Nature Management” is ranked 22nd in the ranking of specialties. The reasons for this circumstance are the lack of awareness of the importance of the formation of an ecologically expanding population, the lack of interests in the priority development of environmental education, as well as regulatory legal and program documents disclosing the state policy in the field of environmental education.

4.3. Environmental Education at School and the Federal State Educational Standard of the Russian Federation

The Federal State Educational Standard of the Russian Federation contains many requirements for the results of mastering the basic educational programs of primary, basic, and secondary education in terms of the implementation of vectors for the education for sustainable development [35]. At the moment, the current standard was adopted in 2009. The previous 2004 standard was not person-centered, but subject-centered, so this standard is outdated. The “second generation” standard (2009) is focused on the development of universal educational skills of students, that is, the ability to obtain information using technology and communication with people independently. Therefore, much attention is paid to the project and extracurricular activities of the student for personal development. However, this time is transitional for the entry into the “third generation standard”, which is planned for 2021.

In the educational standard of the first generation, the educational practice was based on a mono-subject strategy associated with the introduction of the subject “Ecology” into the school curriculum. The second educational standard is focused on an interdisciplinary strategy for the implementation of environmental education. Environmental issues are included in various academic subjects on a broad interdisciplinary basis. A separate integrated environmental course has also been introduced into educational programs.

The 2009 Federal State Educational Standard of Primary General Education contains the issues of environmental education in the requirements for the subject results of mastering the basic educational program for the course “The World Around”, where one of the requirements is called “mastering the basics of environmental literacy”. However, in practice, it is the academic subject “the world around us” that is responsible for the environmental education of younger students. Environmental literacy of children is an integral goal of environmental education. It can be implemented within the framework of other areas of the formation of such qualities (competencies) as civic, patriotic qualities (formation of the foundations of Russian civic identity, a sense of pride in their Motherland, the Russian people, and other qualities), moral qualities (development ethical feelings, benevolence, and other moral qualities), aesthetic qualities (understanding the beauty of the surrounding world and other aesthetic qualities), physical qualities (formation of an attitude towards a safe, healthy lifestyle, and other physical qualities). The qualities (competencies) directly related to the field of environmental education not explicitly market. At the same time, they contribute to the formation of the environmental culture of the individual.

At the elementary school level, environmental education is implemented with a focus on the formation of an environmental culture of primary school children, which is manifested in the following competencies that are part of the content of environmental culture:

- emotionally positive attitude to nature, the surrounding world;
- a responsible attitude to one’s health and the state of the environment, in compliance with moral norms, in the system of value orientations; for the implementation of this goal, it is necessary to solve many interrelated tasks in the field of education, upbringing, and development of the child;
- the formation of a system of elementary scientific, environmental knowledge that is understandable for a preschooler (primarily as a means of developing a consciously correct attitude to nature);

- development of cognitive interest in the natural world;
- the formation of the initial skills and abilities of environmentally competent and safe behavior for nature and the child;
- education of a humane, emotionally positive, careful, caring attitude to the natural world and the surrounding world in general; developing a sense of empathy for objects of nature;
- formation of skills and abilities to observe natural objects and phenomena;
- the formation of the initial system of value orientations (perception of oneself as a part of nature, the relationship between individuals and nature, the intrinsic value and diversity of the meanings of nature, the value of communication with nature);
- mastering elementary norms of behavior concerning nature, the formation of skills for rational use of natural resources in everyday life;
- the formation of the ability and desire to preserve nature and, if necessary, assist it (caring for living objects), as well as skills in elementary environmental protection activities in the immediate environment;
- the formation of elementary skills to foresee the consequences of some of their actions concerning the environment.

The Federal State Educational Standard of Primary General Education involves the implementation of education for sustainable development in the implementation of the subject areas of the natural science cycle and the “Social Sciences”.

In the natural science subject area, issues of nature protection and environmental safety traditionally represent environmental topics. The requirements for the natural science subject area include the fact that the student must develop ecological thinking as a result of studying courses such as physics, chemistry, and biology. These disciplines provide an understanding of the relationship between natural, social, economic and political phenomena. Also, these disciplines are aimed at clarifying the relationship between the quality of human life and the quality of the environment.

One of the requirements for the results of mastering natural science training courses is the task: “awareness of the importance of the concept of sustainable development”. According to the standard, environmental issues are raised in the content of courses such as biology and chemistry.

The ideas of sustainable development are present in the requirements for the results of studying the course “Technology”. As a result of studying this course, students should:

- have an idea of the social and ethical aspects of scientific and technological progress;
- be able to give an environmental focus to any activity, project;
- demonstrate ecological thinking in various forms of activity;
- to comprehend the social and environmental consequences of the development of technologies for industrial and agricultural production, energy, and transport.

According to the Federal State Educational Standard of Secondary General Education of Education, the theme of sustainable development is reflected in the subject areas “Physical Culture, Ecology, and the Basics of Life Safety”, and “Social Sciences”.

The subject area “Social Sciences” includes the formulation of the problem of forming a holistic perception of the entire spectrum of natural, economic, and social realities within the framework of the courses “Social Studies”, “Economics”, and “Geography”.

An integrated elective course “Ecology” is part of the subject area “Physical Culture, Ecology, and the Basics of Life Safety”. The objectives of the educational course “Ecology” include the study of sustainable development issues by schoolchildren, as a result of which they have an introduction to the following topics:

- ecological culture as a condition for achieving sustainable development of society and nature;
- ecological relations in the system “individuals– society– nature”;

- environmental imperatives;
- civil rights and obligations in the field of energy and resource conservation in the interests of preserving the environment, health, and safety of life.

The study by schoolchildren of the educational course “Ecology” has the task of developing the environmental culture of the student, which includes the tasks of increasing environmental literacy and the formation of environmental thinking in schoolchildren who can apply environmental knowledge in life situations and professional activities.

The search for new teaching methods is due to the very subject of research—the need to show the student’s connection with nature, its beauty, and biodiversity in order to form a respectful attitude towards nature in the future generation. In this regard, it is crucial to turn to the methodological system of the trans-subject introduction of environmental and moral imperatives into the content of all subject areas and academic subjects (“green axioms”), which has been successfully tested since 2013 in different regions of the country. E.N. Dzyatkovskaya developed this system. This system is the basis of the integrated course “Ecology and Life Safety”, designed under the guidance of V.A. Gracheva and A.N. Zakhlebny for students in grades 10–11, and the training course “Ugra is my heritage” (developed by E.N. Dzyatkovskaya and A.N. Zakhlebny).

The E.N. Dzyatovskaya’s model of trans-subject interaction is based on universal system-wide regularities. This model allows moving away from the design of education for sustainable development in the general education school of the Russian Federation [67]. E.N. Dzyatovskaya makes a start from the “component” approach to the assessment of ecological culture, which has become widespread in schools since the question of what is their optimal relationship with each other, what are their connections with human ecological culture, is not unambiguously resolved. It provides that it is necessary to measure the components of environmental education (environmental literacy, environmental thinking, environmental relations, environmental awareness). E.N. Dzyatovskaya proposes an “activity-based approach” to assessing environmental culture, which is aimed at measuring the process and the result of a “functional system” of activity for sustainable development, namely:

- cultural concepts of environmental imperatives;
- universal educational activities,
- moral imperatives;
- forecasting, creating (choosing) an image of the result of activities for sustainable development;
- strategies and tactics of activity, the semantic setting of activity based on environmental and moral imperatives;
- management of activities for sustainable development (methods, techniques, forms, means, conditions);
- obtaining and correcting the result for sustainable development, both external (educational-project, social-project, social) and internal (knowledge, universal educational actions, values, personal experience of poly positioning) [67] (p. 21).

The presented approach allows organically combining the cultural-historical and systemic-activity approaches of the Federal State Educational Standard for monitoring the meaning of the generative role of education for sustainable development.

The legal field of the educational sphere in the Russian Federation is based on the Federal State Educational Standard and the Federal Law on Education, which make it possible to expand the scope and genre of educational materials, the core idea of which is sustainable development. Many regions of the Russian Federation are directed to improve separate sections, training modules, extracurricular activities, project topics aimed at promoting sustainable development ideas to the school.

The trend in the development of environmental education in schools in different regions of Russia is manifested in the introduction of a whole set of environmental subjects. For example, the system of environmental education has been introduced into the education system of schoolchildren in some

schools, lyceums, and gymnasiums. For example, Lyceum No. 3 in Ekaterinburg offers courses such as “Plant Ecology”, “Animal Ecology”, “Human Ecology”, “Flora in the Interior”, “Health Culture”, “Park Ecology”, “General Ecology”, “Social Ecology”, and “Environmental Workshop”. Lyceum No.3, Gymnasium No.9, kindergarten No.46, and other educational institutions in the city of Ekaterinburg, as well as in the cities of Degtyarsk, Polevskoy, Lesnoy, Bogdanovich, and other cities and villages are part of the mega innovation platform of the Ural Scientific and Educational Center of the Ural Branch of the Russian Academy of Education. The mission of the Ural Scientific and Educational Center of the Ural Branch of the Russian Academy of Education is to integrate science and practice on the example of applied theoretical research in the field of environmental, noospheric education, and health savings of the younger generation. Head of the Ural Scientific and Educational Center of the Ural Branch of the Russian Academy of Education, G.P. Sikorskaya [68], believes that the main idea that led to the emergence of the mega platform is the creation of a network of educational programs that develop and implement in the real innovative educational space the ideas of a new school. These educational programs should consonant with the socio-natural dynamics of the present, and the future tense helps to master new meanings of human life based on the harmony of people and nature.

One of the trends in the development of environmental education in schools in different cities of Russia is the introduction of courses on urban ecology and sustainable development. Urban development problems are an integral part of the global strategy for the sustainable development of modern society. The possibility of the continued existence of civilization depends on the competence of schoolchildren, who in a few years will become full citizens, on their ecological culture, which they will manifest in various fields of activity. Let us dwell on the example of the course “Moscow Ecology and Sustainable Development”, which is taught in schools in Moscow [69]. Developers are G.A. Yagodin, M.V. Argunova, D.V. Morgun, and T.A. Plusnina. The course is designed to teach the subject in the tenth and eleventh grades of secondary schools in the city of Moscow. The peculiarity of this course is its intersubject nature since schoolchildren acquire knowledge and skills in the field of urban ecology on the example of Moscow, also the possibility of rethinking worldview, cultural guidelines, and becoming an integral active personality. The methodological basis of the course is the dialectical understanding of the relationship between individuals–society–nature. The course covers a wide range of problems of both natural science and humanitarian, axiological, and culture-logical aspects (ideas of natural and cultural heritage, the idea of a “culture of peace”). It is based on the principles of consistency, scientific character, and social significance. The course pays special attention to the cognitive and practical skills of an ecological nature.

Educational technologies include outdoor education, contact methods, for example, in school greenhouses or parks. In such lessons, students directly interact with the natural world. These lessons are essential as they shape positive behavior and student assessment in terms of environmental growth. In world educational practice, this methodology is widespread. In the USA, Canada, England, The Netherlands, Denmark, and Sweden, the priority technologies in environmental education are outdoor activities, environmental games, and special project days and weeks. The core of the educator’s data is the desire to awaken a holistic emotional perception of nature in learners. Many researchers [70–72] note that lessons outside the walls of an educational institution helping to form positive ecological behavior of students, as well as to establish a close connection with real nature. A.C. Bell and J.E. Dymont point out that outdoor education contributes to the development of physical, intellectual, moral, and social qualities of students, which is reflected in their relationship to nature [73]. Researchers [17,74] note that lessons in a green school have higher learning outcomes than lessons in a school that is designed to teach only indoors. The students emotionally respond to the process that captivated them, which means that rational intelligence works together with the emotional intelligence of schoolchildren. The human brain features determine that emotional involvement in the learning process affects the productivity of memorization. Therefore, the idea of a green school is significant. In Russian schools, this practice helps to actively involve students in the educational process and their creative development.

An analysis of the Federal educational standard and its practical implementation at the level of primary and secondary schools allows identifying its environmental orientation. The ecological component in the education of children at the school level is aimed at the implementation of the following tasks:

- formation of the students' idea of the intrinsic value of nature;
- the students' awareness of themselves as a part of nature;
- fostering a respectful attitude towards nature and its inhabitants in schoolchildren, regardless of our likes and dislikes;
- the formation of an emotionally positive attitude of the children to the world around them, the ability to see its beauty, uniqueness, fragility, and strength;
- a systemic understanding of natural processes and the fact that the violation of one of the connections leads to changes in other connections and structures;
- awareness by children of the relationship between their actions and the state of the environment;
- mastering the principles of environmental safety by schoolchildren;
- assimilation of the initial information about the rational use of natural resources on the example of the use of water, energy in everyday life;
- formation of skills for environmentally intelligent and safe behavior in everyday life.

4.4. Interactive Environmental Lessons for Schoolchildren Offered by Environmental Organizations

Public organizations also had a significant impact on the formation of environmental culture and education. Museums, zoos, botanical gardens, libraries, and children's art houses, where festivals, exhibitions of children's drawings, thematic contests, and other events were held, are becoming centers for the ecological education of children. So, the All-Russian Society for the Conservation of Nature for preschoolers once every two years organizes all-Russian conferences, annual contests for the best formulation of work on environmental education of children in preschool educational institutions. In 2009, the International Organization of Preschool Education for children under eight started the Project in Education for Sustainable Development. The project involved about 250 preschools and other educational institutions, as well as individual families (in Moscow, Volgograd, Kazan, Izhevsk, Togliatti, and other cities). This activity of public organizations received a positive assessment in the "Report on Human Development in the Russian Federation" 2017 [37] (p. 244–245).

Conducting environmental lessons for schoolchildren creates the basis for the life of future generations and the realization of a shared dream of living in harmony with nature. Conservation organizations offer engaging, interactive environmental lessons for schoolchildren that teachers can teach in their classrooms. Examples of interactive lessons are the following lessons: a series of lessons called "Water of Russia" in the Federal Target Program "Water of Russia" (free lessons, source—ecoclass.rf), "My Green Tales" with a series of lessons "Share with Us" (free lesson, source—ecoclass.rf), a game-lesson called "Rescuers of the Planet" (paid lesson, source—"Resource Saving Center"), a lesson called "Natural Zones: Where Who Lives", a lesson about the climate and inhabitants of nine natural zones of Russia (paid lesson, source—project "I Know I Love"), the lesson "Batteries Are in Danger" (a lesson on the correct handling of batteries and their disposal, paid lesson, source—"Resource Conservation Center"), the lesson "Living Volga" (a lesson about the largest waterway in Europe, free lesson, source—ecoclass.rf), and other lessons and series of lessons. These lessons provide useful knowledge in the field of ecology and teach practical skills: how to save valuable natural resources, how to handle waste and garbage properly, and other skills of an environmentally educated person. Let us consider in more detail several examples of projects for preschool and schoolchildren aimed at developing ecological culture.

"My Green Fairy Tales" is a project implemented in 2020 by the Public Environmental Movement "Living Planet" and the First Public Environmental Television ("1ECOTV.RF") in the system of Integrated Environmental Education Projects for preschool and primary school children, consisting

of entertaining, educational, and cognitive programs [75]. The goal of the project is environmental education, the development of creative, cognitive, and research activity for environmental protection, as well as the education of a socially and environmentally responsible citizen from a very young age. The project provides for the creation of information and animation products as simple, exciting, and informative, illustrative material. The primary addressees are kindergartens and junior grades of general education institutions.

A series of lessons called “Water of Russia” in the framework of the Federal Target Program “Water of Russia” (free lesson, source—ecoclass.rf), organizer and initiator of the project is the Ministry of Natural Resources of Russia, project partner—ECA Movement [76]. These lessons are devoted to the careful attitude to water resources in Russia. Lessons are age-oriented. Students from grades 1 to 4 are invited to study the properties of water. They study the processes of its pollution and purification with the help of experiments. After making sure the water is more natural to pollute than it is to purify, the students will find ways to keep the water clean. Students in grades 5 through 8 will learn where the water comes from and where it flows, design and test their water filter in action. Moreover, the children are waiting for the online part of the lesson, in which they will watch videos and take tests to test their knowledge. Students from grades 9 to 11 complete the quest tasks and use their creative and intellectual abilities for the benefit of environmental education. The lessons are accompanied by a set of teaching materials, a detailed scenario of an interactive lesson with a description of tasks, exercises, and experiments; a colorful presentation and presenter comments for each slide.

The game-lesson “Rescuers of the Planet” is a lesson about the useful resources of our planet and ways to combat garbage (paid lesson, source—“Resource Conservation Center”) [77]. This game is oriented on students in grades 1–4. This game is a very active and fun ecological process in which participants complete tasks to save the planet from pollution. During the game, schoolchildren must solve several significant problems. The scenario of the game is as follows: people pollute the Earth, and it becomes more and more challenging to live on it. Children need well-coordinated team actions for solving the proposed tasks. After all, the participants in the environmental team game face severe tasks:

- to get rid of landfills in the forest and the city;
- to clear the ocean from plastic waste;
- to explore natural resources and the possibilities of the recycling industry;
- The game [77] allows students acquiring knowledge in the following issues:
- What are useful resources, and what is our Earth rich in?
- How a person uses different natural materials of the planet?
- How a person pollutes the Earth and what it leads to?
- How to sort waste and why people need it?
- What is the life cycle of things and how to give objects a second life?

The project “All-Russian Reserve Lesson” offers interactive lessons for schoolchildren (free lessons, source—the ecological center “Reserves”) [78]. For example, such lessons are “Wildlife Lesson”, “Opening Antarctica Together”, “Leopard of the Near East”, and other lessons.

“Reserve Lesson” is a lesson dedicated to the 100th anniversary of the protected system of Russia, revealing the features and values of protected areas in our country. Today, the protected areas make up more than 13% of the territory of Russia. The purpose of the lesson is to draw the attention of children and adults to the values of protected areas.

“Discovering Antarctica Together” is an interactive lesson dedicated to the 200th anniversary of the discovery of Antarctica by Russian sailors. The lesson aims to present the Antarctic conservation system and the conservation of the Southern Ocean marine ecosystems.

“The Leopard of the Near East” is a lesson about the Near East leopard and its restoration in Russia. The purpose of the lesson is through presentations and game formats to tell about a unique

animal—the Central Asian leopard, which historically lived in the Russian Caucasus, and to teach children the rules of good neighborliness with a spotted animal.

The interactive methods in the process of environmental education have a specific impact on the development of the student: it enhances the motivation for learning, communication with peers, enriches life experience, and activates the student's self-development in the field of ecology and sustainable development. A person assimilates knowledge and acquires skills in the field of environmental education in communication and interaction. The effectiveness of interactive learning is based on its principles:

- dialogical interaction is direct speech contact, which involves the visual perception of the interlocutor, their facial expressions and gestures, as well as the acoustic perception of the entire intonation side of speech;
- work in small groups based on cooperation and collaboration: everyone understands that they can achieve success (that is, acquire specific knowledge) only if the rest of the group members achieve their goals;
- an active role-playing organization of training, the specificity of which is that it brings together events, in reality, much distant, allowing participants to see and understand and, if desired, test a different strategy of behavior;
- the training organization of the educational process, aimed at familiarizing schoolchildren with universal spiritual values, since it involves partnerships between participants in the educational process, joint advancement to new knowledge, and the level of personal relationships, creating conditions favorable for self-knowledge and communication.

4.5. Environmental Education at the Federal State Educational Standard of Higher Education

Undoubtedly, environmental education at the level of universities and institutes in the Russian Federation is being implemented. According to educational standards, universities implement a whole range of environmental disciplines that contribute to the formation of the environmental culture of specialists.

In Russia, special environmental education in universities began about 30 years ago. The training of qualified specialists combining sufficient knowledge in a variety of fundamental disciplines was carried out based on the concept of specialized training of specialists in the fields of biology, geology, chemistry, and law. If we take the example of the Ural State University, named after A.M. Gorky (today it is the Ural Federal University named after the first President of Russia B.N. Yeltsin), then even in the humanities, subjects were taught such as “Concepts of Modern Natural Science”, where environmental issues played an important role.

In the mid-1980s, the specialty “Environmental Protection and Rational Use of Natural Resources” was introduced in technical universities. As a result of training in this area, the university graduate qualified as an environmental engineer, whose professional activity was associated with the engineering protection of the natural environment. The specificity of this professional activity was its focus on the preservation or restoration of the original characteristics of natural objects, as well as on the rational use of natural resources.

The training of an environmental engineer had strict and systemic requirements for the organization of the educational process since the professional competencies of an environmental engineer combined a significant number of requirements of the existing “engineering”, “chemical”, and “environmental” specialties.

By the early 1990s, professional environmentalists-managers appeared after the Ministry of Environmental Protection and Natural Resources was created. This Ministry had an extensive network of divisions, which were environmental committees in all constituent entities of the Federation, cities and regions. The responsibilities of environmental managers included communication with representatives of state and local authorities, the management of various inspected enterprises and partner-enterprises, the population, and public environmental organizations. In connection with the

need to train specialists of different levels in the field of ecology, educational standards have been developed in several new specialties: “Ecology”, “Geoecology”, “Nature Management”, “Life Safety”, “Land Reclamation, Reclamation and Protection of Lands”, “Integrated Use and Protection of Water Resources”, “Engineering Protection of the Environment”, “Ecology and Nature Management” and “Environmental Protection”, and other specialties.

The current ecological crisis can develop into a global ecological catastrophe, which calls into question the existence of human civilization on Earth. The challenges and crises of our time have led to the fact that not only an environmental specialist must have training in the field of ecology, but also the presence of environmental training is one of the basic requirements for a graduate for many specialties in higher education.

In modern Russia, at the national level in the higher education system, the educational system is being reformed following the signing of the Bologna Declaration on Accession to the Bologna Process. The Ministry of Education and Science approved the Federal State Educational Standards of the “first generation” (1994) and “second generation” (2000). These standards had the characteristics of environmental directions, the requirements for mastering the specialty, the structure of the program, including the normative period for mastering the program were prescribed, forms of education, qualifications awarded, and subjects studied by students.

According to the Federal Law of the Russian Federation of November 10, 2009, N 260-FZ “On Amendments to Certain Legislative Acts of the Russian Federation” from 1 September 2011, all universities in Russia switched to training following the Federal State Educational Standards of Higher Professional Education of the “third generation”. In particular, the lack of understanding by an industry of the Bachelor’s degree was a big obstacle. Today, understanding takes place both at the level of employers and teachers. There was no understanding and acceptance of a two-level education system (Bachelor’s, Master’s). The reason was that the existing specialty included five years of training with an established system of theoretical and practical courses, practical training, and other forms of education.

The Federal State Educational Standard of Higher Professional Education of the “third generation” differs from previous standards and leads to questions from teachers and managers in the field of education. So, this standard significantly reduced the number of environmental directions, does not provide for the disclosure of issues of including the concept of sustainable development in the disciplines of social, humanitarian, and natural science blocks of curricula of all specialties and areas of training. Moreover, in the process of general cultural training, the task of developing such competencies among university graduates is not presented as being able and ready to solve the problems of sustainable development at the local level and in professional activity.

However, the Federal State Educational Standard of Higher Education is aimed at developing students’ specialized competencies in the ecological field, as well as in the field of environmental protection in specialties and areas of training. Since 2013, the Ministry of Education and Science of Russia, implementing new principles for the distribution of admission control figures, takes into account the needs of the Russian economy for highly qualified personnel, with the participation of critical employers of the constituent entities of the Russian Federation and centers of responsibility: Ministry of Education and Science of Russia, Ministry of Agriculture of Russia, Rosleskhoz, Ministry of Emergency Situations of the Russian Federation (EMERCOM of Russia), and the Association of Classical Universities of Russia. There are 269 universities that train personnel in the field of ecology and environmental protection [79]. Higher education institutions of the Government of the Russian Federation, Rosaviatsia, Rosrybolovstvo, Rosmorrechflot, Roszheldor, as well as non-state educational organizations and universities subordinate to the subjects of the Russian Federation and local governments are involved in training personnel for this area. Most of the students in this area study on a budgetary basis (about 70% in this area).

Moreover, in all regions of Russia, Master’s programs in the direction of Ecology and Environmental Management are top-rated: Environmental Monitoring, Environmental Safety, Landscape Design,

Organization of Environmentally Friendly Crop Production in the Conditions of Technogenic and Biochemical Provinces, Environmental Management and Environmental Protection, Self-developing Systems in Ecology, Sustainable Development and Environmental Safety, Geological Foundations of Sustainable Water Use, Geoecology of Oil and Gas Producing Regions, Rational Nature Management, Environmental Safety in the Social Sphere and Environmental Management, Ecological–Geographic Foundations of Recreation and Tourism, Environmental Foundations of Natural Science Education, and other Master’s programs. The popularity of these programs among students is the result of the need for a new generation of specialists who can solve nonstandard and innovative tasks in the context of the globalization of environmental problems and the widespread growth of anthropogenic pressure on the territory. The need and demand for specialists with this training are due to the state of environmental resources, the requirements of environmental programs, Russia’s entry into the world economic space, and development trends taking place in modern environmental management and production.

The Ecology and Nature Management program aims at fundamental training in the field of environmental monitoring. Many specialized courses and workshops allow teaching undergraduates how to observe the influence of pollution on the structure and functioning of ecosystems, to gain skills in working with living systems at the level of populations and communities. This program provides the installation of professional skills and abilities for research, design, production, control, and expert, and educational activities of graduates.

Many Russian universities underwent a radical modernization of the training of specialists in the field of environmental education for sustainable development in connection with the introduction of innovative Master’s programs with the receipt of double diplomas of the RF/EU universities.

5. Conclusions

The goal of modern Russian education is the education of a person with an environmental outlook, capable of applying knowledge and skills for sustainable development. The problem is that the possession of knowledge does not mean that a person applies it in practice in everyday and professional spheres. Therefore, in education, it is crucial to focus on the intrinsic value of human and other life, on love for the world and people, the beauty of nature, value, the priority of truth and goodness as guiding values in a caring attitude towards nature. Discussion of environmental destruction issues is essential. However, for sustainable development, it is necessary to foster a sense of the uniqueness and fragility of living things, love for living nature, the feeling and awareness of a person that they are a part of living nature. People should realize that they are unique, valuable, and at the same time, fragile and healthy, like all living things around them. Moreover, this moral and ethical norm will cause people to need live-action.

The strategic goal of environmental education in Russia is the formation and development of an environmental outlook among students of all ages, which is based on scientific knowledge, environmental culture, and ethics. The model of the practical implementation of environmental education for sustainable development assumes that pedagogical technologies are aimed at:

- in-depth study of ecology as a discipline;
- ecologization of many disciplines of the social, humanitarian, and natural science cycles;
- a combination of theoretical and practical approaches in the study of environmental topics, that allows realizing the creative potential of students in the implementation of research projects;
- disclosure of environmental issues on the example of their small homeland, identification, and solution of environmental problems of specific territories.

Based on the study of the inclusion of environmental education in the school curriculum, it can be concluded that the tasks of environmental education are educational and developmental. The modern educational paradigm assumes that a person should be aware of and accept the ideas of sustainable development. People should have knowledge about the socio-political and economic factors of the

development of cities and other settlements. They should know the anthropogenic impact on the environment and the knowledge and skills necessary in the field of monitoring research.

However, as a result of education, a person must receive something more, namely, be capable of the following actions:

- independently acquire the necessary knowledge, competently work with information, formulate conclusions, and, on their basis, identify and solve problems;
- develop analytical, creative, and critical thinking;
- be able to accept and implement changes, make choices, and be responsible for the result of their actions;
- to identify causal relationships of environmental violations in the world around and other qualities and abilities.

Environmental education is lifelong learning and, thus, not only for children and young people. The system of continuous environmental education for sustainable development should include a generalizing ideological course at each stage of education at school and university levels of education. The system of continuous environmental education, upbringing, and enlightenment in the Russian Federation has not yet been finally formed; it is developing. The vector of development of environmental education in Russia is set by international, national, and regional environmental and natural resource characteristics in the context of the country's modernization. The importance of the development of environmental education lies in ensuring environmental safety as an essential component of preserving life on the planet and a decent life for present and future generations of people.

Today, the quality of environmental education of the population for sustainable development largely depends on access to information and communication technologies. Therefore, teaching methods based on information and communication technologies, as well as innovative teaching methods based on the use of an interdisciplinary approach to sustainable development, seem promising. This approach allows forming a holistic vision and understanding of social, political, economic, and environmental problems in the minds of schoolchildren and students. In the current conditions of the spread of the COVID-19 pandemic and changes in all spheres of the daily and professional life of the planet's population in general, and the population of Russia in particular, it is impossible to provide an effective educational process in other ways.

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