

ICHEU 2021**International Conference «Humanity in the Era of Uncertainty»****ECOLOGICAL AND GEOGRAPHICAL EDUCATION OF
STUDENTS IN THE CONTEXT OF SUSTAINABLE
DEVELOPMENT**

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Abstract

This article considers the features of the development of ecological and geographical education in educational institutions by the example of the Republic of Tatarstan (Tatarstan). As is known, at the present stage of development of society, the quality of the environment is one of the main factors that determine the standard of living and health of people, the possibility of forward movement along the path of sustainable development of the territory, its competitiveness and attractiveness. In Tatarstan, significant attention has been paid to the problems of environmental education of students since the second half of the twentieth century, and since 2001 the republic has been a region for the practical application of the principles of an international document – the Earth Charter, and a project “Tatarstan is a territory of sustainable development and a culture of peace” is being developed. In 2007, the textbook "Earth Charter" and methodological recommendations "Earth Charter" Tatarstan were developed and published for teachers of natural sciences in secondary schools; great attention is paid to the practical implementation of the principles of sustainable development of the human community based on respect for nature, economic justice, tolerance and culture. The results of the study show that in recent years there has been a decrease in the stability of natural complexes under the influence of anthropogenic factors on the environment, especially around large industrial cities and urban agglomerations.

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1. Introduction

At the present stage of development of society, the quality of the environment is one of the main factors that determine the standard of living and health of people, the possibility of forward movement along the path of sustainable development of the territory, its competitiveness and attractiveness. Significant attention has been paid to the problems of ecological and ecological-geographic education in the Republic of Tatarstan since the mid-70s of the XX century. During these years, professors of Kazan State University (KSU) I.A. Livanov, I.A. Gordyagin, V.A. Popov were engaged in environmental protection problems and in 1969 the Department of Nature Conservation and Biocenology was created on the basis of the Biological and Soil Faculty, and in 1980 the first ecological faculty was created in the former USSR (Gaisin et al., 2003; Gaisin & Gilazova, 2017; Torsuev, 1993). In 1980, in Kazan, on the basis of KSU, the III All-Union conference on education in the field of environmental protection was held. In his speech, Professor G.A. Yagodin said that the ways of human improvement go through the transfer of the necessary qualities from generation to generation through culture and education and are realized through the content and in various forms and methods of environmental education. And the emergence of global environmental problems leads to the need for new environmental education and presupposes teaching a careful attitude of a person to the world around him and, at the same time, improving the inner world of the person himself. Therefore, only awareness of oneself as a part of the macrocosm allows the formation of harmonious relations between people and the environment (On the protection of Nature, 2008; Education in the field of the environment, 1990; Samigullina, 2020). The holding of this conference in the city of Kazan was of great importance for the further organization of work on environmental education and upbringing of student youth in Tatarstan and in the country as a whole. This once again testifies to the role of scientists from Kazan universities in the development of issues related to the problems of environmental protection, ecological and ecological-geographical education of students of educational institutions (Kamaleeva, 2012; Ulengov & Urazmetov, 2013).

The main goal of students' ecological-geographical education is to form their ecological and geographical culture on the basis of the unity of scientific and practical ecological and geographical knowledge and skills, a responsible attitude to the natural environment, etc. Despite all this, in the educational system for ecological education and upbringing students there is some uncertainty associated with the lack of an independent subject "Ecology" in the curricula of general educational institutions.

2. Problem Statement

The research problem is to consider the ecological and geographical education of students in the context of sustainable development.

3. Research Questions

The subject of the article is the ecological and geographical education of students of educational and professional educational institutions.

4. Purpose of the Study

The purpose of this article is to study the peculiarities of the development of environmental and geographical education in educational institutions on the example of the Republic of Tatarstan.

5. Research Methods

The research method of the article is analysis, systematization and generalization of literary sources on the research topic, methods of comparative analysis and analysis of regulatory documents, interviews, survey, analysis of statistical materials, Internet resources on the development of ecological and ecological-geographical education in the context of sustainable development by the example of the Republic Tatarstan.

6. Findings

The article considers the development of ecological and ecological-geographic education of students of general education and vocational educational institutions of Tatarstan since the mid-70s of the twentieth century, when the problems of environmental protection and ecology gradually began to increase in the country and in the regions, due to the large anthropogenic load on the surrounding nature. And at the beginning of the 21st century, researchers began to write about the emergence of the science of sustainable development aimed at identifying and studying the fundamental interactions between nature and society, including the links between global processes and the ecological and social characteristics of specific territories and industries and agriculture (Bobylev et al., 2004). As a result, the ecological situation in many regions of the country is gradually becoming tense, since a large amount of pollutants enter the atmosphere every year, insufficiently purified wastewater is discharged into water bodies, pollution, depletion and degradation of soil occur, the volumes of production and consumption waste are constantly increasing, the problem of preserving biological diversity of flora and fauna is becoming more acute (Gaisin et al., 2003; Taysin, 2011; Uvarova, 2015).

At present, the same environmental problems are also relevant for the industrial cities of the Republic of Tatarstan: Kazan, Naberezhnye Chelny, Nizhnekamsk, Almetyevsk, Bugulma, Zainsk, where large enterprises of the fuel and energy complex, machine-building, chemical and petrochemical industries, etc. are located.

The research results of scientists from universities and research institutes and specialists of the Ministry of Ecology and Natural Resources of the Republic of Tatarstan dealing with environmental protection and ecology are presented in the Torsuev (1993) and in the annual reports of the ministry (in the form of government reports). They disclose in more detail the data concerning the results of monitoring, management, forecasting and optimization of the state of the natural environment in the region and a significant place is given to the problems of environmental protection, its economic and legal foundations, the basic principles of solving the problem of environmental protection, public health, hygienic and ecological criteria for assessing the quality of the environment, diagnostics of its condition and environmental education and upbringing of students (Torsuev, 1993).

In 2012 Medvedev (2012) approved the "Fundamentals of state policy in the sphere of environmental development of the Russian Federation for the period up to 2030". Among the main tasks in the field of environmental development, it is said about the need to ensure environmentally oriented economic growth and the introduction of environmentally efficient innovative technologies; the formation of environmental culture, the development of environmental education; scientific and information-analytical support of environmental protection and ecological safety, etc. The Concept for the Development of General Geographical Education in the Russian Federation (2020) states that geography is the science of natural and social systems, which forms the provision of human activity in interaction with the environment at the local, regional and global levels. And the main goal of geographic education is the formation of the geographic culture of the population of Russia. Geographic information plays an important role, which is a necessary basis for identifying and solving problems arising in the process of human interaction with the environment, including economic, ecological, ethno-national and training of the population in the use of information and communication technologies necessary in everyday life, etc. Consequently, when solving the problem of the formation of an ecological-geographical culture, the development of ecological-geographical education, it is proposed using various mechanisms: the inclusion of environmental protection issues in new educational standards; the formation of an ecological and geographical outlook among all strata of the population, especially among young people; inclusion of issues of formation of ecological-geographical culture, ecological-geographical education in state, federal and regional programs, etc. (Concept for the development of general geographic education in the Russian Federation, 2019), (Fundamentals of state policy in the field of environmental development of the Russian Federation for the period up to 2030, 2012).

Scientists and teachers of universities in Kazan, I.T. Gaisin, T.Z. Mukhutdinova, A.M. Mironov, A.S. Taisin, A.M. Trofimov, Z.A. Khusainov and others, pay considerable attention to writing and publishing monographs, educational and teaching aids on ecological, ecological-geographical education of students. They published textbooks on the study of nature, population, economy and ecology of the Republic of Tatarstan: "Nature and Ecology of the Republic of Tatarstan" (1998); "Geography and Ecology of the Republic of Tatarstan" (2010); "Economic and Social Geography of the Republic of Tatarstan" (2010); "Geography of the Republic of Tatarstan" (2011) and others (Gaisin et al., 2003; Torsuev, 1993; Education in the field of the environment, 1990). These manuals reveal not only the ecological and geographical characteristics of the republic, but also pay great attention to the problems of environmental protection and ecological and geographical education of schoolchildren and students of colleges and universities.

The results of the study show that in recent years there has been a decrease in the stability of natural natural complexes under the influence of anthropogenic factors on the environment, especially around large industrial cities and urban agglomerations. Most of all, the biological diversity of flora and fauna is negatively affected as a result of the reduction of forests and forest fires, soil erosion, pollution of water bodies, atmospheric air, mining, and an increase in the recreational load around large cities. Thus, Professor A.S. Taisin in the textbook "Geography of the Republic of Tatarstan" (Taysin, 2011) examines and gives a complete description of the Volga-Kama State Natural Biosphere Reserve, the National Park "Nizhnyaya Kama", some natural monuments and nature reserves of the republic. When considering soil and land

resources, he identifies the municipal areas of Tatarstan that are most susceptible to erosion processes: Sabinsky, Baltasinsky, Arsky, Vysokogorsky, Rybno-Slobodsky, Mamadyshsky, Chistopolsky, Sarmanovsky and reveals the main anti-erosion and protective measures carried out in the republic.

In the textbook "Geography and Ecology of the Republic of Tatarstan" (2010) I.T. Gaisin, Z.A. Khusainov, Sh.Sh. Galimov consider in more detail the most important geographical, ecological issues and problems of environmental protection of the republic, summarize the factual and statistical material characterizing the current state of the region's environment and the scale of human influence on it. Also, the manual covers topics such as "The impact of the environment on public health", "Ecology of living conditions", which are especially important for students to understand the need to solve environmental and ecological-geographical problems (Gaisin et al., 2003).

In the Republic of Tatarstan, a certain experience has been accumulated in the implementation of the national-regional component in the geographical and environmental education of students. In recent years, teachers of geography of schools and gymnasiums, teachers of universities of the Republic of Tatarstan have published educational and teaching aids on regional geography and ecology of cities: Kazan, Zelenodolsk, Elabuga, Chistopol and municipal districts: Aznakaevsky, Aktanyshsky, Atninsky, Buinsky, Drozhzhanovsky, Zelenodolsky, Kamskoyustinsky, Kukmorsky, Mamadyshsky, Muslyumovsky, Nurlatsky, Pestrechinsky, Rybno-Slobodsky, Sabinsky, Sarmanovsky, Chistopolsky, etc. In our opinion, geographical and environmental education should be close to the conditions in which the personality of the student is formed. It should be based on regional economic, sociocultural and, directly related to them, ecological and geographical features of the region.

The Republic of Tatarstan is a large industrial center of Russia, where a steady growth of industry and agriculture is noted annually. In order to provide the population with information on the quality of the environment, the Ministry of Ecology and Natural Resources of the Republic of Tatarstan, since 1993, has been annually preparing the State Report "On the State of Natural Resources and on Environmental Protection of the Republic of Tatarstan". This report allows observing the dynamics of activities in the field of environmental management and the effectiveness of measures taken in the republic for the rational use, protection and reproduction of certain types of natural resources, preservation of the environment, environmental education and upbringing of the population, ensuring the environmental safety of the territory and population (Education in the field of the environment, 1990). To obtain accurate information about the state of the environment in the republic, geographic information systems (GIS) are also widely used, which allow one at a new level to organize the collection, systematization and analysis of information on the state of the ecology and the environment of the republic. Within the framework of this system "Electronic Government of the Republic of Tatarstan", the GIS "Nature Management" has been developed, and it includes thematic GIS "Mineral Resources", "Specially Protected Natural Areas", "State Ecological Control", "Monitoring of atmospheric air", etc.

Since 2001, the Republic of Tatarstan has been one of the first regions in the country for the practical application of the principles of an international document – the Earth Charter for the implementation of the concept of sustainable development. Since that time, the development of the project "Tatarstan is the territory of sustainable development and culture of peace", which is an important political and socio-ecological-economic event, began in the republic (On the protection of Nature, 2008). The Earth

Charter is a document containing the fundamental principles for the creation of a just, sustainable and peaceful global community in the 21st century. It aims to awaken in every person a new sense of interdependence and universal responsibility for the prosperity of people and the entire living community (Charter of the Earth, 2006).

In 2007, the Institute for the Development of Education of the Ministry of Education and Science of the Republic of Tatarstan developed the textbook "Earth Charter" and Methodological Recommendations "Earth Charter" for teachers of natural sciences in secondary schools of the Republic of Tatarstan. In the republic, the principles declared by the "Earth Charter" are successfully implemented by teachers of geography, biology, ecology, chemistry, physics in the educational process in secondary schools and gymnasiums and in institutions of additional education. The Earth Charter workbook is written for teachers who want to bring a concern for building a just and peaceful community into the classroom, using attitudes to teach sustainable development using the Earth Charter as a framework. Methodological recommendations contain the development of lessons, extracurricular activities and the work of schoolchildren of a research nature in the subjects of the natural science cycle (Charter of the Earth, 2006). The republic also publishes the Red Book of the Republic of Tatarstan, registers of protected areas and cadasters of natural resources. For the first time in Russia, the "Map of the predisposition of the territory of the Republic of Tatarstan to manifestations of unfavorable technogenic situations" was published and the "Atlas of the Republic of Tatarstan" and others were published (On the protection of Nature, 2008; State register of specially protected natural areas in the Republic of Tatarstan..., 2007; Uvarova, 2015).

7. Conclusion

In general, in Tatarstan, great attention is paid to the problems of ecological and ecological-geographical education of students and the implementation of the principles of sustainable development of the human community, based on respect for nature, economic justice, tolerance and culture. The republic makes a great contribution to solving environmental problems. In general educational and professional educational institutions of the Republic of Tatarstan, considerable attention is paid to the development of ecological, ecological and geographical education of students. In the educational process, teachers of universities, colleges and school teachers use various innovative pedagogical technologies in the process of ecological and geographical education of students.

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