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### **Opportunities for forming geographic values for environmental protection**

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**Abstract:** *The ecological problem is one of the global problems of humanity. In the beginning of XXI century the consumption of natural resources exceeded the critical levels of the natural abilities for reproduction of the Earth's natural system. The recent situation calls for a new environmental policy and a new environmental culture to take shape in the younger generation. They should be carriers of another type of thinking, attitude and behavior of the person in the environment in which and from which he lives. One of the ways to do this is to create geographic values for environmental protection. This study presents opportunities for their formation in geography and economics education among upper secondary graduates.*

**Keywords:** *geographic values, value system, environmental education*

#### **Introduction**

At the present stage of the development of society, humanity should realize that the salvation of the world and its transformation into a normal living environment is in the human hands. It is necessary to understand that all activities, both material and immaterial, must be combined with a responsibility to our environment and its rational use and protection.

In the historical development and culture of all people, the connection between man and nature is deeply rooted in the habitat, life and economic activity. For millennia, humankind has uncontrollably exploited the natural resources without thinking about the consequences. It was not until the early 1960s that the problem of the extent of the destruction of the natural environment became aware and debated. The problem has deepened over time and at the beginning of the XXI century the consumption of natural resources exceeded the critical levels of the natural abilities for reproduction of the Earth's natural system.

It is of utmost importance to pay close attention to the increasing consumption of natural resources, climate change, the effects of earthquakes, floods, oil spills and environmental pollution. All of them

confirm the thesis that **the environmental problem** is one of the most important global problems of humanity because it affects other problems – raw materials, energy, food, demographics and others.

At the beginning of the XXI century, the environmental problem had its global dimension, but it was also projected regionally. At the regional and local level, risk thresholds take on different dimensions, and increasing territorial differences and contrasts in nature-society interactions are emerging as a particularly important specificity. The current situation requires a new environmental policy and a new ecological culture, which are carriers of another type of thinking, attitude and behavior of the person in the environment in which and from which he lives.

The successful implementation of an environmental policy requires both competent management decisions, commitment and activity from all citizens at all levels. In the context of integrating environmental policy and facing the inevitable prospect of major changes in the living environment, the ecological culture of the population is of particular importance. The issues of environmental awareness and behavior, of reconciliation of awareness and concern, of the factors that determine the transition between concern and pro – environmental behavior are of particular importance for the Bulgarian education as well.

### **Materials and methods**

The purpose of the present study is to attempt to present opportunities for the formation of geographic values for environmental protection in education in geography and economics in the upper secondary education. To achieve this goal, an analysis of pedagogical and methodological literature is conducted to highlight the geographic values as part of the students' value system.

### **Results and discussion**

#### *Nature and meaning of values*

In general, values reflect a person's attitude towards the world around him, represented by nature, society and objects of knowledge and their comprehension as meaningful to him or to a particular social group. A person's values determine both the goals he sets and the way to achieve them. They are at the heart of his life course in terms of thinking, relationships with people and his behavior [1].

The process of evaluation and the selection of different values is realized through the expression of value orientations, and the application and creation of values is connected with the value relations. The concepts considered are part of the value development, which contains the meaning of human existence. The most closely applied in the learning process are the values and values that arise to them. They are reflected in the educational documentation and can serve as a basis for implementation in the educational process of geography and economics [10].

#### *Geographic values*

The values in geographic education can be divided into three groups: universal, national and geographic. Human values are present in almost all axiological models, and national and geographic values have not yet been sufficiently studied [9].

This is one of the leading motives for exploring the types of geographic values and proposing options for their application in geography and economics education in the upper secondary education. We attribute environmental values to the geographic values.

#### *Geographic values for environmental protection*

Geographic education opportunities for value formation are great, but at this stage they are relatively incomplete. Building new values, and specifically environmental values, can be a priority for geographic education [3].

Environmental protection should be part of every student's value system. Faced with the challenges of today, the Bulgarian school today must lay the foundations for both the national consciousness of adolescents, but also for them to form a desire for continuing environmental education, as well as to build a position on global problems of humanity.

The subject of Geography and Economics provides very good opportunities for students to form values related to environmental protection. The main objective of geography and economics education in the assimilation of the content of the course in natural geography in the eighth grade is to acquire key competences by mastering knowledge, skills and relationships related to the nature of the Earth, its natural resource potential and the sustainable development of the geographic space [4].

Geographic values for environmental protection in this training course can be formed through several units in the section **Geography of nature:**

- Atmosphere – composition and construction;
- Evaporation, humidity and precipitation;
- Climatic factors. Climatic zones and areas;
- Hydrosphere. World Ocean. Properties of the ocean and sea water;
- Water on land. Groundwater. Lakes and swamps. Glaciers;
- Rivers;
- Pedosphere. Biosphere;
- Earth's natural resource potential;
- Global problems of modernity.

One of the variants of thematically linking the process of formation of geographic values for environmental protection to the global problems of modernity and sustainable development is by applying a case study on the theme: "Human impact on the world ocean" (Application 1). The methodological requirements for the implementation of the case study include activities combined in the following stages:

1. Preparatory – preparation of a case study and developing materials for its application; (Application 1);
2. Organizational – formulating the case (Appendix 1), motivating the relevance of the topic and indicating the necessary activities and time for solving the case (5 min);
3. Executive – time for the task (3-4 min);
4. Control – reporting and analysis of results, formulation of conclusions (5-7min).

**The variants of the students' answers received are related to the following main statements:**

- All geospheres are interconnected and if we do damage to one of them, we damage the other as well.

- The lack of rivers and lakes will make it difficult to irrigate cultivable land and feed the animals.

- A sharp decrease in the water level will cause drought in the area and a decrease in the precipitations, which will affect agriculture and people's lives.

- The climate of the Earth may not change dramatically, but there will certainly be problems. As the amount of water decreases, the amount of water evaporation will also decrease, respectively the humidity and hence the temperature.

- Reducing water will also affect people's lives. There will be less water for irrigation, less water for the animals.

- By reducing the water level in the Aral Sea, which is part of the hydrosphere, we are affecting other areas. This will cause the area to dry up and eventually become a desert.

- In the distribution of solar energy in the area, if there is no water source to absorb it, the Earth will warm up excessively, which will lead to desertification.

- The ecosystem that depends on the water basin is being destroyed. Thus, in addition to the economic problem - the lack of water source and its potential loss, there is also an environmental problem – the disappearance of various plant and animal species dependent on the Aral Sea.

-The man, through his activity, contributes to the irreversible decrease of water levels in the Aral Sea. In this way, we threaten not only the life of the aquatic inhabitants but also the integrity of the regional climate.

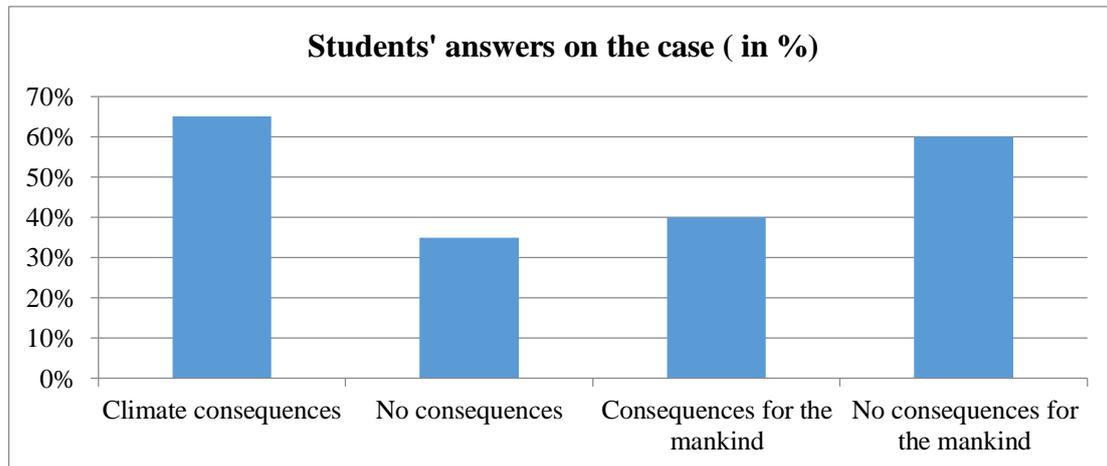
- This will lead to climate change, animals will have to adapt to new changes, and those who fail to adapt will die.

This leads to the conclusion that 65% of the students have an understanding of the effects of climate change, and the remaining 35% of the experimenters believe that there will be no reflection of the problem; 40% of the students are aware that this will affect the life of the person, and the remaining 60% think that there will be no consequences.

At the fourth control stage of the experiment, the students, with the help of the teacher, formulated the following conclusions:

1. Due to the drying up of the Aral Sea, the climate in the region shows continental features (dry and hot summers, cold and prolonged winters).

2. Dust storms form in the dry parts of the sea, which also affect nearby regions. These storms pollute large areas of the Aral Depression with sea salt, sand, chemicals and more.
3. Salt and sand storms cause acute and chronic diseases among the local population.
4. High infant mortality is observed due to adverse environmental conditions.
5. A sharp decrease in freshwater flow to the sea leads to an increase in its salinity and, as a result, plant and animal species disappear due to the fact that they are adapted to a lower salinity environment.
6. This results in closure of the fishing industry and closure of ports. This industry is no longer of economic importance. Unemployment in the region is increasing.



**Figure 1.** Students' answers on the case

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The process of awareness and acceptance of geographic values related to environmental protection is closely linked to the personality of the adolescent, the level of knowledge, awareness and, last but not least, the interest in global and regional issues. The nature and content of contemporary activities in which young people (both educational and extracurricular) participate, influence their attitude to the ongoing processes in our society [7].

Opportunities for the formation of geographic values for environmental protection can also be found in the acquisition of **ninth-grade** geography and economics content. It aims at acquiring key competences by mastering the knowledge, skills and attitudes related to the political and socio-economic organization of society, regions of the world and countries within them [5]. Students need to acquire skills for predicting the results of human impacts on nature, as well as to understand the need for environmental protection and to develop the following values:

- ✓ Interest towards the geographic knowledge;

- ✓ Commenting on the problems and current trends in the development of the agriculture;
- ✓ To analyze the unique in the natural, demographic and economic appearance of countries, typical representatives of regions in the world.

Ninth-grade education in geography and economics contributes to the promotion of leading values such as religious and ethnic tolerance, environmentally friendly lifestyles, the need for active socialization [2]. In this grade, geographic values for environmental protection could be formed through the following themes:

Section "Geography of the society":

- Settlements and urbanization;
- Primary sector. Agriculture;
- Energetics;
- Metallurgy, mechanical engineering and chemical industry;
- Tertiary sector. Transportation;
- Challenges of the global and regional governance;

Section "Geography of continents and countries"

- Russia;
- China and India;
- South American region. Brazil;
- African region (RSA).

Although the whole course of study in geography and economics in 9th grade provides an excellent opportunity for the formation of geographic values for environmental protection, we have not yet conducted an experiment in this training course.

Geography and economics education in **tenth grade** aims to acquire key competences by mastering knowledge, skills and relationships related to territory, most closely related to the life of the student - the native country [6].

In the 10th class of geographic values for environmental protection the subject of geography and economics can be formed through the whole course of study and especially in the following topics:

Section "The natural environment of Bulgaria. Natural components":

- Terrain;
- Mineral resources;
- Climate;
- Waters;
- Soils;
- Plant and animal kingdoms.

Section "The natural environment of Bulgaria. Natural areas";

Section "Agriculture";

Section "Regional geography. Planning areas".

After studying the section: "The natural environment of Bulgaria. Natural areas", the students presented projects on the theme: "*The beautiful nature of Bulgaria – conservation and preservation.*". The implementation of the method passed through the following stages:

1. Organizational – defining the topic and sources of information (educational and scientific literature, internet sources);
2. Analytical – gathering and processing the necessary project information;
3. Practical – realization of the project;
4. Presentation – presentation and protection of projects, evaluation and self-assessment of the results [8].

The time for the implementation of the projects was six weeks, and for their presentation the students used different forms – presentations, models, posters, brochures and more. Of particular interest was the work of two of the students who had created and printed a book on the subject: "*The palace and the botanical garden in Balchik*" (Figure 2).



Photo 1

Photo 2

**Figure 2.** Book "The palace and the botanical garden in Balchik"

Models were made on the theme: "The Seven Rila Lakes", "Sinite Kamani Nature Park", "Yumrukskala – protected area", "Kamchia Reserve" and others. The students showed creativity with regard to the materials for production – paper, clay, plasticine, plastic bags, welters, natural materials and more.

The presentation of the projects was also attended by a presentation topic: Central Balkan National Park, Pirin National Park, Rusenski Lom Nature Park, Srebarna Reserve, etc., the photo material being from personal visits of the students.

The period for preparation, development and presentation of projects aimed at shaping geographic values for environmental protection in the tenth grade was filled with creative energy and motivation to work. This has also led to an increase in the achievement rate among the students.

### Conclusions

-The geographic values for environmental protection are an important element of the value system of students in high school.

- Their formation and realization through the expression of value orientations in the process of teaching geography and economics are the essence of the students' value development.

- The geographic values are a building block in the value system in the geographic education along with the universal and national values.

- The need for the formation and promotion of geographic values through geography and economics training prepares students for active participation in contemporary civil society.

- The formation of geographic values for environmental protection through education in geography and economics provides opportunities for adolescents to build and defend their own position, to express their views freely on environmental issues, to improve their ability to discover causality and to stimulating students' internal readiness for expression of value orientations.

### Application 1

Case study to proof the human impact on the World Ocean and for the promotion of basic geographic values related to environmental protection – VIII grade:

*"Human Impact on the World Ocean "* (students are provided with images of the territorial reach of the Aral Sea in 1977, 1989 and 2006, as well as a NASA photo)



**Figure 3.** Photos from NASA show the lake's eastern basin is completely dry



**Figure 4.** Photos from NASA show the lake's eastern basin is completely dry.

**Once upon a time ..... there was a sea called the Aral Sea.** *The Aral Sea still exists, but has lost more than half its area 30 years ago, and water levels have decreased by about 75%. Its name translates to "sea of islands" since it once had over 1500 islands per hectare. It is a large endorheic basin in Central Asia and is located between Kazakhstan in the north and Uzbekistan in the south. The waters from the melting of glaciers flow to the large Aral depression, and the lake formed until a few years ago was the fourth largest in the world. The Aral Sea has been shrinking since the mid – twentieth century, as the rivers that flow into it, mostly Amu Darya and Sir Darya, have been diverted for irrigation purposes. Historically, significant fluctuations in the Aral Sea level have been observed. Evidence of this is the finding of tree remnants growing on the bottom of the sea. Since the beginning of systematic observations on the Aral sea level, no fluctuations have been observed in the 19th century. In the 1930s, the Soviet authorities began large-scale construction of irrigation canals and, through planned economies, regardless of unrealistic goals, required the mass cultivation of cotton in this region, which is too dry for such activity. With the calls to "transform nature!", Without taking into account the consequences of disturbance of the ecological balance, a livelihood – cottonproduction, which is connected with the today fate of the population in Kazakhstan and Uzbekistan. This livelihood continued to develop intensively in*

the 1960s. By 1990, the area of irrigated agricultural land in Central Asia had increased from 4.5 million to 7 million ha. Water requirements for agriculture in the region are increasing from 60 to 120 km<sup>3</sup> per year, which is why 90% of the water flow is diverted for irrigation. Today, the amount of water supplying the water basin has decreased to 5 km<sup>3</sup> a year. Thus, from 1961, sea level began to decline at an increasing rate of 20 to 80-90 cm/year.

What consequences will this have:

- For the climate on Earth?
- For the life of the mankind?

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