

ANALYSIS OF THE STUDY OF ENVIRONMENTAL EDUCATION IN THE FRAMEWORK OF THE STUDY OF DISCIPLINES OF THE NATURAL DIRECTION IN THE REPUBLIC OF KAZAKHSTAN

M S Yessenamanova, A E Tlepbergenova,
Zh S Yessenamanova, E R Gilmanov

Abstract.

- The article analyzes the materials under study within the framework of teaching natural subjects, such as "Natural Science", "Biology", "Geography", "Chemistry", aimed at environmental education. It was revealed that most of the topics on environmental education are not systematized, that is, some topics such as "Community ecology" are studied before the topics "Population ecology", etc. In addition, some topics such as "The Red Book of the Republic of Kazakhstan" are repeated in the study of different disciplines. It should be noted that the topics have not been coordinated with environmental professionals, this indicates the inclusion of the topic of the law on environmental protection, which currently has no legal force in connection with the use of the "Environmental Code". In order to develop environmental education among the younger generation, it is necessary to include the subject "Ecology" as an independent discipline, in which all topics will be consistently studied in accordance with the levels of organization of all objects of the surrounding world and using this knowledge in practice.

Table 1- Aspects of environmental education in grades 1-4 of primary schools in the study of disciplines "Natural Science".

The 1-sth grade	The 2-nd grade	The 3-rd grade	The 4-th grade
How to care for plants?	How to save the flora?	How do natural communities change?	How do we protect plants?
What do people get from animals?	A variety of different animals	Friend and foe of the plant world	Types of food chains
	Adaptation of animals	How do we protect plants?	What animals are endangered?
	Earth's atmosphere	Changes in the habitat of animals	How to protect animals?
	Different states of water	Why is the number of animals declining?	How is the air polluted?
	Sources of natural resources		How is water polluted?
			What can be replaced by minerals?
			Is there any harm in mining?

Table 2 - Aspects of ecological education in grades 5-6 of secondary schools in the course of studying the discipline "Natural science" and "Geography"

The 5-th grade		The 6-th grade	
<i>Natural science</i>	<i>Geography</i>	<i>Natural science</i>	<i>Geography</i>
Ecological system	Material composition of the earth, rocks and minerals	How does mining affect the environment?	Artificial reservoirs, the importance of inland water and its protection
Natural and artificial ecosystems	Importance of water for life, properties of water, water protection	What is the relationship between ecosystem components?	
Factors affecting the survival of ecosystems	Atmospheric phenomena, their effect on living organisms	Why do ecosystems change?	
Changes in natural ecosystems due to human activities	The environment and the place of man in it Natural resources and their efficient use.	How is the exchange of energy within the ecological pyramid?	
Environmental issues of Kazakhstan	Reserves, national parks, natural monuments	Are there any inconvenient places to live in our country?	
How do we protect nature?	"Red Book" of Kazakhstan	What must we do to keep the planet clean?	
Red Book of the Republic of Kazakhstan	Ecology of the environment, nature protection.		
The principle of movement in nature	Environmental Protection Law of the Republic of Kazakhstan		

Table 3 - Aspects of ecological education in grades 7-8 of secondary schools in the course of studying the discipline "Biology" and "Geography"

The 7-th grade		The 8-th grade	
<i>Biology</i>	<i>Geography</i>	<i>Biology</i>	<i>Geography</i>
Environmental factors	Environmental problems of soil	Components of ecosystems. Aquatic and terrestrial ecosystems.	The negative impact of human activities on the atmosphere
Biotic factors, food chains and food networks	Problems associated with the development of natural resources.	Population - its ecological characteristics	Environmental problems of inland waters. Water disasters
Ecological succession		Different ways of life of organisms. (K and r survival strategies)	Protection of flora and fauna
The negative impact of modern human activities on the ecosystem		Type of "predator-prey" relationship. Population change.	Demographic problems
Specially protected natural areas of Kazakhstan		Types of direct and indirect interactions of organisms. Adaptation of organisms to changes in environmental conditions.	Economic and environmental assessment of natural resources
Red Book of the Republic of Kazakhstan		The role of man in nature. Rational use of nature. Save the nature. Biodiversity conservation.	The main environmental problems in Kazakhstan (global, national, local)
		Environmental problems of the Republic of Kazakhstan. Causes and consequences. Ways to solve them.	Environmental Protection Law of the Republic of Kazakhstan, "Red Book" of Kazakhstan
			Specially protected areas, reserves
		National parks, reserves and others	

Table 4 - Aspects of environmental education in grades 9-11 of secondary school in the course of studying the disciplines "Biology", "Geography" and "Chemistry"

The 9-th grade

<i>Biology</i>	<i>Geography</i>	<i>Chemistry</i>
Impact of mining on the environment and human health.	Problems associated with the development of mineral resources	Contamination of the environment with heavy metals
Effects of pesticides on the environment and human health.	Environmental problems of water resources	
Greenhouse effect (greenhouse) and ozone depletion. The impact of rising global oceans, water and atmospheric temperatures on living organisms.	Anthropogenic factors affecting natural complexes; Ways to improve anthropogenic landscapes.	
	Sustainable development	
	Problems related to nature management in Kazakhstan	

Table 4 - Aspects of environmental education in grades 9-11 of secondary school in the course of studying the disciplines "Biology", "Geography" and "Chemistry"

The 10-th grade

<i>Biology</i>	<i>Geography</i>	<i>Chemistry</i>
The concept of the biosphere, its composition, structure, the concept of the noosphere	Environmental impact assessment of types of nature use	Understanding of radioactive substances, nuclear reactions and their role in the energy potential of Kazakhstan.
Problems of protection of geographical crust components of geographical zones and natural zones.	Principles of rational use of nature	The meaning of the periodic law for the development of science, technology and understanding of the chemical picture surrounding the world.
Types of settlements and urbanization	Design of environmentally friendly industries	Biological role of metals and nonmetals in the life of living organisms
	Pollution of geospheres	Environmental effects of nitrogen oxides, nitrates and phosphates on the environment.
	Geoecological zoning	Biological role of iodine in human life. Measures to protect the health of the people of Kazakhstan from diseases caused by iodine deficiency
	Anthropogenic factors in geoecology	Contamination of the environment by chemical and metallurgical emissions
	Global environmental problems	
	Innovative technologies in ecology	
	Environmental problems of Kazakhstan	
Geographical aspects of global problems		

Table 4 - Aspects of environmental education in grades 9-11 of secondary school in the course of studying the disciplines "Biology", "Geography" and "Chemistry"

The 11-th grade

<i>Biology</i>	<i>Geography</i>	<i>Chemistry</i>
The relationship between biodiversity and ecosystem sustainability. Biodiversity of species	Types of global problems, their interrelation, the problem of maintaining peace in the world	Contamination of the environment with heavy metals.
Protection of rare and endangered plant and animal species	Problems of energy and raw materials	Application and effect of plastics on the environment.
Use of various statistical methods to determine the number and distribution of organisms in the local ecosystem	Problems of the world ocean	Ecological action of nitrogen oxides and nitrates on the environment.
Global warming: causes, consequences and solutions	The main way to solve global problems is the need for international cooperation of states.	Ways to solve the problem of reducing the effects of nitrogen compounds on the environment
Zone of ecological disasters in Kazakhstan		Problems of environmental protection in the production of metals
Ways to solve environmental problems in Kazakhstan		12 principles of "Green Chemistry". Pollution of the atmosphere, hydrosphere, lithosphere
		The scale of pollution of the atmosphere, hydrosphere and lithosphere
	Depletion of the ozone layer of the Earth	
		Global warming.