

FORMATION OF AN ECOLOGICAL CULTURE IN TEACHING CHEMISTRY

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Abstract

This article discusses the problem of implementing an ecological approach in chemistry teaching, the purpose of which is to analyze and select effective forms and methods of implementing an ecological approach in chemistry teaching.

Keywords: Chemistry, environmental issues, integration, modern teaching methods.

Introduction

The whole history of the emergence and development of human society is directly related to nature. Man, being a part of nature, is at the same time a part of the culture he has been creating for thousands of years. In the process of mastering nature, man transforms himself and nature, creating a world of culture. Most scientists characterize the current ecological state of the planet as a crisis. Among the main causes of the environmental crisis are the growth of production associated with population growth, depletion of natural resources, global environmental pollution, and a consumer approach to nature. Scientific and technological progress has created unprecedented opportunities for the exploitation of nature's resources, and at the same time for its pollution, destruction and destruction.

Scientists see the further survival and sustainable development of mankind in changing the cultural basis of modern society. In this regard, it is the ecological culture of mankind that is called upon to play a key role in the successful advancement of society along the path of sustainable development. The idea of culture, culture-like education, including environmental education, is currently being put as the main paradigm of education.

The problem of forming a personality with a high level of general and ecological culture, capable of perceiving and implementing the ideas of coevolution of society and nature,

involves a qualitative renewal of the environmental education system for young people and affects, first of all, the personality of a teacher, including a chemistry teacher. Chemistry is a subject in which environmental aspects can be reflected in almost every lesson. Ecological education is based on the concepts of the relationship between the composition, structure, properties of substances and their biological functions, the dual role in living and inanimate nature, the biological interchangeability of chemical elements and the consequences of this process for organisms. Chemistry is important in solving environmental problems at the present stage. When studying the composition, structure and properties of substances, chemistry answers the question of what happens to them in the atmosphere, soil, and aquatic environment, what effects the substance and its transformation products have on biological organisms. By studying the topic of "Initial chemical concepts", students gain an initial understanding of chemical elements and related concepts. In addition to theoretical knowledge, students acquire practical skills in conducting chemical experiments, for example, in the purification of substances and separation of mixtures. In this regard, it is possible to familiarize evening school students with a number of environmental concepts: pollutants, sources of pollution, modern methods of cleaning substances (waste) in industry and everyday life, which expands their cognitive sphere. Another example of the application of environmental knowledge for the development and correction of the cognitive sphere of students is the lesson of generalizing repetition "Modern methods of purification of substances in industry and everyday life". It allows the teacher and students to consider this topic from the perspective of previously acquired environmental knowledge. During the lesson, the formation of ecological culture and practical skills of students in the separation of substances and their purification continues. In this lesson, students are introduced to modern methods of cleaning substances with demonstrations: filtration, dust and gas capture, neutralization (neutralization, oxidation, reduction, absorption of gases by liquid and solid absorbers), disinfection of wastewater, precipitation, conversion of substances into a poorly soluble or insoluble compound, recrystallization, use of ion exchange columns. Demonstration of cleaning the water surface from pollutants (oil, oil, suspensions). A kind of summing up of the "chemical-ecological" lesson is the practical work on the separation of an artificially created mixture of substances. Due to the fact that the integration of knowledge has many different aspects, in our work we take into account the environmental potential of the chemistry and geography courses, considering them in their interrelationship. For example, the theme "Oxygen. Oxides. Gorenje is closely related to an important section of ecology, "Anthropogenic impact on the biosphere. The atmosphere." The role of the atmosphere in the natural processes of the biosphere is enormous. The presence of an atmosphere around the globe determines the general thermal regime of the surface of our planet, protects it from harmful cosmic and ultraviolet radiation. Atmospheric circulation affects local climatic conditions, and through them the regime of rivers, soil and vegetation cover and relief formation processes. The role of oxygen in the life of living organisms is widely discussed. Students know that the main vital function of the body is breathing. When comparing the effects

of oxygen and ozone on the human body, it should be emphasized that a small amount of ozone in the air has a beneficial effect on the body, especially in respiratory diseases. On the contrary, in higher concentrations, ozone is highly toxic, which cannot be said about oxygen itself. Since oxygen is an important component of air, it is necessary to elaborate on the main sources of atmospheric pollution and the consequences of this process. But this happens already in geography lessons. In secondary and higher schools, you can use a chemistry circle with an environmental focus using methods of chemical and analytical control of the state of environmental objects or the quality of finished products, with the formation of ideas about the chemical parameters of the environment, their norms and limits of change as a result of human economic activity. The main role in developing interest in classes belongs to students' understanding of the causes of contradictions in the "nature — society" system. How can one explain the behavior of a substance in the atmosphere, reservoir, soil, in the human body, what effect it has on itself and the products of its transformations on natural systems? Chemistry and ecology act as a link between the inanimate and the living. In the classroom at the Laboratory of Applied Ecology, it is possible to vividly and convincingly demonstrate both the negative sides of human intervention in the natural environment and possible ways to optimize anthropogenic influences on it [1].

The integration of the sciences of ecology and chemistry is of great importance, which shows the role of chemistry in solving environmental problems. The main feature of the integration of sciences is the orientation towards an activity-based approach to determine the relationship between living and inanimate nature, deepen and expand the theoretical knowledge gained in their application in daily activities, familiarize themselves with the professions of chemical and environmental profile. When teaching ecology, in addition to purely educational goals, educational goals are also set — we, the teachers, want the graduate to acquire the features of a careful, reverent attitude to nature. And not only from an aesthetic point of view, but on the basis of solid scientific knowledge about the fragility of natural ecosystems, their extreme vulnerability. We want the economic thinking of the future specialist to be environmentally friendly, and the principle of "Do not harm nature" was put at the forefront of any economic activity. Unfortunately, in today's economic conditions, this good aspiration runs into a blatant contradiction with reality.

Thus, it can be assumed that the use of modern teaching methods and the simultaneous actualization of the tasks of environmental education in education make it possible to improve the environmental culture of future graduates, and are also of great importance for their subsequent professional activities, successful self-realization and achieving a high standard of living and such conditions that would not violate human harmony with nature. To solve the problems of environmental education in higher education, it is advisable to implement an interdisciplinary approach in teaching not only in chemistry, but also to include environmental material in the cycles of humanitarian socio-economic, general professional disciplines and disciplines of specialization.

References

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