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The Role of Interdisciplinary Integration in Teaching "Geography" and "Biology" Sciences in Forming Students' Scientific Worldview

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Abstract: In the article, in the context of the formation of a holistic vision of inanimate and wildlife, it is discussed that the integrated teaching of biology and geography in general educational institutions gives a good result in the formation of the scientific worldview of students. Based on integrated learning, it is explained that the subjects of biology and geography are interrelated and complement each other.

Keywords: Improving the Quality of Scientific Education; Integration in Biology and Geography; Scientific Outlook, Interdisciplinarity, the Idea of Materiality.

1. Introduction

Currently, a new educational system is being formed in Uzbekistan aimed at integration into the entire world education system. Training of specialists with comprehensive knowledge adapted to the market economy is a requirement of the present time. The use of interdisciplinary integration in the teaching of "Geography" and "Biology" is a factor that increases the effectiveness of teaching, and provides an opportunity to improve its quality and achieve good results in the formation of scientific worldviews. Formation of a scientific worldview in students is one of the most important tasks of general education institutions, and formation of a scientific worldview in students is one of the main goals of the pedagogical process. Undoubtedly, the worldview determines the behavior and activities of a person in society. The rapid development of science and technology requires students to have certain scientific concepts in natural directions. It is necessary to follow the principle of consistency of interdisciplinarity in forming a scientific worldview. Interdisciplinarity allows students to see a certain phenomenon from different points of view and get a complete picture of the event. In the formation of a scientific worldview, in particular, the importance of interdisciplinarity, which allows to fully cover all the characteristics and connections of the event or phenomenon under study, is great. For example, on the basis of interdisciplinarity, methodological ideas about the unity of living and dead nature, society and nature are formed in students.

Literature review

The content of geography and biology taught in general education institutions is rich in vital concepts and has great potential for forming a scientific outlook. Because these sciences are distinguished by the dialectical unity of natural objects and phenomena and their mutual interdependence. A.Ya.Gerd, I.D.Zverev, N.M.Verzilin, V.M.Korsunsky, T.N.Gerasimov, M.K.Kovalevsky, and P.M. Pancheshnikov thoroughly studied and developed the ideas of scientific outlook for school subjects. Those who came out. The study of geography and biology gives an understanding of the materiality of nature, its objectively real character. A.Ya.Gerd, one of the founders of the scientific methodology of teaching natural sciences, emphasized the vital role and importance of biological science in forming the scientific outlook of students. His scientific views were supported and complemented by scientists such as A.N.Beketov, K.A.Timiryazev, K.F.Rule, A.P.Bogdanov, K.Ber. B.E.Raykov proposed to use the "research method" and V.V.Polovtsev to use "laboratory method" in the education of students' outlook.

2. Methodology

Through the teaching of natural sciences, the changes of the earth from ancient times to the present, the gradual change of the world from simple to complex, its diversity, and the ideas of worldview for scientific understanding of the ongoing processes are revealed. When studying the sciences of biology and geography, students study the signs, structure, tasks, development, and interaction dynamics of objects and events, the laws of dialectics are manifested in them, and the ideas of worldview are expressed. The idea of materiality is expressed in the content of physical geography through the unity of space-time changes — all objects, events, processes of the geographical shell are material and unique. Understanding materiality in school biology is related to the study of the diversity of the flora and fauna in relation to living conditions, the study of the cell as a structural-functional unit of living organisms, metabolism, heredity and variability. Materiality reflects the unity of the world and the idea of the next worldview - the idea of wholeness. Within the geographic crust, all components do not exist separately from each other, but form a single complex system, for example, the natural complexes of the Earth (geographic belts, natural zones). In biological sciences, it is possible to consider the wholeness of the organism and life, a single system of interconnected organ systems and their functions, as an example of plant and animal organisms. And it is this interaction and interdependence that gives further impetus to development. The idea of wholeness is reflected in the constant movement and change, interaction and interdependence of the natural components of animate and inanimate nature, which are manifested in the circulation of matter and energy: water, air, biological unity, etc. All cycles (periods) are incompletely connected, and the gaps between them form a vector of directed change — that is, development. Development is a process that takes place in the struggle of conflicting phenomena, such as the variability and heredity of characters in the world of living nature, and the participation of exogenous and endogenous factors in the formation of reliefs in non-living nature. Acquainting students with the history of the formation of the geographical crust allows to reveal the natural character of the development of nature. When studying living organisms in biology courses, schoolchildren gain knowledge about the evolution of the organic world, the reasons and laws of the historical development of organisms are revealed. It is necessary to form the foundations of a scientific worldview in students during the educational process. Influence on the student's thinking, will, emotions and activity also plays an important role in the formation of worldview. When studying events, the student should have certain concepts and ideas. Their formation is an active activity of the thinking process. In order for concepts and ideas to become a skill, to become a known system of worldview, they must be able to enter the student's emotions and

experiences. A positive emotional state encourages students to reach the heights of knowledge. Of course, a strong will combined with beliefs and emotions motivates a person to certain actions. In addition to these, trust in the student and assigning responsibility to him also takes a certain place in the formation of the scientific worldview. The role of the teacher in forming a scientific worldview is incomparable. From the level of knowledge of the teacher to his behavior, a certain result is achieved if he can instill confidence in the students.

The content of geography and biology is aimed at studying the following problems:

- To know the essence and dynamics of nature, natural, ecological processes;
- To understand the main characteristics of the interaction between nature and society, the importance of environmental protection and rational use of nature, recognition of high value in all aspects of life, formation of environmental consciousness;
- To determine the laws of distribution (integration) of the population, the regional organization of the economy in connection with natural, socio-economic, ecological factors, the dependence of adaptation and human health problems on the geographical conditions of living.

Environmental education and training in biology classes is based on the study of the relationship of organisms with the environment, the structure and activity of ecological systems, the diversity of plant and animal species, their importance in nature and human life. Geography lessons are conducted within the framework of the geoecological direction, which studies the geographical consequences of anthropogenic and natural changes in the environment. The connecting link of biology and geography studies the distribution of living organisms in the surrounding nature according to natural zoning, the vital activity of living organisms under endogenous and exogenous environmental factors and anthropogenic influence. On the basis of ecological concepts, worldview ideas are also formed, which are generalized knowledge explaining the basic laws of nature. The idea of the need for rational use of the geographical shell, including the biosphere, is reflected in geography and biology courses when considering the importance of nature for people and measures to protect it. The idea of an integrated scientific approach to the use of nature is manifested in the interdisciplinarity of solving important environmental problems. The tasks of natural sciences in this area are "... aimed at developing the scientific basis of nature protection and change, developing recommendations to prevent the negative consequences of human economic activity, ensuring the protection of nature, the state of the environment".

The idea of understanding the development laws of nature is also expressed in the content of the sciences under consideration. In the course of education, students will get acquainted with the methods of studying environmental problems: environmental monitoring (biotesting, bioindication, geographic forecasting, ecological and geographic expertise), which will be the basis for drawing conclusions about the possibility of knowing the laws of development. Among the tasks of the natural sciences of geography and biology, the following are highlighted: the formation of a system of geographic and biological knowledge as components of the biological-geographical picture of the world, which we ultimately consider to be elements of a single scientific unity. The image of the world, acquaintance with cognitive culture, recognition of high value in all aspects of life, knowledge of the environment, mastering research methods, form the intellectual abilities of students based on knowledge motives.

Therefore, the content of the sciences aimed at the formation of ecological awareness is characterized by the integrity of knowledge, the hierarchy of acquired values, the priority of moral, intellectual and worldview education. Undoubtedly, interdisciplinary relations reflect

the dialectical relations of animate and inanimate nature, its movement and development, help to form worldview ideas about the material unity of the world, the relations of the forms of movement of matter (biological and geographical). As long as a person is alive, he grows, develops and changes throughout his life. During the years of childhood, adolescence and adolescence, the maturation of the individual is clearly visible. By development, we understand the process of physical, mental and spiritual development of a person. The science of pedagogy and psychology considers development as a whole, with biological and social characteristics closely related to each other. In order to achieve the development of a human child as a person, to achieve effective all-round maturation, he determines and analyzes the laws of the development of the science of pedagogy, the factors influencing it, as well as the influence and importance of education and activities in the development of a person. It is known that a person does not come into the world as a person, but his formation primarily depends on life conditions. A person goes through a complex process of development throughout life, as a result of which he becomes a person. For this reason, we should understand a person as a product of a certain social system.

3. Conclusion

In conclusion, it should be noted that the use of interdisciplinary integration (connections) is one of the most complex methodological tasks of biology and geography teachers. This requires knowledge of the content of the syllabus and textbooks in other subjects. Implementation of interdisciplinary communication in teaching practice implies cooperation of the biology teacher with the geography teacher; i.e. visiting open classes, planning joint lessons, etc. One of the methods of effective implementation of interdisciplinary integration is the continuous cooperation of teachers. A modern teacher, using the methods and means of organizing the educational process, taking into account the psychological and individual characteristics of students, should have the ability to organize each lesson (training) at a high level based on didactic tools by the requirements of the current developing society.

4. References

[1] Andreeva N. D., Malinovskaya N. V., Solomin V. V. “Methods of teaching biology”. History of formation and development: textbook manual for academic undergraduate / ed. N. D. Andreeva. — 2nd ed., corrected. and additional - M.: Yurayt Publishing House, 2017.
[2] Zverev I. D. “Interconnection of educational subjects”. – M.: Knowledge, 1977.
[3] Ruler K. F. “Selected Biological Works”. / Ed., with comments. and after. L. Sh. Davitashvili, S. R. Mikulinsky. - M .: Publishing House of the Academy of Sciences of the USSR, 1954. - 688 p.
[4] Arbuzova E. N. Polovtsov V. V. - the author of the first Russian textbook on the methodology of teaching biology // Bulletin of the Omsk State University. ped. un-ta: Electronic scientific journal. — 2007.
[5] "Teaching aid for students of the Faculty of Geography of pedagogical specialties." - Brest: BrGU, 2012. - 420 p.
[6] "Textbook for students of pedagogical specialties and teachers of geography." - Minsk: Aversev, 2006. - 157 p.
[7] Nizamova Sh. Ya. “Use of non-traditional methods of teaching geography”. // Modern education (Uzbekistan). 2018. No. 3.

[8] Muslimov N., Usmonboeva M., Mirsoliyeva M. "Innovative educational technologies and pedagogical competence" - TDPU. SCCT, April 6, 2016. Pages 14-28.
[9] Zharkova T.G. and others "Some aspects of interdisciplinary integration in foreign school education." Scientific theoretical journal of the Russian Academy of Education. "Pedagogy", 2019. No. 12 p.102.
[10] Guriev A.I. "Status of interdisciplinary connections in the system of modern education". / Science and School 2002. No. 2.
[11] Elagina V.S. "Professiogram of the activities of teachers of natural sciences in the implementation of interdisciplinary connections in teaching schoolchildren." / Science and School 2002. No. 2.
[12] Manaenkova O.A. "Modeling and conducting training sessions based on an integrative approach." / Science and School 2002 No. 4.
[13] Barotov M.U., Inogamova D.R., "The concept of interdisciplinary integration and its role in the educational process." "Eurasian Journal of Mathematical Theory and Computer Sciences" (ISSN: 2181-2861), November 12, 2022 Issue 12.