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IMPROVING METHODOLOGICAL TRAINING OF FUTURE CHEMISTRY TEACHERS BASED ON INTEGRATED EDUCATION

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Abstract:

In this article, the development of chemistry and improvement of methodology, implementation of interdisciplinarity on the basis of integrated education is noted. The importance of using integrated education in pedagogical activity is shown. The role of integrated education for future chemistry teachers is emphasized.

Keywords: chemistry, educational technologies, integrated education, methodology, competence, teaching, educational methods, educational tools.

Introduction

Today, positive results are being achieved in our country in terms of raising a mature generation and educating our growing children using modern technologies. In the world, effective research is being carried out aimed at improving the quality of teaching chemistry, implementing and integrating innovative and information technologies into the educational process, using the opportunities of mixed education technology, creating modern methodological support aimed at developing students' mental potential, creative abilities and knowledge level. . In the era of rapid scientific development, interdisciplinary integration is of crucial importance in the establishment of continuous education. The term integration is derived from the Latin word integration, which means joining, joining together. Information integration means combining and presenting materials available in various sources based on a specific purpose. Currently, biology, geography and physics are of great importance in teaching chemistry. In the teaching of chemistry, the essence of theoretical and practical knowledge can be more deeply understood with the help of the integration of biology, geography, ecology and physics.

Decree №. PF-4947 of the President of the Republic of Uzbekistan dated February 7, 2017 "On the Strategy of Actions for Further Development of the Republic of Uzbekistan", Decree of the President of the Republic of Uzbekistan dated April 29, 2019 "Approving the Concept of Development of the Public Education System of the Republic of Uzbekistan until 2030 Decree №. PF-5712 of the Republic of Uzbekistan dated August 12, 2020 "On measures to increase the quality of continuing education and the effectiveness of science in the fields of chemistry and biology" This dissertation research serves to a certain extent in the implementation of the tasks defined in the decisions of 4805 and other regulatory legal documents related to this field.

Since the subjects of chemistry are a difficult subject for pupils and students to master, it is an urgent problem to introduce the use of science integration into its teaching.

In our research work, the integration of natural sciences in chemistry is explained by the use of physics, mathematics, biology, geography and informatics to create knowledge, skills and abilities of students in the study of chemistry, and as a result, increase the efficiency of learning. Improving the methodology of teaching chemistry in the countries of the Commonwealth of Independent States and the pedagogical effectiveness of educational materials Yu. Scientific - conducted research. N.M.Nazarova, M.I.Nikitina, Yu.M.Kolyagin conducted scientific research on integration in the field of pedagogy. H. Omonov, S. Nizomova, A. Mamajonov, M. Nishonov, Sh. Begmatov, M. Ajiyeva, E. Eshchanov, F. Alimova, N. Anvarova, Kh. Rajabov, Researchers like M. Ahadov worked hard.

Integrated education and interdisciplinary communication are two different concepts that complement each other. In order to allow the student to understand this or that problem as deeply as possible in the process of mastering certain knowledge in interdisciplinary communication and to effectively implement the acquired knowledge into practice, educational sciences communication between and integration is related to interdisciplinary communication, that is, subjects in general, academic subjects, departments and topics of the field of study. It means the consistent, deep and vivid opening of the leading ideas and events specific to the studied issue based on knowledge.

In order to learn the solution of a problem based on interdisciplinary communication, the teacher must first clearly define the goal, review the studied material, choose suitable methods for its effective learning, determine the form and necessary materials for organizing the lesson process, and it is necessary to determine in advance the result to be obtained. General the content of education is aimed at all-round mental development of students, development of different forms of thinking in them. Studying each educational subject allows the learner to create a process of understanding the material, to remember it, to create a mental focus that activates sensitivity, develops thinking, speech and imagination. It is especially important to develop types of thinking that are inextricably linked to each other in the process of cognition. One of the most urgent issues of today is ensuring interdisciplinarity, that is, coherence in the formation of students' worldview. Because a teacher who is able to organize a lesson with interdisciplinary connection is ensured, not only increases students' interest in their subject, but also helps them master this subject. As a result of the systematic implementation of interdisciplinarity, the relevance of the educational process increases significantly. Students develop thinking skills. In addition, it is an important condition for the development of knowledge and interest in academic subjects. The content of interdisciplinary communication and the volume of materials are determined by the curriculum in the school mathematics course. It is already known in the teaching methodology that every subject teacher should explain the interdependence of one or another subject to his students and skillfully use it in the educational process.

Interdependence between academic subjects is divided into two types: chronological and ideological. The first one is based on the mutual proportionality of the programs of different disciplines, and the second one is based on common methodological conditions of scientific

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concepts in the same direction, based on absorption. Inter disciplinarity is also explained by the unity of common methods depending on the type of science. For example, mathematics and physics are methods, and mathematics and physics are experimental methods in common.

In practice, mathematics teachers directly use three types of interdisciplinary chronological connection: past, present, and future. Previously interdisciplinary communication to the knowledge obtained from other subjects before teaching mathematics course materials is relied upon.

Implementation of interdisciplinarity in the educational process has a strong impact on the quality of education:

- allows to expand the possibilities of modernization of education, innovative teaching;
- acts as an important factor in ensuring coherence and continuity in general secondary and secondary special education; It is one of the important tasks of pedagogues and researchers to introduce issues aimed at ensuring interdisciplinary communication into the content of programs, textbooks and training manuals;
- development of interdisciplinary communication models based on educational technologies is one of today's urgent issues.

In conclusion, to identify systemic deficiencies that hinder the full and effective implementation of measures to increase the country's position in the international rankings in the field of science and innovation, to develop solutions and proposals for solving problems in cooperation, as a result of the introduction of digital technologies and modern information and communication technologies, it is necessary to properly implement integrated education. When using the above methods, the competence to observe, understand and explain chemical processes and phenomena, the competence to express elements and chemical compounds in chemical language, the competence of conducting and applying chemical experiments and communicative competence, the competence of self-development as a person, general cultural competence, mathematical literacy, the competence to be aware of and use science and technology innovations are developed.

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