

THE SIGNIFICANCE OF STUDYING CHEMICAL CONCEPTS BY INTERDISCIPLINARY INTEGRATION IN THE COURSE OF CHEMISTRY OF THE SECONDARY SCHOOL

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Abstract. *This article describes the problems of introducing an integrative approach to the formation of chemical concepts in the school chemistry course, the main factors and methods for their solution.*

Keywords: *chemical education, chemical science, chemical understanding, integration.*

Introduction. It is well known to everyone that at the heart of the large-scale reforms and renewals that are being implemented in our country, the goal is to ensure the well-being, happiness and well-being of our people living in holy Uzbekistan, especially our dear young people who are the owners of our tomorrow.

The acceleration of the development of society, the growth of science and technology, the wide spread of information technology, is leading humanity to a new society of nations, a deeply integrated economic space, and a unified information and communication system in order to turn the 21st century into an age of peace. Living in such a society requires a lot of preparation and a lot of knowledge.

In the future, life itself demands the need to educate young people with integrated knowledge and intellectual potential.

In particular, the gradual development of acquired chemical knowledge of students is one of the most important requirements of modern chemistry education. For this, it is necessary for teachers to fully demonstrate their abilities and opportunities and to mobilize all their energy [1].

Based on the analysis of scientific-methodical literature and the analysis of conducted researches, it should be noted that the problem of gradual development of students' acquired knowledge and teaching of the most important concepts of science by mutual integration has not been solved so far. In our opinion, schools try to provide in-depth knowledge about things and phenomena in the framework of some academic subjects separately, from the point of view of their own academic subject. As a result, the object is divided between different academic subjects, and a whole system of knowledge about it is not formed. [2].

The excessive number of subjects taught at school created an overload for students. The main way to solve this problem is to establish integrated education at the level of DTS requirements [3,4].

In particular, the inter-disciplinary integration of the most important concepts of chemistry is being studied for the first time. Although the issues of studying the didactic possibility of teaching the most important concepts of chemistry have been covered in a number of scientific literatures, didactic analysis of the integration of concepts has not been conducted.

Therefore, we found it necessary to define this direction, which has not been researched in the literature, as the main goal of our research.

MAIN PART

The purpose of the study. Development of methodological recommendations that serve to ensure the integrity of chemical knowledge by applying an integrative approach to the process of general secondary education students' acquisition of knowledge in chemistry and to increase the effectiveness of using this knowledge in their work.

Tasks of the research:

- To study the stages of formation and development of students' theoretical concepts in the teaching of various subjects of the chemistry course of general secondary education and to conduct a didactic analysis of the presentation of the situation in chemistry textbooks.

- to create different methods of formation of chemical concepts in students.

- introducing an integrative approach to the formation of chemical concepts in students.

Solving the problem

Solving the problem of integration is related to the effective use of new pedagogical technologies in the educational process. Proper organization of this process ensures the effectiveness of teaching.

Solving the integration problem depends largely on the following factors:

1. Effective use of new pedagogical technologies in the educational process. Proper organization of this process ensures the effectiveness of teaching.

"Integration" is defined by scientists as follows. Integration is a method of organizing several subject materials on the basis of natural subordination to the task and single purpose of the methodology; the highest level of interdisciplinary connection, the way of complex study of the problem based on general methodological principles; a tool that allows to create a whole "integrity" of knowledge that raises the level of interdisciplinarity of teaching; they describe it as a factor that brings together knowledge in the sciences and determines a common platform in creating a holistic picture of the environment [5].

The material should allow students to comprehensively analyze the studied object and help to form their interest in studying the wholeness of the universe;

- the material should be specific to the subject;

- it should represent the prospects of the development of modern science and technology.

2. Use of media education in chemistry classes.

This process requires an interdisciplinary approach to the integration of various subject areas taught in schools. In order to effectively solve this problem, special preparation of various social groups of the society for the information future is required.

With the help of media education, students' skills of receiving and using information, skills of designing verbal copies in visual form, opportunities of unique understanding and application of information in their practical activities will expand. Free communication with world mass media is also ensured.

3. The use of integrated technical means in the educational process is a factor that determines the direction of "educational technology" and is focused on the organization of information transmission service and individualization of education.

The most important pedagogical problem of today is the organization of the transfer of concrete and natural sciences, in particular, physics-mathematics, physics-astronomy, physics-chemistry,

chemistry-biology, physics-geography, physics-geometry, on the basis of modularized integrative programs and textbooks. To solve such problems, it is necessary to determine the possibility of integration of natural sciences, its rational methods (modular integration, inter-subject integration) and the need to use it at different levels [5].

Natural sciences should always be combined with theoretical concepts, laws and practical training.

In the course of the research, it was proved that it is necessary to acquire knowledge, training, skills and competences related to the establishment of integration of subjects in mixed educational subjects, and the methodology of creating training algorithms for the purpose. [6-9].

Based on our many years of scientific-pedagogical experience and analysis, we recommend using the following methodological methods in order to integrate the teaching of subjects:

1. Curriculums for subjects other than field subjects, programs, study of educational literature, with teachers of these subjects establishing strong creative-methodical connections.
2. Educational materials in the nature of science integration selection, methodical interpretation and thorough study of them in training.
3. Examining students' implementation of the individual task of establishing and using the integration of subjects during the school internship, discussing the achieved results.

On this basis, reliable learning, skills and qualifications based on the principle of interdisciplinary integration will be strengthened in students, and their professional and pedagogical activities will be more effective. This, in turn, develops students' intellectual abilities and makes them actively creative in the educational process. [10-14].

CONCLUSION. Explaining the interdependent development of the events and phenomena that occur in nature and society, and the relations between them, based on the integration of natural sciences, forms a comprehensive system of knowledge about the organic world in the student and forms a scientific worldview.

Therefore, integrated education envisages a new approach to the content of knowledge given in schools from the basics of science, and its main goal is to study educational materials as a set of logically complete problems, to form a holistic scientific picture of the world and society in the minds of students, to create scientific concepts and knowledge about nature and the place of man in it.

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