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ABOUT INTEGRATIVE IMPROVEMENT OF THE COURSE "CHEMISTRY" IN THE CHEMICAL PREPARATION OF FUTURE STUDENTS OF BIOLOGY

Jumanov Akhmadjon Mirzaevich,
Associate Professor of Kokand State Pedagogical Institute

ANNOTATION
This article describes the theoretical and practical foundations for studying and solving the problems of integrative teaching of the course "Chemistry" in higher educational institutions of the Republic of Uzbekistan, which train biology teachers.

Keywords: teaching natural sciences, interdisciplinary communication, interdisciplinary direct and indirect communication, integrated teaching of chemistry and biology, chemical mechanism of biological processes, mechanism of chemical reactions in the biosphere**.**

INTRODUCTION

In the Action Strategy for the Further Development of the Republic of Uzbekistan, the priority is "the development of innovations in education and science, in particular, the systematic implementation of the policy of training qualified personnel, taking into account the modern needs of the labor market." it is important to improve the technology of organization, methodological support, the system of operational competencies and mechanisms for cyclic diagnostics [1].

The reason is that the goal of teaching natural sciences in primary grades is to ensure the interdependence of such sciences as chemistry, biology, physics and geography, the formation of a natural-science worldview in them and, as a result, ensure their participation in the future international research competitions.

THE MAIN PART

Therefore, in the training of future biology teachers, it is necessary to integrate the teaching of subjects included in the curriculum. Regulatory documents for solving the problem of our study, analysis of the state of teaching the course "Chemistry" in higher educational institutions of the republic, the formation of this course in the context of the education reform, showed that the state of development of that time was not fully and adequately taken into account. Scientific and pedagogical research in the field of methods of teaching chemistry and biology does not adequately reflect the issues of direct and feedback between the disciplines of chemistry and biology [2].

To explain the nature of the processes occurring in living organisms, research on the totality of chemistry and biology courses and information about their results, it is required to include the course "Chemistry" in the curricula and textbooks.

Serious studies have been carried out on the relevance of chemistry and biology courses in secondary schools in this area. But some researchers have analyzed the integration of chemistry and biology courses into higher education.

Determining the place and status of chemical knowledge in the process of training biology teachers is an urgent pedagogical problem. Its study, analysis and development of practical recommendations at the level of higher educational institutions of the Republic of Uzbekistan are important scientific and pedagogical issues.

In order to improve the level of professional training of future teachers of biology, it is necessary to pay special attention to the issues of interdisciplinary integration in the teaching of "Chemistry" and subjects related to the block of biological sciences.

In recent years, there has been a lot of pedagogical research on integrated science education. In particular, the interconnected teaching of chemistry and biology is the basis for the formation and development of the natural science worldview of students.

Thanks to the integration of sciences, the most unique achievements of civilization are achieved. Many things and events are known due to the interdependence of organisms and the environment, the interdependence of celestial bodies, the cosmic factors of life on Earth, the interdependence of changes in human life with geological and astrophysical events, the successful participation of science in the study of the Universe. Such global scientific-creative, social-educational and anthropono-noospheric processes will continue with unrelenting force. With the help of philosophical and natural sciences involved in solving the most important and general issues and problems of the "world-man" relations with their worldview, methodological, axiological, epistemological, ontological, praxeological, humanistic, educational, communicative, critical, integrative, prognostic and sociological functions it will be possible to interpret accurately and completely, objectively and in the mirror of reality [3].

Especially important is an integrated approach in teaching natural sciences, including a comprehensive study of the relationship between chemistry and biology in teaching chemistry in higher educational institutions that train biology teachers in the country. Because without knowledge of chemistry it is difficult for a biology teacher to have a full-fledged profession. The reason is that the chemical structure and its mechanisms underlie the material structure of a living organism and all the complex physicochemical processes occurring in it [4].

Based on the sources studied, it should be noted that biology teachers have modern ideas and knowledge about the mechanism of chemical processes in the biosphere, the chemical composition of living organisms, the exchange and energy between organisms and the environment, chemical patterns of growth and development. The main goal of our study is to update the content of the subject "Chemistry" taught in the undergraduate programs of biology teachers of pedagogical universities in the country, and to develop guidelines for modernizing the educational process.

The results of scientific and pedagogical research show that when improving the content of this course on an integrative basis, attention should be paid to the following issues: simple and complex substances in general and inorganic chemistry, their biological role, place in wildlife and chemical relationship with them. inanimate nature; the presence of bioanorganic bonds of metals and non-metals with an atomic structure; biological compatibility of substances and their important properties; the role and significance of redox processes in living organisms; biogenetic position of chemical elements; the most important and biochemically important representatives of coordination compounds; the phenomenon of radioactivity and the influence and significance of radioactive isotopes on living organisms; biological role and importance of the most important inorganic solvents, solutions and colloidal systems. Electrolytes for qualitative analysis of analytical chemistry, ionic reproduction of water, hydrogen indicators; in quantitative analysis, methods of expressing concentration in volumetric analysis, methods of volumetric analysis. In organic chemistry, extensive attention has been paid to all classes of hydrocarbon compounds, oxygen and nitrogenous organic compounds, high-molecular organic compounds, their participation and biological significance in living organisms.

Both sciences (chemistry and biology) are close and related, they complement each other and take an active part in shaping the general and natural-scientific landscape of the universe. Thus, the integration of chemistry and biological sciences allows students not only to form a natural-science outlook, but also to form the knowledge, skills and abilities necessary for their professional training.

The training of biology teachers in accordance with modern requirements is carried out through the widespread use of modern pedagogical and information technologies in the educational process, taking into account the latest achievements in biology, chemistry and pedagogy. Practical areas of chemistry require that students be taught on a large scale, based on the interdependence of disciplines that are inextricably linked with life. Tasks such as providing students with scientific and methodological knowledge, the formation of the necessary training, skills and competencies of the teacher are directly related to teaching the course "Chemistry" in combination with biological sciences [5].

To achieve the goal of the study and test the hypothesis, the following tasks were performed:

- To study the state of the problem of improving the structure and content of the course "Chemistry" abroad and in Uzbekistan, its history and traditions of development, analysis of curricula, teaching aids and textbooks for this course;
- To revise the structure and content of the course "Chemistry" in conjunction with the biological sciences, taking into account the requirements for improving the education system of Uzbekistan and the prospects for its development;
- Formation and improvement of the content of professional training of teachers of chemistry and biology in full-time, advanced training and retraining;
-Development and implementation of a mechanism for the formation of a single chemical and biological image;
- Widespread introduction of a system of interdisciplinary communications in the education system as a factor in improving the quality and effectiveness of education;
- Based on the results of pedagogical experiments and research, to develop scientific and methodological and scientific and practical recommendations for biology teachers of higher, secondary specialized, vocational and general secondary education in the course "Chemistry" to improve the content of education.

The methodological basis of the study is the new edition of the Law of the Republic of Uzbekistan "On Education", the State Educational Standards and curricula for general secondary education, monographs on chemistry, conclusions and recommendations of scientific and methodological studies by outstanding chemists and methodologists.

In the course of the study, methods known in pedagogy, psychology and special pedagogical sciences were used in accordance with the goals and objectives of the study. Based on a systematic analysis, general teaching methods were used, as well as existing methodological recommendations and guidance in response to them in terms of critical creativity.

The study of scientific and scientific-methodical literature on special pedagogical research methods, observation, experiment, oral and written surveys, the study of existing documents of the public education system, curricula, teaching aids, as well as the analysis and teaching of curricula in inorganic chemistry and recommendations and conclusions of biology have been used appropriately within the scope of the research topic.

or the first time in the history of the Republic of Uzbekistan, a study was conducted to improve the structure and content of the course "Chemistry" in conjunction with the biological sciences, based on the principles of adapting the education system to modern conditions.

In accordance with the requirements of the state educational standard of higher education in terms of psychology, pedagogy and teaching methods, a training course was created and tested to provide students with the tasks of teaching, educating and harmonious development of students based on undergraduate curricula. pedagogical institutes and universities. As a result of the study, based on the formation of theoretical knowledge, practical skills and competencies in the course "Chemistry", recommendations were developed that are important for students of higher educational institutions.

In higher educational institutions that train teachers of biology, a training system has been created and introduced into the educational process, which helps to increase and consolidate the level of knowledge of students in the course "Chemistry" and has been used in practice for many years. The system of scientific, methodological knowledge developed as a result of pedagogical research, selected, didactically acceptable, and created recommendations for their teaching can be successfully applied by teachers, methodologists and specialists of higher educational institutions.

CONCLUSION

In conclusion, we can say that the provision of interdisciplinary links in the improvement of the course "Chemistry" in the field of biology in higher education is important in the professional training of students.

REFERENCES

1. Towards rapid development and renewal on the basis of action strategy.-Tashkent: NGU named after G. Gulom, - p. 70.
2. A. Jumanov, M. Nishonov. Areas of biological education Interdisciplinary connection in the course "Inorganic Chemistry". Journal of Continuing Education. Issue 3, 2010, pages 103-106.
3. Jumanov A. Interdisciplinary communication is an important factor of scientific imagination. Materials of the Republican scientific-practical conference "Pedagogical conditions of integrated teaching of sciences". Tashkent, 20074. M.Xyuz. M. Inorganic chemistry of biological processes, M.: “Mir” 1983.- p.414.
4. Jumanov A. Raxmatullaeva G. Khudoiberdiev J. On the problems of integration of disciplines in the teaching of "Inorganic Chemistry" to future teachers of biology and their solutions. Humanization of science teaching. Materials of the Republican scientific-practical conference. TDPU. Tashkent-2012. pages 194-195.