

## TEACHING CHEMISTRY ON THE BASIS OF MODERN METHODS

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**Abstract.** *The article mainly reflects the elements of the integration approach in the process of teaching chemistry and English in general secondary schools. The importance of an integrated approach in modern education and the importance of the formation of competence in students is highlighted based on the opinions of experts and the author's conclusions.*

**Keywords:** *chemistry, English language, integration, interdisciplinary, syncretic approach, competence, method, methodology, interdisciplinary cooperation, bilingual communication, etc.*

### INTRODUCTION

The various approaches and methods applied to the educational system are obliged to serve for the development of education. For the development of education, it is necessary to abandon methods that have not served or do not. Of course, each method and technique also has its own role. In particular, interdisciplinary, integrational, syncretic and other approaches to educational development are used today as the most attractive and effective methods. We also aimed at organizing educational work in general secondary schools with a cross-integrated study of chemistry and English on the example of an interdisciplinary approach to educational development.

To describe the theoretical foundations and conceptual rules of the models of the organization of educational work of chemistry with English in general secondary education schools in an integrated environment, we will consider the clarification and correction of the studied conceptual apparatus, which includes:

In the implementation of the goals of general education, the integration of educational disciplines closer together contributes to a holistic perception of the content and methods of educational subjects, the surrounding world, the phenomena and processes taking place in it;

- gemodernization of general chemistry education, which is primarily due to the change in the content of its main purpose. Modernization is aimed at moving from old to new, to modern. Within the framework of modernization concepts, first of all, the task of forming basic competencies in the course of general secondary education school chemistry as living conditions for students in modern society appeared;

- education aimed at changing the relationship between subjects in the educational process, humanization, development and application of personality-oriented education, "humanization" of education, a close global worldview and brings it closer to humanity;

- one of the important goals of education is the formation of the intellectual and creative abilities of students, General basic competencies that are carried out communicatively, creatively, emotionally-holistic;

- communication refers to the transfer of information, which can be an electronic means of transmitting information from an information carrier, a person, a book, a media, to a person as a

specific form of interaction between people in the process of their own perception-labor and cognitive-educational activities;

- a systematic approach involves a comprehensive reflection of the system of scientific knowledge in the minds of students with all facts, communication, theories; compliance with the logical sequence of construction of educational material, subordination to its sole purpose is considered;

- the integrative-communicative approach focuses its students on the formation of integrity from various similar components previously allocated, taking into account the goals and objectives of not only chemical education, but also linguistic education, through their active participation in oral and non-verbal communicative activities;

- the integrated approach involves the use of educational tools.

- an active approach means the active and conscious participation of the student in the learning process, the acquisition of new knowledge and skills in activities.

The organization of educational work with the integration of chemistry and English will be effective in the modern educational system for studying both the English language of chemistry.

### **LITERATURE REVIEW**

We can also observe the connection between the two disciplines, the connection and the effectiveness of cooperation in the organization of educational work in the works of the following scientists.

Hence, let's consider concepts studied in O.A. Zakharova's works [1-2]. The author defines the information-communicative competence of a person, on the one hand, as the ability to act in a dynamic socio-cultural environment, to interact in different areas. Different cultures move among themselves in width: on the other hand, we determine the creation of a specific style of communication, characterized by an increase in the volume of information and knowledge, an increase in personal activity, learning to act in an information-mechanical environment. O.A.Zakharova as noted in the scientific work [3], the competence of information and communication allows a person to exist in the world of symbols and signs, social code and patterns of behavior and communication.

For example I.A.Zimnyaya [2-3], and A.V. Khutorsky [4], it should be noted that they see separately the concepts of communicative-informational competencies. We believe that the problem of pedagogical competencies is being developed. Because it is not emphasized by the generality of competencies, but this concept can be considered through the prism of subjective interpretation. O.A.Zakharova's idea [5] is closer to us about information-communication competence as a single phenomenon. First, the exchange of information is the goal of any society, and in turn, it is impossible to communicate without the exchange of information. Secondly, in accordance with the methodology of communicative training [6] the formation of communicative competence of students, widely used for subjects in the field of linguistics, is the main goal of teaching English.

When combining chemical knowledge and other field knowledge in any English language area, attention should first be paid to identifying the relationship between English and chemical language. As M.S. Pak noted [7], chemical language is the subject and didactic agent of chemical science. It is a system of chemical terminology, signs, nomenclature, rules for their writing, construction, modification, interpretation and use. Problems of the use of chemical language in teaching chemistry at school N.E.Kuznesova [8], studied in her research. V.G. Prokopenko and

V.I. Daineka [7-8], D.F. Fayazova [1,8] and V.I. Shilova [9] works explore some issues of chemical language teaching for general secondary education schoolchildren. General high school chemical language is the language of chemistry that is didactically processed in accordance with the purpose and content of general secondary education school chemistry. [9]

When considering English and the language of chemistry, it is possible to identify points of contact in semantic, etymological and communicative aspects.

### **RESEARCH METHODOLOGY**

In order to describe the theoretical foundations and conceptual rules of the models of the organization of educational work in chemistry at a general secondary school in conditions integrated with the English language, we will consider the clarification and correction of the studied conceptual apparatus, which includes:

- Cognitive communication is the process of communication in 2 languages (native and foreign), which aims to exchange information.

- Bilingual in chemistry is a bilingual educational work based on the use of two languages as a means of communication.

- Cognitive bilingual semantics is the ability to assimilate the meaning of a term and use it in bilingual speech.

- Cognitive-integrative knowledge is knowledge that is related to two areas of education at the same time – the science of chemistry and the English language and is formed using specific methods.

- Information-communication skills are skills that ensure the student's ability to obtain, evaluate and transmit information on a particular topic in various communication situations.

- Information-communication competence is the ability and readiness of a student to speak in communication on a particular topic, using adequate communication skills and working with information based on his previous experience.

- The organization of educational work with the integration of chemistry and English will be effective in the modern educational system for studying both chemistry and English.

### **ANALYSIS AND RESULTS**

The integrated approach is significant in our time in that it is aimed at the formation, development and competence of important personal characteristics that allow interdisciplinarity, interdisciplinary approach, syncretic, independent, creative and effective movement in various educational and life situations.

The personality-oriented approach involves taking into account the individual psychological characteristics, inclinations, abilities and interests of each student, and aims to establish the relationship between educational content and the student's personal experience.

It is important to note that competency-based and personality-oriented approaches are closely related. V.A.Bolotov and V.V.Serikov argues: "competence is knowledge, skill, availability of education, contribution to personal self-organization, finding a place in life, as a result of which education becomes highly motivated and person-oriented, maximizes the demand for privacy, allows potential, recognition of the individual by others and awareness of its importance" [7-9].

- The integrated principle of chemistry and English is a principle that implies the interconnection, Union and synthesis of knowledge and skills within the framework of two educational disciplines (chemistry and English), creating conditions for the formation of new

bilingual-integrative knowledge, the formation of bilingual information and communication, the skill is also useful for the application of integrated teaching methods;

- The principle of development of chemical and linguistic knowledge - the principle that implies the possibility of deepening and expanding the experience of knowledge, skills and their use;

- The principle of bilingual communicative activity is a principle that ensures the involvement of general secondary education in the use of new educational materials for schoolchildren, the cognitive value and curiosity of which stimulate bilingual communication, increase its quality level, which contributes to the development of information and communicative competence of students;

- The principle of accounting for the individual characteristics of students - the principle that emphasizes the need to take into account the psychological, age and other personal qualities of each student;

- The principle of continuity with chemistry and English lessons is a principle aimed at the interconnection and continuity of knowledge and skills formed by students in terms of their integration with English in chemistry and English lessons and in the process of studying chemistry.

### **CONCLUSIONS AND RECOMMENDATIONS**

On the basis of an integrated approach, it is advisable to successfully use the relationship between chemistry and English, to include the following in the didactic and methodological conditions when applying it to educational processes in the educational system.

- reliance on bilingual semantics techniques (bilingual assimilation of the meaning of chemical concepts by students), etymological approach to the study of chemical and general scientific terminology, and chemical nomenclature;

- systemic actualization in problematic-communicative situations of special (chemical) knowledge;

- mastering chemical material using a complex of information-communication skills;

- development of students' logical thinking techniques (generalization, comparison, classification) based on chemical and linguistic materials at the same time;

- implementation of the principle of personality-oriented education; ensuring the expansion of intercultural competence of students;

- creating a methodological base by carefully selecting chemical and linguistic materials, adhering to all didactic principles;

- the principle of existence should be considered as a priority;

- compliance of the methodology of educational work in chemistry within the framework of the integration of chemistry and English into the level of teaching and development of students;

- taking into account the initial level of scientifically based diagnostics, science and language knowledge and the level of formation of bilingual-integrative knowledge and communicative-information skills at different stages of the educational process;

- the use of the technique for the formation of a communicative core in speech activity, stimulating the research activities of students, and so on.

From the above, we can say that for the development and progress of education, in today's globalized period, various methods and methodologies have a special place. However, it is required to further promote the importance of the interdisciplinary approach to the application of interoperability in chemistry and English. It serves to facilitate the easy acquisition of English

terms used within the subject of chemistry in general secondary schools and, on this basis, further development of English skills in the student youth.

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