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METHODOLOGY FOR THE DEVELOPMENT OF INTELLECTUAL AND CREATIVE CAPABILITIES OF STUDENTS BASED ON THE SCIENCE OF CHEMISTRY

T. I. Jonimkulov[1]
Independent Researcher of Karshi IEE[1]

ABSTRACT

In recent years in several developed countries, including USA, Germany, China, Russia, Korea, UK, India, Japan, along with all the natural Sciences, improving the process of teaching chemistry is reflected in the work aimed at the harmonious management theory and practice, organization of training based on the sequence of “to know – to understand – to put into practice”, the development of the use of didactic games, selected in accordance with the age and interests of the pupils. In the future, as a result of educating the younger generation, who have thoroughly studied and perfectly mastered the scientific foundations of chemistry, they will help to solve many environmental, technological, food and a number of other production problems.

Keywords: mind map, contextual text task, method, competence, training, didactics, creativity, mental action, perception.

Introduction

In almost all countries of the world, including in our country, where day by day the fields of science, art, technology and production are developing, all subjects taught in general secondary education schools, which are considered the main primary link in education, in particular, are important in improving the process of teaching chemistry, which is the basis of modern production and our daily In the following years, improving the process of teaching chemistry, harmoniously conducting theory and practice among all natural sciences in a number of progressive countries of the world, including the United States, Germany, China, Russia, Korea, Great Britain, India, Japan, " know-understand – application in practice " is reflected in the work aimed at the development of areas of use of didactic games, which are selected in a way appropriate to the age and interests of the student in order to organize teaching on the basis of sequence continuity,

conduct classes in an interesting way and develop motivation. As a result of raising a generation that has studied and knows perfectly well the scientific foundations of Chemistry, a number of problems in the future in many environmental, technological, food and other areas of production will lead to their own solution. Therefore, as a result of improving the process of using didactic capabilities of educational technologies based on the integration of educational disciplines, the development of students ' scientific potential, creative abilities is one of the most fundamental problems that serve to improve the process of teaching chemistry.

LITERATURE ANALYSIS.

Russian Methodist scientists V.N. Verkhovsky, P.P. Lebedeva, L.M. Smorgonsky, Y.L. Goldfarb, Yu.B. Khodakov, S.G. Shapovalenko, L.A. Svetkova, I.N. Chertkova, V.S. V. P. Garkunova, N. E. Kuznetsova, D. M. Kiryushkina, G. I. Shelinsky, M. S. Pak, O. S. Gabrielyan and others contributed. These Methodist scientists prepared the first educational-methodical material complexes, textbooks, exercise books and other didactic resources intended for use in the teaching process [1; 19-76]. H.T.Omonov, N.Azizkho'jaeva, Z.Mamajonova, N.Kh. from the scientists of our republic in the study of the theoretical and practical foundations of using pedagogical technologies in the process of improving the quality of education, the use of innovative methods in the education process, and the use of group and individual methods in classes. Khojaev, S.A.Madyarov, E.U.Eshchanov, O'.Q.Tolipov, M.Usmonboeva, M.B.Khattabov conducted research.

About the development and application of didactic materials in the teaching of chemistry and its departments, methods of effective organization and management of chemistry education, the use of algorithms and programs in the teaching of chemistry, forms of organization of chemistry education, chemistry o E.G. Polupanenko, V.A. Kuzurman, I.V. Zadorojniy, E.E. Minchenkov, M.S. Pak, D.K. Bondarenko, S.S. Kosmodemyanskaya, S.I. Gilmanshina from foreign scientists on the study of the connection of teaching methodology with other subjects, the theoretical basis of using innovative methods in chemistry classes the works of others are noteworthy [2;3-4]. The services of G.M.Chernoblskaya and N.E.Kuznetsova in the formation of the chemistry

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curriculum in Russian schools are incomparable. According to P.A. Orzhekovsky: "Development is positive changes in the cognitive process of a person, such as perception, thinking, imagination, memory, which appear as a result of active and conscious activity." The basics of developmental education, including the importance of developmental education in the process of deepening and strengthening acquired knowledge, were explained by the famous psychologist L.S. Vygotsky [4; 2-5].

Analyzing the process of studying the methodology of teaching its departments in chemistry in Uzbekistan, in recent years, professor H.T.Omonov made a huge contribution to the development of the field of methodology for teaching chemistry. In addition, A.Mamajonov, J.Fayozov, T.Gulboev, G'.Boymurodov, M.Umarov, A.Azimov, SH.Kuchov, J.Mamajonov, F.Alimova and L.Zaylobovs conducted a number of scientific studies on improving the teaching of chemistry.

METHODOLOGY

Analyzing the above-mentioned scientists and the researches conducted by them, we found that they explained the forms of teaching chemistry, the methods that can be used in chemistry classes and their importance, and gave a number of valuable opinions on the assessment of students' knowledge. we will be able to see. However, it should be noted that there are a number of poorly researched aspects of chemistry teaching: 1. The psychological foundations of the chemistry teaching process have not been sufficiently analyzed, and the necessary recommendations in this direction have not been properly developed. In order for the lesson to be effective, it is necessary for the teacher to have a deep knowledge of the student's psychology, to have a good influence on his mood, to increase motivation by creating only positive emotions in him, to improve and develop new technologies that develop interest, and to use them in lessons. 2. Today, modern, effective methods of identifying and eliminating gaps in students' knowledge of chemistry are rarely studied.

"Intellect map", "Quest", "Text logical tasks" which allow to learn chemical laws, use formulas, use reactions, use and develop creative abilities, in the process of strengthening the previous and new topics, which are the most important parts of the lesson. ", "Swot-Analysis", "Case-Study" and improvement of modern technologies and assignments. 3. It is necessary to

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develop graphical, tabular, and pictorial representations of exhibitions used to explain the topic in the lesson and assignments for students [4; 5-8]. Because tasks and exhibitions of this kind are remembered longer and help to better understand the subject. When analyzing the state of teaching chemistry in developed foreign countries, it was found that they use more elements of STEAM education in lessons.

In this direction, in teaching children, they are treated freely, as if they were adults, they are given tasks to prepare various projects and exhibitions, lapbooks. In the process of independent preparation of the project and exhibition, the students' interest in the lesson increases, the process of creative thinking develops [5; 11-14].

ANALYSIS AND RESULTS

Pedagogical studies have found that a person allows you to remember 10% when he independently reads the source, 20% when he hears information, 50% when he sees information about an event, event or process that happened, 80% when he transmits information himself, 90% when he applies the acquired knowledge to his activities. [6;5-6]. This situation is general, for all disciplines, and it is not for the science of chemistry that analysis has been carried out. Considering the complex science of chemistry, it would not be harmful if the process was analyzed more deeply.

Of the technologies that are now considered the top priority in the educational process, problematic educational technology mainly allows students to explain, strengthen topics in an interesting way. However, test methods are considered very effective in the process of rapid and close assessment of the student's knowledge.(7;40-45). In the process of teaching chemistry, it is necessary to develop new manifestations of tests, improve existing tests, continuity of tests with situational, problematic, illustrated, Tabular tasks. Among the methods proposed above, one of the most significant is currently the "intelligence map" method [8; 96-100]. This method can be used equally when explaining a new topic, strengthening the topic mentioned. In the middle of the map, a “central concept” is put, then from it are drawn primary networks that can base the essence of the central concept, and, if necessary, secondary networks that interpret the idea presented in the primary network. This method uses as many

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different colors as possible to better concentrate attention. In order to further enhance the figurative appearance of this method, various images, characters can be used.

With a high degree of exhibitionism, this method, which can draw attention to its own aesthetic aspect, is a creative project work in which a sequence of existing concepts in the human mind is arranged in an orderly manner. A drawing of the" intellect map " method. It is necessary to use "contextual text assignments" in classes in order to develop the skill of completing tasks of a modern creative appearance, which is associated with the application of the acquired knowledge in life situations, the competence of the assimilation of the theory into practice is reflected. When drawing up such assignments, taking into account the age, interests and worldview of the student, it is advisable if the subject being taught is drawn up in connection with an event, or event, that occurs in our daily life [9; 120-125]. Especially of great interest to younger 7th graders are assignments with the participation of fairy tales, cartoons or famous movie characters. An example from the"context text assignment": in ancient times, in one of the distant villages lived an old man, his kind, intelligent and hardworking daughter Emerald, her stepmother and step-sister. Her stepmother tried to torment the Emerald as much as possible, giving her impossible and unfeasible assignments. Here, even today, the stepmother gave her daughter Emerald the following assignments: task 1: this substance is formed as a residual substance when the usimliks burn, which can be used to clean household items. It contains 56.5% potassium, 8.7% carbon, 34.8% oxygen. Determine the substance and clean the items using it. (Answer: potash K2SO3) task 2. In the kitchen, the mice began to multiply. They transmit many diseases. Therefore, it is necessary to lose weight. In this you can use a substance whose composition consists of X2O3. If the mass fraction of an unknown element in its composition is 75.7%, determine the substance(answer:As2O5).

It is very effective to use this method in teaching chemistry, which, in theory, is considered to be very complex, rich in many concepts and terms that are inextricably linked with each other. When developing text assignments, it is necessary to take into account mainly a number of inextricably linked aspects. The basic requirements for context text assignments can be made using a variety of hand-made illustrated exhibitions to teach 7th graders the elements contained

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in the "periodic table of chemical elements" and their chemical formula. Such picture cards can be given to the reader in a colorless form and required to be painted from ulur. It is known that small-class students are very fond of Painting Pictures, a process that is sure to be interesting and memorable for them.

CONCLUSIONS AND SUGGESTIONS

The problem of using innovative methods in improving the effectiveness of Chemistry Lessons has been studied very widely by foreign and domestic educators, with various achievements in this direction [10;550-555]. At the same time, in order to adapt the methods and technologies created to this day to the requirements of the times, it is necessary to slightly change them, improve them. It would be desirable if it emphasized the creative abilities of students and the development of the creative thinking process.

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