



DEVELOPMENT OF METHODOLOGY OF TEACHING CHEMISTRY IN SCHOOLS

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Abstract

This article explores research into the development of chemistry teaching methods in schools. You also need to be a well-rounded chemistry teacher. It is scientifically based on the need to know the age-appropriate psychology of children in addition to chemistry, chemical knowledge and practical methods. In addition, conclusions and recommendations for the development of methods of teaching chemistry in schools have been developed.

Keywords: chemistry, teaching methodology, teaching methods, chemical knowledge, advanced specialists.

Introduction

Since the independence of the Republic of Uzbekistan, we have witnessed a sharp increase in the need for qualified, advanced specialists. Educating independent-minded boys and girls from school is one of the urgent tasks of today.

The younger generation should not only know a certain amount of knowledge, but also have the spirituality and enlightenment of an independent state-builder, and their attitude to work and behavior should be enviable.

In our country, great privileges are given to teachers, to the education of the younger generation. Therefore, in the face of higher education, first of all, it is necessary to accept educated, spiritual and Uzbek-minded young people into the student body, equip them with knowledge and bring them to the level of a great person in a high sense. The service of science teachers in doing this is great.

The teacher must be an expert in perfectly formed chemistry. He needs to know the psychology of children according to their age, in addition to chemistry, chemical knowledge and practical methods. He must master the techniques of carrying out all stages of pre-education. Knowing the didactic foundations of the science he teaches, he must convey the knowledge based on his own life experience, taking into account the general methods of imparting knowledge to the children's youth.

The teacher must constantly improve his knowledge, that is, to master the pedagogical technologies, to strive to improve the learning process. Because if a teacher stops in





his research, the next day he becomes a stereotyped thinker and out of high envious people, and the respect for him among the students decreases, the children start to imitate him, the envy disappears.

Every teacher should complement the experiences of others with his or her own experience, without copying them, and then the learning process will be perfected because each person has their own unique style and unique personal qualities.

Chemistry teaching methods are studied in a certain order. First, the main tasks of the reading process are considered. Then the methods of organizing the learning process, teaching tools, forms and methods of scientific organization of the teacher's work are considered.

Chemistry teaching methods are not only delivered through lectures, students need to know experimental demonstration methods, lesson planning, chemical problem solving methods, teaching forms and more. Therefore, they have to do course work, work independently in pedagogical practice. When teaching methods, it is necessary to make excursions to schools, academic lyceums, vocational colleges. It is important to organize special courses, internships from special courses.

The development of science and technology is increasing students' interest in the flow of knowledge and the wave of events. From today's point of view, students need to have high cognitive activity, good mental activity and be able to think independently. Such qualities in students are developed by school teachers. It is the duty of every educator to work responsibly in such an honorable work for the development of our independent country, for our future generation. Solving such a responsible task depends on the method of equipping students with deep and solid knowledge, interest in science, independent work and focus on thinking. The more a specialist pays attention to the methodology of his work, the greater the results he will achieve. The main teaching methodology of teacher work is the methodology of teaching and educating students. The basis of the work of a chemistry teacher is the methodology of teaching chemistry.

The conclusions of the science of chemistry require that they be closely connected with life and that they be interpreted philosophically. Chemistry teaching should gradually form a chemical worldview in students. Duties of a chemistry teacher:

- For the future of our independent Uzbekistan to help students to consciously and thoroughly master the basics of modern chemistry;
- To acquaint students with the scientific basis of chemistry, which is necessary for the interpretation and use of nature;
- Pay special attention to the formation of students' ability to look at nature from a materialistic point of view;





- Educate students to be able to use a chemical experiment, which is one of the means of scientific knowledge;
- It is necessary to train students for work - to prepare them for future practical activities;
- To increase students' interest in chemistry;
- To teach students to search and learn independently;
- Formation of students' learning and skills in everyday life;
- Involvement of students in socially useful work;
- Explain the importance of chemistry in our lives;
- To bring to the level of physically strong, mentally mature people;
- A concrete acquaintance with the periodic law of elements and the periodic table is the main content of the chemistry course.

Chemistry teaching is a powerful tool for educating students, making chemistry hardworking and patriotic, deeply interested in science, and the ability to think independently about scientific subjects. Showing that the basic concepts in chemistry and the laws must be brought up in such a way that they look at the gradual historical development from the right perspective. Among the methods of teaching chemistry, in particular, methods specific to the teaching of chemistry, as well as general pedagogical methods can be used. For example, the problem of experience and explanation may be:

- a) First experiment, then comment;
- b) First comment, then experiment;
- c) Explanation and experience together;
- g) Homework assignment, demonstration of experience, and then explanation.

In the development of new methods of teaching chemistry, it is necessary to use general pedagogical research: pedagogical observation, the researcher's conversation with the teacher and the student, questionnaires, pedagogical organization of the observed lesson, re-experimentation. A chemistry teacher should be an ideologically formed person, have a deep knowledge of science, be able to correctly apply the basic theoretical knowledge of education and teaching in practice, as well as be aware of pedagogical experience in the field of chemistry teaching methods. has a special place. Because this subject is a pedagogical tool that teaches and guides the content of chemistry in school and the laws of its understanding by students. The essence of chemistry teaching methods as a science is the laws of the process of teaching chemistry, which includes: the purpose, content, methods, forms, tools and activities between teacher and student. The function of the chemistry methodology is to find the optimal ways for high school students to express the basic facts, the laws and





theories of understanding, in sentences specific to chemistry. Based on the main conclusions, laws and principles of didactics, the methodology solves the main tasks of teaching chemistry, which promotes education and maturity. The choice of profession of students pays great attention to the problems of polytechnic education. Methodology, like didactics, deals with the development and growth of students' learning activities and the formation of the foundations of a dialectical materialist worldview. It should be noted that the effect of the chemistry methodology varies for different young people with different interests and other characteristics. In order to solve the methodology of chemistry on a scientific basis, it is necessary to base the school chemistry course from the point of view of dialectical-materialist philosophy, taking into account the modern knowledge of pedagogy, physiology and psychology.

Results

There are the following methodological directions on the basis of chemistry teaching methods:

1. General dialectical method, in which the development of concepts during thinking, the interdependence of different parts of teaching, the interdependence of internal contradictions, a problem-solving approach to solving them.
2. Systematic-structural approach, which includes the separation of the main sections for teaching, finding their interdependence, as well as showing the stability, closeness of the interaction of elements and the unity of methods of teaching school chemistry. 'show.
3. To consider the above methodical categories based on three teaching functions: education, upbringing and development.
4. To consider the basis of the methodology of teaching chemistry through a didactic approach.

In the methodology of teaching chemistry, didactic education of teaching methods is taught by the laws of education, the development of knowledge - psychological sciences. During training, these three components interact and the chemistry axis is based on the dental technique. This means that chemistry teaching methodology is a pedagogical science that teaches, educates and develops students in school during the teaching of chemistry lessons. The methodology of teaching chemistry is located at the heart of pedagogy, chemistry, social sciences and other disciplines and is inextricably linked with them.

In the development of methods of teaching chemistry M. Lomonosov, N. Zinin, A. Voskresensky, D. Mendeleev, A. Lavuaz'e, A. Butlerov, N. Beketov, L. Chugaev, D. Konovalov, Kekule, I. Kablukov, A. Reformatsky, I. Pisarevsky, B. Menshutkin and





other famous chemists contributed because they also taught chemistry to their students. These scholars also had a number of textbooks written in a fundamentally new style.

Russian scientists M. Lomonosov, D. Mendeleev, A. Butlerov have made many contributions to the creation of the scientific basis of chemistry teaching methods. In the process of uncompromising struggle against idealism and empiricism, these scientists not only created new directions in chemistry, but also laid the foundations for the methodology of teaching chemistry on a scientific and materialistic basis.

M. Lomonosov (1711-1765) ... founded a gymnasium and a university with a deep belief that Russian soil could produce its own Plato and sharp-witted Newtons. He wrote and read lectures at Moscow University.

D. Mendeleev's books "Fundamentals of Chemistry" (Basic Chemistry), "Dream Thoughts" (Zavetnye mysli), "Project of the Teachers' Training School" (Project of three mentors) brought the chemistry closer to practice. On the basics of chemistry, he said, "Wu is my beloved child - my initial thoughts, my pedagogical experience, my heartfelt thoughts are in this work." He advocated that chemistry be related to life. In addition to drawing conclusions, "designing recommendations for ways to draw these conclusions" should teach students to use conclusions, "to practice chemistry, that is, to ask nature and listen to its answers in laboratories and books". Chemistry teaching should gradually form a chemical worldview in students.

Mendeleev to acquaint students with the scientific basis of chemistry, which is necessary to explain and use the surrounding nature: to pay special attention to the formation of students' ability to look at nature from a materialistic point of view: considered it necessary to educate students to use chemical experience, which is one of the means, to teach them to work, to prepare them for future practical activities. In his view, chemistry teaching should be based on the substances themselves and the changes that occur with those substances. Chemists believed that the properties of substances and the changes that occur with these substances should be explained on the basis of existing theories in science: the theory of the structure of substances, the periodic law, the periodic table of chemical elements, and other theories. S. Sazonov (1866-1931) In his opinion, in the teaching of chemistry should pay more attention to experiment.

He did not deny the educational value of demonstrating chemical experiments, but at the same time attached great importance to the organization of special practical classes for students in high school. He wrote his first systematized chemistry textbook, Elementary Course Chemistry, and his book, Chemical Experiments, First, on the techniques and methods of conducting experiments by students. After that Krapivin





S. "Zapiski po metodike khimii", as well as Goldfarb, Smorgunskiy published in 1933 the first stable perfect textbook. They also created a textbook "Methods of teaching chemistry."

The pedagogical academy of the former Soviet regime also played an important role in the development of chemistry teaching methods. Because it includes methods of teaching chemistry, equipping school chemistry classrooms, creating chemical concepts in students, collecting problems and exercises in chemistry, experimenting with organic substances taught in high school chemistry course and similar methodological problems. areas of problem solving through

Even today, the chemistry methodology has the task of scientifically developing the following issues:

- a) Scientific bases of chemistry;
- b) Chemistry course system;
- c) The content and methods of polytechnic training of students;
- g) Educating students in the process of teaching chemistry;
- d) Methodology of chemical experiments conducted at school;
- e) The basic laws of the educational process in chemistry;
- j) The system of extracurricular activities in chemistry, etc.

The science of chemistry was formed only three centuries ago and has gone through several major periods so far. It is important to know these periods when teaching high school chemistry.

1. The era of fine chemistry. The textbook, which dates back to the middle of the 18th century and did not contain laws or theories, is also called "demonstration science."
2. The period of experimental-theoretical chemistry is the period from the middle of the XVIII century to the middle of the XIX century. During this period, the law of conservation of mass of substances and other practical work emerged. During this period, the experimental theoretical character of chemistry was also reflected in the methods of teaching chemistry. The experimental method was used instead of the simple instruction method previously used. However, at that time, due to the widespread methodological struggle in chemistry, anti-materialist ideas also entered the teaching of chemistry. Methodological views were poisoned by the harmful ideas of extreme empiricism.
3. The third period is the period of the greatest theoretical generalizations in chemistry from the middle to the end of the XIX century. Mendeleev's and Butlerov's books were published. Although D. Mendeleev's periodic table of elements and A. Butlerov's theory of chemical structure "Introduction to the full study of organic





chemistry" was the main principle of the whole course of organic chemistry, it has not been used in Russian schools for a long time.

4. Electronic concepts in chemistry The period from the late nineteenth century to about the 1920s is associated with the discovery of the structure of atoms. During this period, the properties of substances were explained in terms of the structure of atoms: the essence of chemical changes was determined - the essence of oxidation, reduction, ionization, electrolysis and other processes was clarified: new atoms, new artificial chemical elements were created and used. An enormous source of energy called the internal energy of the atom has been found.

Conclusion

The above scientific discoveries have hampered the roots of various idealistic ideas and have suddenly strengthened dialectical-materialist ideas that are correct, reflecting the essence of nature and laws.

The task of a chemistry teacher is to prepare the younger generation to build an independent Republic. Equipping students with modern knowledge is the most important task of our school and it is also assigned to the chemistry teacher.

Polytechnic education of students in the process of teaching chemistry is the most important task of the school and chemistry teacher, to form the basis of the dialectical-materialist worldview, to educate in the spirit of patriotism and nationalism. In order to provide polytechnic education to students:

1. Introduces students to the most important chemical industries, emphasizing the scientific principles that underlie modern chemical production.
2. Explains the chemical basis of agricultural production.
3. Demonstrates to students the achievements of the chemistry and chemical industry, as well as in what way they will develop in the future.
4. Draws students' attention to how the latest advances in chemistry are being used in our practical lives.
5. Provides students with the most important learning skills that are essential in practical life.
6. Involves students in socially useful activities that are subject to the educational goals they are able to achieve.

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