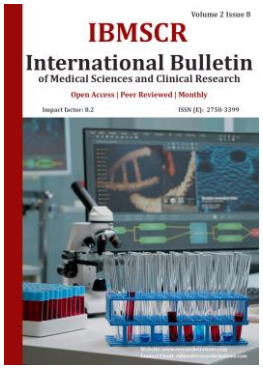

METHODOLOGY OF FORMING THE SYSTEM OF CONCEPTS ABOUT THE SUBSTANCE IN THE CHEMISTRY COURSE

[1]Rustamova Ch. Sh., [2]Makhmudova N.R., [3]Kholikulova N.B., [4]Israilova G.B., [5]Tadjiyev Sh., [6]Khusanova M.T.

[1]Tashkent c. Chemistry teacher of the 1st Vocational School of Chilonzor District,
[2]Tashkent c. Sirgali Medical College,
[3]Syrdarya district,
[4]Akkurgan district,
[5]Vocational school,
[6]Chirchik city, Ortachirchik district

https://doi.org/10.5281/zenodo.7969089

A chemistry course includes factual material about substances and their changes, chemical concepts, laws and theories. This knowledge is learned in an integral connection with each other.

It is necessary to adequately use the exercises given in the textbooks to explain the chemical concepts to the students, to systematically organize the independent work of the students on the basis of visual aids and other didactic materials in the formation of chemical concepts.

Samples of substances shown to students and various visual aids - tables, schemes, diagrams, crystal lattices and models of molecules, various handouts, chemical experiments, chemical tools help students understand chemical concepts.

The properties of substances and chemical phenomena studied in the chemistry course are diverse. In chemical concepts, the most important, general and necessary signs of a group of substances or chemical phenomena are summarized.

Chemical concepts are formed, clarified and developed in connection with the basic theories of chemistry and on the basis of factual material in the school inorganic chemistry course. These concepts complement each other and form a system of knowledge about substances and their properties and changes.

Formation of chemical concepts has its logical, psychological and didactic aspects. The creation of chemical concepts will be successful only when these aspects are realized in an integral relationship with each other. Logical and didactic aspects of forming chemical concepts can be pointed out [1].

One way to improve the quality of chemistry lessons is to correctly formulate various chemical concepts. At present, it can be said that the focus on teaching basic chemical concepts in the educational process is very weak. Research shows that scientific research is being conducted in this important direction in our republic.

OIn the process of providing students with concepts about matter, they develop a materialistic worldview.

The system of substance concepts consists of the following components.

1) substance composition 2) structure 3) properties 4) classification 5) use 6) extraction 7) chemical method of studying substances.

Materials are classified and systematized for comprehensive and in-depth study.

Inorganic compounds are first classified according to their composition. After studying the electronic structure of substances, substances are classified according to their structure.

<table>
<tr><td colspan="9">Substance</td></tr>
<tr><td colspan="2">Simple</td><td colspan="7">A complex substance</td></tr>
<tr><td>Metals</td><td>Non-metals</td><td colspan="4">Inorganic substances</td><td colspan="3">Organic substances</td></tr>
<tr><td></td><td></td><td>Oxides</td><td>Basics</td><td>Acids</td><td>Salts</td><td>Hydrocarbons</td><td>Oxygen compounds</td><td>Nitrogen compounds</td></tr>
<tr><td>Metal gardens and crystal lattices</td><td>Non-polar covalent bonds. Molecular or atomic crystal lattices</td><td colspan="4">Ionic and polar covalent bonds. Ionic and molecular crystal lattices</td><td colspan="3">Polar covalent bonds. Spatial structure. Chemical structure</td></tr>
<tr><td colspan="2">Electrolytics</td><td colspan="4">Electrolytes</td><td colspan="3">Electrolytics</td></tr>
</table>

The properties of substances come from their composition and structure. The structure of substances is studied according to their physical and chemical properties. Physical properties include the following signs: color, smell, state of aggregate, relative density of gases, relative molecular mass, density, hardness, electrical conductivity, melting and boiling temperatures.

Chemical properties of substances are manifested in chemical reactions. Their classification of substances odepends on their classification, their composition and structure. The properties of inorganic substances (metals, nonmetals, oxides, hydroxides, acids and salts) differ from the properties of organic substances (saturated, unsaturated, aromatic hydrocarbons, oxygen-containing, nitrogen-containing).

Substances oThe understanding of the chemical method of learning is also based on the study of the composition and structure of substances. The composition of the substance is found using methods of qualitative and quantitative analysis. To determine the structure of substances, complex physico-chemical instruments are used, that is, instrumental analysis, or they are studied through complex syntheses. For example, the composition of complex compounds is determined based on instrumental analysis IR, quantum chemical analysis [2]. In addition, there are theoretical methods of studying the properties of substances.

In the study of the concept of matter can be seen in the topic "General properties of metals". When studying metallic bonding in this topic, the concept that metal is a simple substance gives new meaning to metallic bonding. When a metal is considered as a simple substance, its structural structure is understood as a substance, that is, it forms a crystal lattice. Processes occurring in galvanic elements, electrochemical voltage series of metals, oxidation-reduction properties in solution or liquid, i.e. electrolysis process, types of corrosion are explained by chemical and electrochemical corrosion, crystal lattice structure of metals [3]. When studying a certain metal, the complex of concepts about the above-mentioned substance is perfected,

By developing concepts about substances, it is observed that changes in quantity lead to changes in quality. This is an example of the arguments that prove the law of dialectics that quantitative change leads to qualitative change [4].

The main educational task of summarizing concepts about matter is that, with the help of many examples about matter, a scientific materialistic worldview is instilled in the minds of students.

References:

1.Saidamatova, N. Sh., Ibodulloeva M. I. (2021). PROBLEMY I PERSPEKTIVY VOSPITATELNOY RABOTY SO STUDENTAMI. Internauka, (8-1), 63-64.

2.Ibodulloeva, M. I., Azizov, T. A. (2011). O kompleksnom soedinenii nicotinata zinc s carbamidom. Actual problems of modern science, (2), 172-173.

3.Formanova S.B. Application of Pedagogical Technologies to the Topics of the Metals Department //Annals of the Romanian Society for Cell Biology. - 2021. - S. 5499-5509.

4.Shomurotova, S.X., Farmonova, S.B., Kamolova, N.I., Movlonova, S.A. (2020). Improving the Methodology of Teaching the role of metals in Biochemical Processes using Pedagogical Technologies. Engineering a Management Test, 83.