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METHODOLOGY OF TEACHING THEORETICAL FUNDAMENTALS OF CHEMISTRY IN INTERACTIVE METHODS

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ABSTRACT

The study of each chemical theory certainly has its own characteristics, but there are many methodological aspects that apply to all chemical theories. In this process, the analysis of chemical theories using the aspects of teaching chemistry and how to teach them methodologically, how and in what way and using what technologies, is one of the general methodological processes.

KEYWORDS: *Chemical Concepts, Natural Water, Spring Water, Organic Chemistry, Mechanisms Of Hydrolysis, Sodium Hydroxide.*

INTRODUCTION

Students are mainly introduced to the following theories in the formation of chemical concepts by teaching them the basic theories of chemistry. 1. The theory of atomic structure. 2. Solution theory. 3. The theory of electrolytic dissociation. 4. The theory of formation of complex compounds. 5. The theory of the structure of organic chemistry in the process of teaching the subject to students to understand the structure of matter and its properties and the reactions that take place in it to obey the chemical laws and based on the synthesis of new substances by applying them in industry. **[1]**

Many textbooks and methodical manuals on chemistry, as well as the experience of teaching chemistry to our great Methodist scientists, apply two different methodological views on how to study theories. The most widely used theory today is on the subject of these solutions, which are mainly based on the teaching of the laws of chemical reactions that take place in solution. The subject of water and solutions begins in 7th grade in chemistry, with students being taught the

following based on chemical concepts: what is a solution and how it is formed, types of components solution (saturated, unsaturated and super-saturated), solubility, solvent, solution, methods of expressing solution concentrations (percentage, normal, molar and molar and substance titers), separation of substances from solution is obtained by explaining the extraction, filtration methods and diffusion processes. The Methodist teacher's view of what process occurs when a substance dissolves mainly in water in a solvent basics and provide chemical insights into what other reactions occur. We know that any inorganic substance, such as a metal, oxide, acid, or salt, dissolves in a solvent, but the salt first dissolves, then hydrolyzes, decomposes into ions, and dissociates. Based on this, the teaching of solution theory in the school chemistry course is carried out in three stages. **[2]**

1. First acquaintance with solutions.

2. Atomic molecular theory of solutions deepening on the basis of.

3. Further expansion of the theory of solutions on the basis of the theory of electrolytic dissociation. In teaching this theory, the general properties of solvent water and its physical and chemical properties are formed by giving students chemical concepts using simple methods and experiments based on concrete examples. In this case, the Methodist teacher is based on all the waters of nature, ie natural water, spring water, drinking water, distilled water, snow water and chemical reactions. They need to introduce the water that is formed and to give them a complete chemical knowledge that they all contain N + and ON- ions, and that these ions form melting mechanisms.

The teacher performs the melting process by demonstrating to the students by taking a few glasses of chemicals based on the demonstration method, adding the same amount of water to it, and adding different substances on it to show whether they are soluble or not. For example: sand, soil, sodium chloride, potassium permanganate, stone, sugar, sugar the solubility of copper (II) sulfate salts can be shown. In this case, they see that some substances are soluble, some are insoluble, and the rest are distributed throughout the container, and on this basis, students learn about the mechanisms of solubility and diffusion, and chemical concepts about solution, solvent and solute. In order to further develop this theory, it is necessary to teach students the solubility product in explaining the melting mechanism. **[3]**

Theoretically in order to further develop this process The chemical concepts are generated by comparing it with the solubility table by showing it experimentally and based on it experimentally. To do this, the Methodist teacher is invited to demonstrate the following experiences. For example, we take a few chemical glasses and put the following substances: A chemical reaction occurs in sodium metal, potassium nitrate, ammonium nitrate, sodium hydroxide, magnesium sulfate, silver chloride, ammonia, lime, broken glass, copper oxide, iron oxide, barium sulfate and show the mechanisms of melting salts by taking the solubility table and comparing which of them are soluble and which are insoluble. Students think independently based on the results of the experiment and draw general conclusions. **[4]**

In order to further develop this process, the teacher demonstrated in practice the methods of recrystallization and recrystallization of solute by evaporation of the solution and the methods of melting and super crystal solutions and recrystallization will have knowledge. We recommend that you perform this experiment as follows: Take a cup of For, add sodium sulfate solution to it,

heat it, separate the dissolved salt by evaporating the water in it, and weigh it to calculate how much salt has been obtained.

Therefore, demonstrating to students the process of separating sediment from a solution leads to the formation of ideas about the methods of separation of insoluble components in the two. For example, when a solution of barium chloride is exposed to potassium chromate, a yellow precipitate is formed, which, if required, is separated from the solution by filtration. **[5]**

The filtrate contains a yellow precipitate of barium chromate, and the filtered solution is mixed with water and sodium chloride will be. From this experiment, the student develops new skills, such as filtering, sedimentation, dissolution, and chemical experiments. In order to further expand the theory of solutions, the Methodist teacher explains the theoretical foundations of gaseous substances, such as the solubility of solids and liquids in solvents, by giving information about the mechanism of its melting.

In consolidating this theory, the teacher should prepare a demonstration experiment, it is necessary to first obtain SO2 through a gas-receiving device, and when it is exposed to water in a glass, bubbles are formed. make sure that the solvent is soluble in the aqueous medium. Methodist teacher to the complex state of sediments formed as a result of chemical reactions. The following examples can be given to them by developing their knowledge of increasing solubility through conduction. When a solution of silver nitrate is exposed to sodium chloride, it gives information that we can see the formation of a white precipitate insoluble in water. When this precipitate is exposed to an ammonia solution, the white precipitate is determined to melt.

In this case, we can explain the mechanism of dissolution of white sediment by the fact that it is transformed into a complex compound. Methodist teacher electrolyte solutions suggests the study of ion exchange reactions that occur between in the following groups, states that they are divided into classes, and suggests sections as follows.

1. Neutralization reactions.

2. Reactions with sediment formation. 3. Reactions with the formation of gaseous matter. Therefore, the teacher must explain the essence of neutralization reactions on the basis of the theory of indicators, in which water is a weak electrolyte, so it is almost indistinguishable from does not decompose. However, since acid and alkali solutions are colorless, it is not possible to visually see how much salt is formed when they interact and how much acid or alkali is left, but based on indicator theory, it can be said that alkali or acid is added to the solution by determining the color change.

Therefore, the teacher should experiment with the litmus indicator in a demonstration method, which is performed in litmus acidic environment, alkaline environment. In order to determine the color of a neutral medium, three cups of acid, alkali and water are slowly added to the litmus indicator and it is necessary to pay attention to the color change. their vision is based on creating new perceptions and recording the results of their experiences in their notebooks and indicator, litmus chemical understanding of the environment and skills to identify it.

The teacher should explain the theoretical basis under which the salts undergo hydrolysis, saying that salts dissociate with the formation of a solution when dissolved in water and form a

hydrolysis process. Then the hydrolysis equations should be focused on the step-by-step hydrolysis process with salts that proceed under weak base and strong acidic conditions.

Given the gradual process of hydrolysis in such salts, give the equations of the processes that take place in it based on the study of the mechanism of hydrolysis of salts. The following experiments, for example, cover the hydrolysis of all other salts. 1. The effect of water on ferric chloride. 2. Implementation of ferric chloride by heating a solution of sodium acetate in combination with a solution of phenolphthalein. 3. What kind of product is formed by ferrous chloride under the influence of sodium carbonate and the indicator phenolphthalein? I identify and substantiate it. 4. The study of the mechanisms of hydrolysis of salts by analyzing the experiments by substantiating the process that occurs under the influence of sodium acetate and buffer solution and phenolphthalein in a solution of ferric chloride. From these experiments, when we exposed a solution of iron (III) -chloride from a solution of sodium carbonate and phenolphthalein, iron (III) -chloride in the solution first hydrolyzed in one step, resulting in the formation of Fe (OH) Cl2. Next the NCl solution released in the reaction to the phase dissolves the Fe (OH) 2Cl precipitate formed in step 2. However, sodium carbonate added to the solution dissolves in water to form sodium hydroxide, which is a strong electrolyte and reacts with Fe (OH) 2Cl to form Fe (OH) 3 precipitate. The remaining chloride ions combine with the sodium metal to form sodium chloride. As a result, this salt is not hydrolyzed, the rest is in solution ions are released in the gaseous state, the phenolphthalein solution turns red because the solution medium is alkaline.

This reddens due to the formation of Fe (OH) 3 ions, but when litmus solution is used, the solution turns blue, which gives students new chemical insights by quoting reaction equations stating that the medium is so alkaline. The complete explanation of this process is based on the complex teaching of the hydrolysis process by quoting the equations. Solutions in teaching the subject in its entirety is based on the methodology chosen by the Methodist teacher.

The teaching of this topic is mainly based on the complex teaching of all the processes that take place in solutions. It focuses on developing students' ability to think independently about solutions and the processes that take place in them.

REFERENCES

1. Sharipov ShR, Sharifov GN, Turdikulova F, Rakhmanov B. Methods of formation of creativity of the teacher of chemistry. Of modern chemistryg Collection of materials of the Republican conference on topical issues. Bukhara, 2020. pp. 216-219.

2. Sharipov ShR, Sharifov GN, Raxmanov BSh. Teaching the theory of electrolytic dissociation in the course of school chemistry on the basis of problem-based educational technology. Proceedings of the 21st Republican Multidisciplinary Scientific Remote Online Conference on Scientific and Applied Research in Uzbekistan. October 31, 2020. pp.9-10.

3. Sharifov ShR, Sharipov GN, Turdikulova F, Rakhmonov B. Creativity of chemistry teacherability formation methods. Proceedings of the Republican online scientific-practical conference with the participation of foreign scientists on "Actual problems of modern chemistry." 2020. pp.216-218.

4. Sharipov ShR. Pedagogical Basics of Teaching Chemical Theories. Nukus State Pedagogical Institute named after Ajiniyaz on the occasion of the Year of Youth Support and Public Health 2021 and the International Mother Language Day on February 21Proceedings of the International scientific-theoretical conference "Integration of distance learning in the system of continuing education". Nukus city. February 20, 2021. pp.248-249.

5. Sharipov ShR. Innovative foundations for teaching chemical theories. In connection with the Year of Support of Youth and Public Health 2021 and the International Mother Language Day on February 21, the Department of Distance Learning of the Nukus State Pedagogical Institute named after Ajiniyaz "Continuous Proceedings of the International scientific-theoretical conference "Integration of distance learning in the education system." Nukus city. February 20, 2021. pp.269-270.