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PEDAGOGICAL BASIS OF EXPERIMENTAL TRANSFER OF CALCIUM AND ITS COMPOUNDS

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ANNOTATION

This article mainly presents the pedagogical foundations of the methods of conducting experiments in the formation of chemical concepts in students.

Keywords: method, experiment, chemical concept, substance, substance properties, chemical reactions, educational innovation process.

THE PURPOSE AND SCIENCEOF THE WORK

Today, it is based on the explanation of the elementary theories of chemistry to students by showing and analyzing the experiments to arouse their interest in chemistry. It starts with teaching the concepts, theories and system of rules to the actions that reveal the nature of the changes. Which concepts are the ultimate product of mind, which is the ultimate product of matter. The process of formation of chemical concepts is generally based on students' consistent transition from live observation to abstract thinking and from that to practical application and creation of scientific theories. Live observation is based on direct observation of substances and

phenomena. In this way, students enrich their perceptive abilities with the help of all sense organs [1.].

THEORETICAL PART OF WORK

The teacher clearly draws students' attention to the processes and connections between the observed aspects of the studied substances (smell, color, aggregate state) and other aspects of the phenomena (oxygen, hydrogen, water, ammonia) should take examples. Students need to explain their distribution in nature, their structure, what kind of chemical elements and atoms they are made of when forming concepts about substances. After that, the substances are directed to the understanding of the possibilities of forming compounds. After students have acquired knowledge about chemical substances and compounds, the knowledge is summarized, students are shown different types of substances, and by showing in an experiment what substances are formed during the burning process of substances, students can learn how to burn any substance in nature. It is justified that it is possible and that different types of oxides are formed as a result. For example, take calcium metal and put it on a special spoon and burn it, as a result, the students will see that a white fine powder is formed. it is said to form a base, and then the white powder is put into the prepared water, as a result, the students can see with their own eyes that the white powder dissolves, and they form ideas about the solubility and insolubility of oxides in water. Based on the elementary theories of chemistry, it is said that substances form complex substances by changing from a simple state to a complex state, and by writing the reaction equations on the board, students are directed to form concepts about substances. After that, the Methodist teacher by further developing this process, it is necessary to justify the mechanism of the dissolution of oxides in water through the theory of indicators. For this, it is shown that the color of the solution changes to red by the effect of phenolphthalein on the formed base, and the reddening of the solution due to the presence of OH ions in the solution is based on the reaction equations. It is shown to the students that a chemical phenomenon occurs as a result of the formation of new substances as a result of the interaction of simple and complex substances. In this, the experiments shown to the students are mainly in the form of precipitates, gases and colored solutions. it should be. It is recommended to show experiments in sheep as an example [2,3,4].

1.Experiment: If a white milky solution of calcium hydroxide or a solution of hydrochloric acid is dropped into a glass, the solution starts to change color slowly. they begin to understand, in which the new substance calcium chloride salt is formed by giving chemical equations. This experiment is based on seeing the solubility of salts, the formation of a new substance and theories of chemical phenomena through experiments.

$Ca(OH)_2+2HCl=CaCl_2+2H_2O$

2.Experiment: If a small amount of calcium chloride solution is placed in a glass and silver nitrate solution is added to it, it will be shown in the experiment that a white precipitate of silver chloride is formed, and after it is established that the formed precipitate is silver chloride, The sediment is filtered and shown by the equation of the reaction and the formula of the precipitate is determined because it does not dissolve in water. dissolve ammonin in hydroxide and justify the formation of the complex by giving chemical equations.

$CaCl_2$+ $2AgNO_3$=$2AgCl\downarrow$+$Ca(NO_3)_2$

NH_4OH+AgCl=Ag_2O+NH_4Cl+H_2O

3.Experiment: By putting a calcium chloride solution in a beaker and dropping a potassium carbonate solution on it, a white precipitate of calcium carbonate is formed, and by showing that when a hydrochloric acid solution is dropped into this precipitate, the precipitate dissolves, the students can learn a new substance by forming calcium carbonate. It is based on the fact that the previous calcium chloride salt is formed as a result of the dissolution of the precipitate. students develop ideas about sedimentation.

$CaCl_2$+K_2CO_3=2KCl+$CaCO_3\downarrow$

$CaCO_3$+2HCl= $CaCl_2$+ $2H_2O$

4.Experiment: If a piece of calcium oxide is placed in a porcelain container and water is slowly dripped, as a result, heat is released and it begins to decompose. If more water is added to this experiment, the solvation process occurs. It is necessary for the methodical teacher to explain that the chemical phenomenon in the experiment is based on the equation of the reaction. It should be done mainly based on the theory of indicators. For this, the methodist teacher needs to know the theory of indicators completely. In this experiment, the teacher uses two indicators, one universal indicator solution, and the second one phenolphthalein solution. It is justified that the OH group formed in this experiment is a derivative.

CaO+ H_2O=$Ca(OH)_2$

5.Experiment: If calcium carbonate salt is placed in the gas detector and heated slowly, gas will be produced. However, the students cannot see the carbon dioxide being formed, so add barium chloride or calcium chloride to the solution through the gas tube. If it is dropped, it will be seen that a milky white precipitate is formed. In this case, it should be justified by the solubility product by stating the formation of barium carbonate by giving the equation of the reaction and showing the precipitate in the equation. the teacher shows the students how to show the formation of gas.

$CaCO_3$=CaO+$CO_2\uparrow$

$BaCl_2$+CO_2+H_2O= $\downarrow BaCO_3$+2HCl

6.Experiment: A white precipitate is formed when a calcium chloride solution is placed in a glass and ammonium oxalate solution is dropped on it. It is proved by giving chemical equations that the precipitate is formed so that the precipitate does not dissolve in water. It is done by justifying its solubility and its insolubility in solvents.

$CaCl_2$+$(COONH_4)_2$=$(COO)_2Ca\downarrow$+ $2NH_4Cl$

7.Experiment: If you put a calcium chloride solution in a glass and slowly drop phosphoric acid solution on it, you will see that a white amorphous precipitate is formed. calcium phosphate is formed. This should be justified by the methodist teacher by giving chemical equations.

3$CaCl_2$+2H_3PO_4=$\downarrow Ca_3(PO_4)_2$+6 HCl

8.Experiment: Before placing a copper sulfate solution in a glass and putting calcium metal on it, calcium reacts with water, and then the calcium hydroxide formed in the water reacts with copper sulfate and a new substance is formed. The solution becomes cloudy, that is, calcium sulfate is formed. They see the difference. Methodist teachers justify this by giving reaction equations.

Ca+ $2H_2O$=$Ca(OH)_2$+$H_2\uparrow$

$CuSO_4+Ca(OH)_2=CaSO_4+Cu(OH)_2$

After the initial ideas about the substance are formed in the students through the analysis of these experiments, the theory of the structure of atoms and molecules, as well as the periodic law and the periodic system of elements are of great importance in learning the concept of chemical elements. The most important concept is to explain the processes involved in the solution. Because students can't imagine the reactions that take place when a substance is dissolved or in a solution, because it is a colorless solution, and the processes that take place in ions. For this, it is necessary to fully understand the theory of indicators in explaining the theories of solution and electrolytic dissociation. For example: if a calcium hydroxide solution is given, the student can see that this solution is colorless, but what ions are present in the solution, by dropping the indicator solution, showing through the experiment that the color of the solution turns red due to hydroxyl ions, forming indicator concepts in the students goes In order to develop this further, the theory of indicators is formed by explaining to students the types of indicators and the reasons for color formation, showing the types and solutions of indicators through paper indicators, and conducting separate experiments for each of them. Methodist teacher explains these theories based on his own methods. In this, students are mainly based on heuristic independent work methods, they are given opportunities to study on the basis of discussion and brainstorming methods. In general, it is necessary to train students to observe chemical phenomena, interpret them and apply them in practice. It is formed on the basis of a systematic analysis of the experiences shown by the teacher or conducted by the students themselves. [3,4,5,6,7].

This analysis is performed as follows:

1) Substances obtained for the reaction (their characteristic properties);
2) Reaction conditions (heating, catalyst exposure, cooling, recrystallization);
3) Observed changes (color change, gas release, light flickering, etc.);
4) The essence of the observed phenomenon (explaining, drawing pictures, writing equations of chemical reactions);
5) Learning the methodology of conducting experiments;
6) Formation of general drawing skills;

In the formation of students' chemical concepts, the methodist teacher uses interactive methods from classical methods and pedagogical technologies. On the other hand, the methodist teacher must be based on the theory of teaching when conducting classes.

METHOD OF TEACHING THE SUBJECT

1. Each lesson is aimed at the implementation of a certain goal and A well-planned cake is necessary. 2. Each lesson should have a strong ideological and political orientation. 3. Each lesson should be connected with life and practice. 4. Each lesson should be conducted using various methods, methods and tools effectively. 5. Every hour and minute allocated to the lesson is saved and more productive should not be used. 6. I can create the opportunity to use instructional tools, equipment and computers in the lesson regarding the content of educational materials. 7. By carrying out the lesson with the whole class, the individual characteristics of the student and increasing their independence are taken into account. 8. Based on the nature

of the topic in each lesson, our people it is necessary to look for the opportunity to turn to the rich pedagogical heritage and use it.

When teaching this subject, it is necessary for the Methodist teacher to implement it based on his own methods and using educational technologies. Problem-based education is not to give the basic knowledge to students ready, but to ensure that they are mastered by them on the basis of studying and researching problems related to the subject of the lesson. In the formation of assumptions for solving the problem, based on the knowledge acquired by the student, such as observing, comparing, analyzing, summarizing, drawing conclusions, etc.

Basic in mental activity the process is the process of thinking, the quality of thinking its logicality, independence, creativity, scientificity, reasonableness, coherence, economy, purposefulness, speed, analysis, comparativeness, generalization, specialization, breadth, depth, with the level of believability, reality, truthfulness. At the same time, the intellectual qualities of memory, imagination, understanding and similar psychological processes related to speed and other parameters. The level of intellectual development of teachers and the higher the students, the better there is a chance to achieve results.

According to this, the students' perception of the problem, it to determine, correctly set the assumption about the solution and the ability to check the correctness of the solution develops [5,6,7].

CONCLUSION

Problem-based educational technology for students various problems arising from the topic of the subject to teach them to find solutions to problems or situations, some ways to solve problems in them to introduce and teach to choose the right methods for solving the problem

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