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**DEVELOPMENT OF SCIENTIFIC COMPETENCE OF STUDENTS
ON THE TOPIC «GENETIC RELATIONSHIPS OF THE MAIN CLASSES
OF INORGANIC COMPOUNDS»
IN THE SECONDARY SCHOOL CHEMISTRY COURSE**

***Annotation.** The main task of teaching this topic is to teach students the ways and methods of obtaining the basic classes of inorganic compounds and genetic bonds of these classes through various methods and techniques of teaching chemistry and to increase the level of knowledge of students in chemistry.*

***Key words:** oxides, acids, alkalis, salts, genetic relationships, chemistry.*

***Анотація.** Основним завданням викладання даної теми є навчання учнів способам та методам отримання основних класів неорганічних сполук та генетичних зв'язків цих класів у вигляді різних методів та прийомів навчання хімії та підвищення рівня знань учнів з хімії.*

***Ключові слова:** оксиди, кислоти, луги, солі, генетичні зв'язки, хімія.*

Introduction. Improving the effectiveness of the lesson is the main task of the teacher. The success of its solution largely depends on the teaching methodology,

which allows to equip students with deep and solid knowledge, teach them to work with interest and independently. It is obvious that their interest in studying and creativity makes them more active in the educational process, which leads to greater motivation, the manifestation of their talents and the achievement of success in the study of science [2]. In the organization of this kind of activity, the so-called case-study technology becomes one of the promising learning technologies. This technology is a synthesis of problem-based learning, information and communication technologies, and the project method.

The development of scientific competence of students in secondary school chemistry courses is of great importance. Therefore, the topic of investigation is relevant.

The purpose of this article is to review the development of scientific competence of students in chemistry secondary school courses on the topic «Genetic connections of the main classes of inorganic speakers».

For this, special literature and own previous results were used [1 - 3].

Research Results. During regular study of each class of inorganic compounds, certain material is repeated, it is necessary to complete the knowledge with new material. This repetition does not mean relearning the previous material, it is done by the students themselves.

Classification of substances according to this or that sign is the separation of substances into separate groups. Having explained these signs, it is necessary to emphasize their importance to the students, because in this way the original nature of the classification is shown. This topic is considered a good material for the development of logical thinking of students. Such a logical method as comparison, conclusion and concepts of genetic connection, classification and system are used in it.

Due to the method of studying the subjects in this subject, it is possible to provide such conditions in which the students themselves become active and creative scientists show the process of education.

When studying this topic, students systematize the information obtained from the introduction to chemistry on oxides, bases, acids and salts, and add new information. The following questions are additionally formulated here: classification of oxides, acids and salts. The interaction of oxides and alkalis, oxides and amphoteric bases, as well as the genetic relationship between the most important classes of inorganic compounds.

When studying the topic of the main classes of inorganic compounds, students are introduced to oxides and amphoteric bases for the first time. When detecting relationships between classes of chemical compounds, students pay attention to the presence of substances such as signs of different classes combined together. In the same way, it is proved that there is no absolute existence in nature, substances with different properties (metals, acids, bases and oxidizing agents) are interdependent through transformations. Knowledge of substances of different classes in interaction encourages students to be confident in the materiality, colorfulness and unity of the surrounding world.

When we study this topic, we ensure its easy assimilation under the following conditions: without going beyond the curriculum, before studying each part of the topic, we clearly imagine what is known and what should be studied by students, and organize the repetition of the topic accordingly, based on the independent work of students using various tasks. In order to test their knowledge, students are invited to perform exercises that will help strengthen practical skills. The assessment process also takes into account knowledge and skills, as well as skills.

For example, when solving a problem where «obtaining barium sulfate by neutralization reaction» is performed, students receive not only theoretical knowledge of the material, but also the ability to work with a tripod, chemical utensils, as well as perform cleaning (polishing), washing and drying of sediment in practice.

In order to test their knowledge, students are encouraged to perform exercises that will help strengthen their practical skills.

At the same time, as in the case of cattle, cattle cannot be found in cattle, and cattle cannot be found in cattle, because cattle cannot be found in cattle, and cattle cannot be found in cattle, because cattle cannot be found in cattle, because that cattle cannot be found in cattle. *This makes it possible to specifically define the main functions of this topic:*

1. Using the example of substances that we often encounter and which are of practical importance, providing accurate information about the classes of compounds, we must reveal the essence of the dependence of the composition and properties of oxides, acids, bases and salts.

2. We will familiarize the students with the ways of production and use of the most important materials in the economy.

3. We teach students how to handle acids and alkalis using practical skills and abilities.

4. It is necessary to improve the chemical knowledge of students by familiarizing themselves with symbols, names, concepts of inorganic compounds and their active use in the educational process.

5. On the basis of comparison, generalization and systematization of knowledge about oxides, bases, acids and identification of their common features, concepts of classes of compounds and classification of substances are formed.

6. With the help of specific examples and a general plan, we reveal the genetic relationship between substances of different classes and show an understanding of their general relationship in nature.

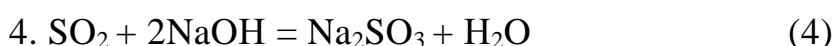
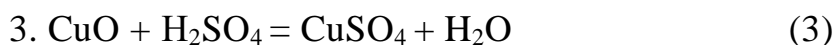
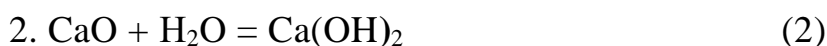
7. Expand the content of the concept of oxides, bases, acids and salts when studying other topics of the school chemistry course.

The implementation of these tasks was carried out in accordance with the general goals of chemistry education, the preparation of students to understand the periodic law.

In the final part of the topic, ideas about the relationship between the most important classes of inorganic compounds discovered by students are strengthened.

We remind students that we have classified many compounds, that is, divided them into groups (classes) according to one or another of the most important signs. These classes of inorganic compounds were bases, acids, and salts. When studying their properties, we provided the necessary information about the connection between them, which is called a genetic link. This is due to the fact that when substances of one class interact with substances of another class, substances of another class are formed, and when substances of different classes interact, substances of another class are formed.

We prove by examples the presence of a genetic connection between classes of inorganic compounds:



From these examples, the relationship between oxides and acids, oxides and bases, oxides and salts (through the formation of acids, bases and salts from oxides) can be distinguished.

The genetic relationship can also be determined by chemical interactions between substances. (In the third example, the oxide reacts with the acid, and in the fourth example, the oxide reacts with the base).

Sometimes students wonder: do salts react with other compounds? To answer this question, experiments will be shown (reaction between CuSO_4 with NaOH and CuSO_4 with HCl). Their analysis and writing of reaction equations convince students of the existence of a genetic link between salts and other classes of inorganic compounds.

Conclusions. In order to proceed to the systematic study of oxides, bases, acids and salts, it is necessary to remember the previous information in this regard. It is possible that some of the material has been forgotten by the students. But with the

help of conversation, assignment and successive repetition of the previous topics during one or two lessons, the students will get ready to understand this topic.

References

1. Zubaidov U.Z., Kholnazarov S. Methods of teaching chemistry. Textbook for high school. – Dushanbe, 2011. 384 p.

2. Umarov S.A., Sirojov F.Z. The system of independent work of students in the 10th grade. *Collection of articles of the first international scientific and practical conference «Prospects for the development of research in the field of chemistry of coordination compounds and aspects of their application», dedicated to the memory of Professor Saodat Mukhammedovna Basitova, the 80th anniversary of her birth and the 60th anniversary of the pedagogical and research activities of Doctor of Chemical Sciences, Professor Azizkulova Onajon Azizkulovna, March 30-31, 2022.* - Dushanbe

3. Polat E.S. Modern pedagogical and information technologies in the education system: Textbook / E. S. Polat, M. Yu. Bukharkina, - M.: Publishing Center «Academy», 2007.