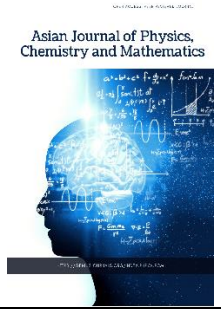

Teaching The Topic of Sulfur and Its Compounds Through Case Technology

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ABSTRACT

This article describes situations of students' professional activities and their analysis, the ability to think logically, teamwork skills based on the use of innovative technologies in teaching chemistry to teachers.

Keywords: problematic method, sulphuric acid, sulfur, educational technology

Nowadays, one of the main qualities of a teacher is dedication to his profession, ideological convictions, and a love of his profession. Because the high level of education in the school depends only on the teacher, his professional training.

The resolution “On measures to improve the quality of continuing education and the effectiveness of science in the field of chemistry and biology” states that The construction of extractive industries will stimulate the rapid development of the oil, gas, chemical, medical and food industries[1].

The problem of increasing the efficiency of the educational process in our country is of great importance, and the training of highly talented, highly qualified and creatively active personnel is one of the most important and topical issues. It has been repeatedly acknowledged that the future of our country depends on young people with a broad outlook, knowledge and creativity.

By using a variety of interactive teaching methods in the study of chemistry, students will be able to objectively and objectively determine how well they have mastered certain topics, which will further increase students' interest in science.

The use of different methods in the study of the subject gives good results. For example, case-study technology is an interactive method of teaching that increases students' interest in the lesson, seeks to apply theoretical materials in practice, and creates creative motives for the learning process.

[1] President of the Republic of Uzbekistan Sh.M. Resolution of Mirziyoyev "On measures to improve the quality of continuing education and scientific efficiency in chemistry and biology." Source: https://lex.uz/docs/4945470

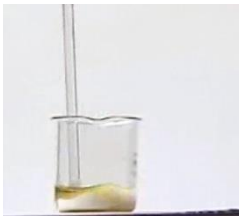
At the same time, this style gives a new interpretation of the image of the teacher, encourages him to creative research, to innovate thinking[2].

Case study is one of the most challenging learning technologies. The basis of this innovative technology is the situation of students' professional activities and their analysis. An in-depth study of the circumstances surrounding future professional activities will ensure that the theory is relevant to practice. Students explore specific situations in detail. In turn, they actively think, compare what they hear in theory with information gathered during independent study, and apply personal experience[3].

In order to implement the case-study method, the teacher develops ideas to determine the knowledge of the chemistry course on the topic "Sulfur and its compounds." Students will be given a syllabus at the beginning of the class which will outline lesson plans. These ideas are discussed by the students in the group in two groups, and one student responds based on what they have learned. The answers are written by one student in the group. At the end of the case study, students will be introduced to the ideas of both groups.

Keys №1

Case Statement: Approximately 50g of white sugar or sugar is ground into a powder in a porcelain mortar. It is placed in a porcelain bowl or glass containing crystallizers and mixed with a glass rod. Then 25 ml of concentrated sulfuric acid is poured on it. After 2-3 minutes, the sugar darkens, fills the glass and begins to flow out.



Keys question: Why is such an event observed?

Teacher's Solution: Concentrated sulfuric acid absorbs water quickly. That is why it is used as a drying agent. Concentrated sulfuric acid even converts the elements hydrogen and oxygen in the molecules of organic matter into water and binds them. Therefore, sulfuric acid first breaks down the blood into charcoal. The color of the sugar darkens:

$$C_{12}H_{22}O_{11} \rightarrow 12C + 11H_2O$$

The sulfuric acid then reacts with some of the carbon to form gases consisting of carbon (IV) oxide and sulfur (IV) oxide. The resulting gases porosize the coal and lift it upwards[4].

Keys №2

Case Statement: Extreme care must be taken when working with solutions in chemical laboratories. Solutions are often more active than concentrated or pure substances. When working with alloys, use rubber gloves, goggles and, of course, gowns. Keys question: Watch the pictures below carefully in sequence. What do the pictures say and what do they mean? What class do you think the substance that injured the hand belongs to?

[2] O.U.Avlayev, S.N. Jorayeva, SP Mirzayeva Educational-methodical manual "Teaching methods", "Navruz" publishing house, Tashkent – 2017.

[3] Golish Active methods of teaching: content, selection, implementation. T.: Center for Secondary Special Education, 2001.

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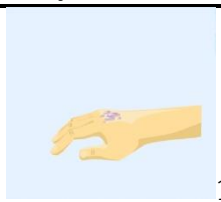
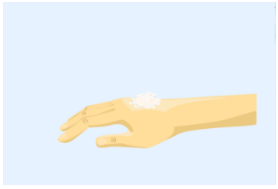
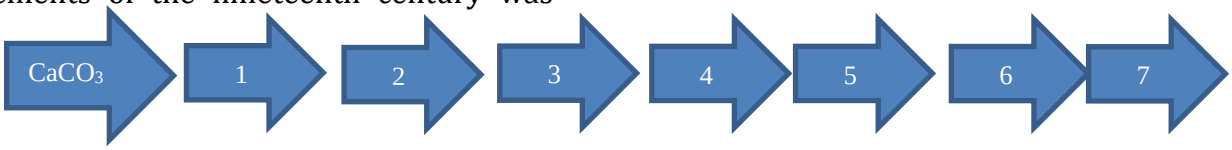
 1  2  3  4

Teacher's Solution: The pictures above tell of a classmate's spill due to negligence and explain how to help. Figure 3 shows the acetic acid formula. Acetic acid solution is used for alkaline wounds. This means that when an alkaline solution is spilled on the hand, it is first kept under running water and then wiped with a 2% solution of acetic acid. If the injury is severe, seek medical attention.

Keys №3

Case Statement: One of the greatest achievements of the nineteenth century was the abolition of the "vitalist doctrine." According to the doctrine, organic matter cannot be synthesized, it is formed by some vital force. However, the great scientists of his time, such as Vyoler, Butlerov, and Zinin, synthesized organic compounds not only from organic matter but also from inorganic matter.

Case Assignment: Follow the steps from limestone to acetone. Consider the following scheme:



Teacher's solution:

1. First the limestone is burned in the furnace and converted to CaO.
2. The resulting calcined lime reacts with C at high temperatures to form CaC2.
3. When CaC2 is dissolved in water, a rapid reaction takes place to form Ca (OH) 2 and C2H2.
4. Acetylene is trimmed in the presence of a catalyst to obtain benzene.
5. Chlorbenzene is obtained by reacting benzene with Cl2 under the catalyst FeCl3.
6. Isopropylbenzene is obtained by reacting the formed chlorbenzene with propane 2 in the presence of Na metal.
7. When isopropylbenzene is oxidized by oxygen, phenol and acetone are formed.

The case-stage method is based on the organization of real-life situations, which create situations that organize ordinary life and require learners to find a more appropriate solution[5].

Thus, the main purpose of case-study technology is to activate the learning process of students, to develop their scientific and creative abilities by solving existing problems. Technology is also an educational technology that teaches students to apply their knowledge, skills, and abilities together, and to look for alternative solutions by analyzing the proposed solutions.

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