DOI 10.18372/2786-5495.1.18887

Saidanvar Umarov

Applicant, Assistant,

SEI «Khujand State University named after academician Bobojon Gafurov»,

Khujand, Tajikistan

anvar.8889@mail.ru

Farhod Sirojov,

Applicant, Assistant,

SEI «Khujand State University named after academician Bobojon Gafurov»,

Khujand, Tajikistan

farhod_sirojov94@mail.ru

THE USE OF THE CASE METHOD IN THE FORMATION OF META-SUBJECT COMPETENCIES OF STUDENTS IN CHEMISTRY LESSONS

Annotation. *The formation and diagnosis of the formation of meta-subject skills requires the teacher to have optimal technologies. The latter include case technology. Case technology is a method in which students can have the opportunity to develop a creative personality, communicative competence, the ability to work in a team, the ability to work on an independent task, the ability to act and make decisions in conditions of excess or lack of information. Case technology is an interactive learning technology based on real or fictional situations, aimed not so much at mastering knowledge as at forming new qualities and skills in students. The most common methods of case technology are: analysis of specific situations, situational tasks and exercises, case study.*

Key words: *case technology, chemistry, case, lesson, teaching case technology.*

Анотація. *Формування та діагностика сформованості метапредметних умінь вимагає від вчителя наявності оптимальних технологій. До останніх належить кейс-технологія. Кейс-технологія - це метод, при якому у*

студентів з'являється можливість розвивати творчу особистість, комунікативну компетентність, вміння працювати в команді, вміння працювати над самостійним завданням, вміння діяти та приймати рішення в умовах надлишку чи нестачі інформації. Кейс-технологія - це інтерактивна технологія навчання на основі реальних або вигаданих ситуацій, спрямована не стільки на засвоєння знань, скільки на формування у здобувачів освіти нових якостей і навичок. Найбільш поширеними методами кейс-технології є: аналіз конкретних ситуацій, ситуаційні завдання та вправи, кейс-стаді.

Ключові слова: *кейс-технологія, хімія, кейс, урок, навчання кейс-технології.*

Introduction. Chemistry of the XXI century is the basis for the development of world civilization, without which it is impossible to imagine today's human life, his culture, worldviews and lifestyle. Everywhere we will see the miraculous power of chemistry and chemical technologies [2].

For example, when studying various sections of chemistry, students should understand: what the subject teaches, what it is needed for, and how the concepts studied are related to the pressing tasks of practice. In this regard, a new approach is proposed to the design of the content of education, as well as to the use of modern educational learning technologies. As is known, one of such effective learning technologies is life-situational learning using the case method [3]. This method confirms the didactic significance and relevance of the use of case technology in the process of teaching chemistry as an effective means of improving students knowledge.

The issue of using the case method in the formation of students' meta-subject competences in chemistry lessons is gaining particular relevance.

The purpose of the article is to reveal the use of the case method in the formation of subject competences of students in chemistry lessons.

For this, special literature and own previous results were used [1 - 4].

Research Results. Case study (English Case - set, concrete situation, stage - learning) - is described in the case and developed in a realistic or artificial way, which directs students to express the problem and search for appropriate solutions for is not an educational method based on problem-situational analysis of the situation. A case study is an optimized, optimal approach to education, information, communication and management, which provides an intermediate approach to achieving learning goals and ensuring guaranteed learning outcomes in the process of solving the practical problem of the situation described in this case and educational technologies consisting of a set of tools. Cases are descriptive representations of specific conditions resulting from the vital organization of a group of people or individuals who help students express a problem and find a more appropriate solution [1].

The use of case studies in teaching will contribute to the development of analytical skills among students, involving finding and highlighting essential and non-essential information, analyzing it; practical skills that allow using theoretical knowledge in practice. It should also be noted that when organizing case studies, it is necessary to take into account the psychological, pedagogical, physiological, age characteristics and capabilities of students, their willingness to receive information and the interests of students [4].

For example, when studying the topic «Oxygen» you can use the following cases:

Case: Oxygen, nitrogen and inert gases are permanent components of air. Oxygen consumption is very diverse. They are widely used in many chemical and medical fields. A large amount of oxygen is needed for breathing. But the total amount of oxygen in the air does not decrease.

Questions for the case:

1. Why does the amount of oxygen in the air remain unchanged? Comment.

2. Enumerate several ways of oxygen generation. Write the reaction equation on the class board.

3. How do they produce oxygen in the air?

When studying the topic «Nitrogen» you can use the following cases:

Case: Nitrogen occurs in nature in a free form. It makes up 78,09% of the volume and 75,6% of the mass of air. Nitrogen compounds are present in small amounts in the soil. Nitrogen is included in the composition of coffee and other natural organic substances. Nitrogen makes up 0,01% of the earths mass. The amount of nitrogen in the human body is equal to 70 kg and 1,8 kg. Its amount in muscle tissue is 7,2%, in muscle tissue it is 4,3%. Nitrogen is one of the elements that play an extremely important role in biosystems, it is included in the composition of proteins and nucleic acids and forms the foundation of life on earth.

Questions for the case:

1. How many oxides does nitrogen produce? Write on the board.
2. Which nitrogen oxides are neutralized? For what?
3. Which of the nitrogen oxides are formed?
4. What percentage of ammonia is nitrogen?

When studying the topic «Hydrochloric acid, its properties».

Case: Hydrochloric acid (a solution of hydrogen chloride in water) is used in hydrometallurgy and electroplating, for cleaning the surface of metals during soldering and tinning, and for producing chlorides of various metals. Component of gastric juice: diluted hydrochloric acid is prescribed orally mainly for diseases associated with insufficient acidity of gastric juice.

Questions for the case:

1. Chemical name of hydrochloric acid?
2. What class of compounds are called acids?
3. What groups are acids divided into?
4. What substances do acids react with?
5. What types of reactions are characteristic of acids?
6. What metals do acids react with?
7. What are the products of the interaction of acids with metals, basic oxides, bases? Write down the equations of possible reactions and name the reaction products.

Practical research of case technology as an interactive method of teaching schoolchildren is of fundamental importance for increasing the productivity of the educational process. Such training contributes to the development of creative cognitive activity and the development of students' intelligence. Correct use of this technology gives the result required by modern standards - a transition from external motivation to the formation of internal motivation and regulation of the process of personal development, which corresponds to personality-oriented learning, individualization of the approach to students and the introduction of a competency-based approach to modern education**.**

Conclusions. Thus, based on all of the above, we can conclude that the use of case technologies in chemistry is one of the methods in demand today for teaching students this subject. In addition, based on the fact that chemistry is primarily an experimental science, with many different ways to solve one problem or task, the use of case technologies allows you to realize all the advantages of this teaching technology when used in teaching chemistry.

References

1. Mamadaliyeva N.I., Ibodullayeva M.I., Kamolova N.I., Kuchkarov M.A. Case Method and its Use in Chemistry. *Journal of Advanced Zoology*. 2023. 44(S5), P. 1502 – 1506. URL: https://doi.org/10.17762/jaz.v44iS-5.1331; https://www.researchgate.net/publication/375076284; https://jazindia.com/index.php/jaz/article/view/1331 (last accessed: 2024/05/30).

2. Melikov B. Rahimi F. Innovative pedagogical methods and technologies in teaching chemistry. *Bulletin of the Tajik National University, Dushanbe* 2020. № 10.

3. Sofronov R.P., Sidorova L.V. Case technology in teaching biology at school. *Bulletin of BSU*. 2015. № 15.

4. Umarov S.A., Sirojov F.Z. Case technology in teaching chemistry at school. *Materials of the Republican scientific and practical conference on the topic «The*

role and use of achievements of natural, exact and mathematical sciences in production», dedicated to Science Day (April 14, 2023), Dushanbe. P. 147 – 151.