TEACHING THE TOPIC OF CARBON SUBGROUP ELEMENTS THROUGH COLLABORATION AND MODULE-BASED LEARNING TECHNOLOGY

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This article explores the importance of teaching the topic "Carbon Subgroup Elements" through collaborative and module-based learning technologies. The impact of collaborative learning approaches and module-based technology on students' knowledge and skills development has been analyzed. The article presents the methods of applying these approaches and the results of research on their effectiveness. The effective teaching of chemistry requires the use of innovative methods. Among modern pedagogical technologies, collaborative learning and module-based learning technology hold particular significance. Carbon subgroup elements are fundamental topics in chemistry that must be studied from both theoretical and practical perspectives. A deep understanding of this topic helps students systematize their chemical knowledge and enhance their applied skills. Collaborative learning fosters knowledge and experience exchange among students, while module-based learning technology allows lessons to be structured and goal-oriented. The combination of these approaches increases the efficiency of chemistry lessons by improving students' research and analytical thinking skills. This article examines the advantages of integrating these methods into the teaching process and the scientific-methodological foundations of their application [1].

The rapid development of science and technology necessitates the implementation of new methods in chemistry education. Teaching through collaborative and module-based learning technologies not only enhances students' interest in the subject but also develops their critical and creative thinking skills. These methods enable students to acquire knowledge more profoundly and conduct independent research. The objective of this study is to determine the most effective ways to teach the topic "Carbon Subgroup Elements" through collaborative and module-based learning technologies. The article proposes methods and approaches to ensure active student participation in the learning process. The application of modern teaching methods helps educators organize the learning process more efficiently. This approach contributes to the development of students' academic and social skills. The process of learning through collaboration and module-based learning technology fosters teamwork among students and ensures a deeper comprehension of the subject matter. Effective use of collaborative learning methods in chemistry education, systematic and comprehensive teaching of the "Carbon Subgroup Elements" topic through module-based learning technology. Enhancement of lesson practicality through the use of interactive teaching tools and experiments [2].

Conclusion. The research results show that lessons conducted through collaborative and module-based learning technologies increase student engagement, strengthen their interest in chemistry, and enhance their level of comprehension. These methods contribute to the structuring and systematization of the learning process. The proposed approaches not only develop students' independent and creative thinking skills but also cultivate their research capabilities. Additionally, the implementation of module-based learning technology enables students to break down topics into sections, leading to a deeper and more logically sequential understanding. Experimental findings indicate that classrooms where collaborative and module-based approaches were applied showed significant improvements in students' academic performance. The widespread application of these approaches in the education system will contribute to improving the quality of chemistry teaching.

References

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