The Role Of Ict In The Development Of Chemical Knowledge Of Future Chemistry Teachers

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ABSTRACT

This article describes a unique approach and methods of pedagogical influence in the development of chemical knowledge of students in chemistry, the means of teaching them to think independently and the factors affecting this, the educational unit in the formation of students as mature pedagogues and is dedicated to the issues of effective use of ICT from scientific research in the educational process.

Keywords: Methods of pedagogical influence, education, research, independent thinking, learners, educational process, innovative approach, method, integrative approach.

The educational system of Uzbekistan is developing further, and innovative methods and technologies are of great importance to students in learning chemistry. In this context, computer programs and virtual laboratories should be used to improve the processes of learning chemistry and encourage students to participate in laboratory activities. Computer programs and virtual laboratories in Uzbekistan's higher education institutions and secondary special education institutions should be very important to provide students with high-quality applications for participation in chemistry laboratory training and practical mastery. . These applications should be tools that can help motivate students to learn chemistry, test theoretical knowledge in practice, and improve chemistry skills. Discussion and research in this area open up new directions that can provide theoretical and practical applications for chemistry teachers and students. Computer programs in chemistry labs are programs used to help students learn chemistry and conduct scientific research. These programs are used to facilitate the practice of chemistry laboratories, study details, analyze, perform computer simulations, and explain reactions and molecular structures to students.

Therefore, we will discuss the role of computer programs in the chemistry laboratory classes in the educational system of Uzbekistan, based on research and experiments aimed at studying the processes of their transition. This analysis allows us to open up new directions in students' self-development and better preparation in the study of chemistry. Chemistry teaching methods and laboratory exercises are of great importance in testing students' theoretical knowledge in practice, turning chemical reactions into experience, and learning chemical skills. These practices are essential tools to encourage students to love and master chemistry, and to greatly assist in preparing them to become chemistry professionals. An extensive literature review shows that these programs play an important role in improving the learning environment and provide many benefits for teachers and students. In addition, the introduction of practical experience and demonstrations in chemistry lectures serves to bridge the gap

between theoretical knowledge and practical application. Traditional laboratory techniques not only reinforce theoretical concepts, but also develop important skills such as critical thinking, problem solving, and experimental design. The tactile experience of manipulating chemicals and directly observing reactions provides a visceral connection to the subject, instilling a sense of interest and engagement in students.

In an era dominated by virtual simulations and multimedia presentations, the material and emotional aspects of traditional methods offer a refreshing and effective balance. As we navigate the evolving landscape of chemistry education, it is critical to recognize the continuing importance of these traditional approaches and consider them as an integral component of the well-rounded development of future generations of chemists. Aims to study the integration and impact of computer programs in enhancing hands-on learning experiences in the chemistry laboratory.

He explores the various applications of software tools in experimental design, data analysis, and simulation, emphasizing their role in accelerating learning, increasing accuracy, and deepening understanding of chemical concepts.

Chemistry laboratory training serves as a foundation for the education of aspiring scientists, providing theoretical knowledge with a practical and experimental dimension. This comprehensive review aims to provide a deeper understanding of the importance, objectives, and key components of laboratory training in chemistry. In addition to acquiring technical skills, laboratory work develops a deep understanding, curiosity, inquiry, and deep appreciation for the empirical foundations of chemistry. Overall, the integration of computer programs into chemistry laboratory activities integrates theory and practical application, enriches the educational experience, and better prepares students for real-world scientific problems.

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