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USE OF SOME INNOVATIVE TECHNOLOGIES IN TEACHING PHYSICAL AND COLLOIDAL CHEMISTRY

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Annotation: This paper discusses the use of innovative technologies in the process of teaching physical and colloidal chemistry.
Particular attention is paid to the use of modern educational platforms, virtual laboratories and interactive techniques to improve learning efficiency. Examples of the use of online resources, virtual models and other means of the digital educational environment in the context of chemistry courses are also discussed.
Keywords: Innovative technologies, teaching, physical chemistry, colloid chemistry, virtual laboratories, interactive methods, online resources, learning efficiency, integration of innovations

In modern pedagogy, innovative technologies are actively being introduced in order to increase the efficiency, interest and accessibility of the educational process for students. In the natural sciences, such as physical and colloidal chemistry, the use of advanced technology becomes a key element in attracting students' attention to the subject and developing their practical skills. At this time, special attention is paid to the use of computer hardware, and therefore a didactic complex of information support has been developed.
The information complex includes its own work program, an electronic version of the lecture course and source data.
It also includes solving problems for each module, test questions and tasks for solving a lecture course with elements of scientific and technical creativity.One of the key areas of training is students' mastery of modern methods of physical and chemical experimentation, for which a route computer workshop was created.
Conducting laboratory work using computer technology allows students to use computer methods of teaching and processing experimental data.
New teaching methods also include career-oriented training, stimulating students to scientific and technical creativity and active interaction with teachers for the successful implementation of the educational process.
Teaching the discipline "Physical and colloidal chemistry", effective organizational forms of training have been developed, based on modern methods:
1. Create a stimulating environment, stimulate the imagination, ask and answer questions.
2. The use of problematic questions, situational and targeted, to stimulate the participant to productive creative thinking.

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3. Encouraging student activity, supporting initiative, stimulating the exchange of opinions on the problems being solved.
4. To create an environment that ensures students' creative activity in a constructivist environment, it is important to use cognitive terminology in lectures and homework.
This includes analysis, analysis, analysis, evaluation and forecasting. We believe that a combination of constructivist and contextual approaches to learning is effective.Virtual laboratories are one of the auxiliary tools in the educational process. Through the dedicated use of software and simulations, students are able to conduct chemistry experiments in an environment, giving them the opportunity to learn safety skills and gain experience without leaving the environment.
3D modeling and reality technologies provide unique opportunities for visualizing complex concepts in physical and colloidal chemistry. Using special devices such as virtual glasses, students can connect molecular structures and interact with particles and physical processes.Using the presented presentations and interactive whiteboards allows teachers to see the basic concept of using images, animations and videos. This greatly simplifies the preparation of materials and makes the learning process more accessible to students.Modern students, focused on online learning, prefer to use distance learning platforms and online resources. These tools provide the opportunity to study materials at your own time, as well as access a variety of educational materials, such as video lectures, e-textbooks and tests.In conclusion, the use of innovative technologies in the process of teaching physical and colloidal chemistry has the potential to transform the educational environment, giving it a more dynamic and adaptive character that meets the requirements of modern students. These cutting-edge technologies not only stimulate students' interest in learning material, but also help them develop a deep understanding of scientific concepts.
The use of electronic laboratories gives students a safe opportunity to control chemical processes, which is especially important when teaching physical and colloidal chemistry, where practical skills play a key role.
3D modeling and reality technologies provide unique visual tools for studying molecular structures, promoting a deeper understanding of complex elementary processes.Multimedia presentations and interactive whiteboards create a dynamic learning environment that teachers effectively deliver to students. This makes the learning process more interactive and adaptable to different learning styles.

Online resources and distance learning increase learning flexibility by allowing students to learn content at their own time and pace. This is especially true in modern society, where mobility and accessibility of information are becoming increasingly important factors.Thus, the integration of innovative technologies in the teaching of physical and colloidal chemistry not only improves the quality of education, but also prepares students to use advanced research methods in the scientific and professional fields. The development of technological capabilities in education plays a key role for the future generation of scientists and specialists in the field of chemistry.

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