

THE USE OF MODERN TEACHING METHODS AND TOOLS IN THE TEACHING OF CHEMISTRY

Associate professor of the Department of Chemistry and
methods of teaching at Tashkent State Pedagogical University
named after Nizami (PhD)

Razakov Gulomjon Abduvohidovich



Annotation: In modern society with its developed information culture, the organization of information education, the need for which is dictated by life itself, is of particular importance. Along with this, our time is characterized by a decrease in the level of learning motivation, and above all, the educational and cognitive motives of students. Motivation to study chemistry is no exception. In solving the problem of increasing and to maintain the level of motivation for learning, a significant effect can be achieved through the use of modern information technologies in chemistry lessons.

Keywords: independent work, project method, chemical knowledge

Their use in the study of chemistry makes it possible: - to accompany the educational material with dynamic drawings, i.e. to consider the studied chemical phenomena from different sides and at different levels; - to make wider use of audiovisual means, which makes the content of the studied material in chemistry more visual, understandable, and entertaining; - to conduct rapid and effective testing of students; - to model and investigate patterns that cannot be reproduced under normal conditions; - reproduce complex chemical experiments (reactions with explosive or toxic substances, rare or expensive reagents, processes that proceed too slowly, etc.); - to organize independent work of students, to teach (them to work with reference material on chemistry); - to carry out the personal orientation of chemistry education, to create comfortable conditions for schoolchildren, taking into account individual psychological characteristics (perception, thinking, memory) and individual pace of work; - to promote the development of information culture, skills

of working with modern means of informatization and telecommunications. The use of chemistry software products ensures the implementation of such learning principles as scientific, visual, accessibility, activity and independence. The traditional system of chemistry lessons has been established for a long time. We will try to supplement it with information technology of education (ITE). The tools and equipment used should be selected taking into account the type of lesson, its purpose, and stages, which are aimed primarily at activating the motivational sphere of students in chemistry lessons. Chemistry lessons using ITE have a fundamental difference from the classical learning system. This difference consists in a change in the role of the chemistry teacher: he is no longer the main source of knowledge, his function is reduced to advisory and coordinating. This is due to the use of modern electronic chemistry textbooks, virtual chemical laboratories and the Internet. The task of a chemistry teacher is to select these teaching tools in accordance with the content of the chemistry teaching material, the age and psychological characteristics of schoolchildren, as well as their ability to use a personal computer for educational purposes. Slide storyboarding of chemistry material allows you to save time, optimize the chemistry learning process, structure the material, and the use of animation makes it more accessible to students' perception and understanding.

When using the project method in the classroom, students are given the opportunity to create reality themselves. They form the learning situation themselves, consciously choosing methods, realize their independence and thereby take responsibility for their own learning. This technology is based on the idea of increasing the level of interest of schoolchildren in learning through the creation of projects to solve problem situations taken from real life. Project technology promotes the development of students in their own abilities, stimulates creative thinking, promotes cooperation, collective creative creativity; it is focused on the personal abilities of the student, promotes the development of critical thinking.

Effective organization of the educational process in a modern school is impossible without the use of an individually differentiated approach to students. After all, the main goal of the school is to create conditions for personal self-realization, to meet the educational needs of each student in accordance with his inclinations, interests and capabilities, to prepare him for creative intellectual work. And for this, it is necessary to give the student the right to choose the level of study in each subject. Differentiation of educational blocks can be carried out by age, gender, health level, area of interest, intellectual abilities and other indicators that increase the effectiveness of educational work. It is important to note that the development of individual educational routes followed by self-correction work is an integral part of this system. Differentiation is of particular importance in chemistry education. This is due to the specifics of the subject: some students have significant difficulties in mastering chemistry, while others have significant difficulties, and others have pronounced abilities to study this subject. In this situation, it is important for the teacher to take into account both the positive interests of the students and the individual pace of their development. When forming chemical concepts and subject skills in the process of teaching chemistry in secondary school, the quality of knowledge generated is of great importance. An important characteristic of the quality of knowledge is its consistency, i.e. a clear awareness of the connections between individual elements of knowledge: the content-logical connections between elements of theoretical knowledge or between theoretical and factual material, the cause-and-effect dependencies of the composition, structure, properties and application of substances. Awareness of knowledge is manifested in the ability to use it. A sign of awareness is the ability to solve various tasks: apply theoretical knowledge in practice, explain and predict facts and phenomena, reveal the logic of the material, competently and weightily argue value judgments. An important requirement for the formed chemical knowledge is their concreteness, i.e. knowledge of specific chemical objects (atoms, chemical compounds and processes)

and their individual properties, their production in the laboratory and industry. This approach is indispensable when studying the topic "Composition, structure and properties of substances".

Currently, the concept of pedagogical technology has firmly entered the pedagogical lexicon. Technology is a set of techniques used in any business, skill, art (explanatory dictionary). There are many definitions of the concept of "pedagogical technology". I will choose the following: this is a construction of the teacher's activity in which all the actions included in it are presented in a certain sequence and integrity, and the implementation presupposes the achievement of the necessary result and has a predictable character. Today there are more than a hundred educational technologies. The introduction of modern learning technologies and their systematic use contributes to improving the quality of education, motivation, the formation of functional literacy of students and key competencies, and the development of potential abilities of students.

Various types of technologies contribute to the development of cognitive and creative interests of students:

1. Pedagogical technologies based on the effectiveness of management and organization of the educational process: technology of level differentiation of training; group technologies; computer learning technologies.

2. Pedagogical technologies based on the activation and intensification of students' activities: gaming technologies; technology of problem-based and research-based learning; technologies for the intensification of learning based on schematic and iconic models of educational material.

3. Pedagogical technologies based on the personal orientation of the pedagogical process: technology of learning in collaboration;

The expediency of using a computer in the educational process should be confirmed by pedagogical goals, the achievement of which is possible only with the use of a computer, thanks to its capabilities. A computer can support and thus bring

variety to the process of presenting new material, the possibility of computer modeling of chemical processes and phenomena and, of course, in the process of quality control of education is not excluded. When mentioning computer simulation of chemical processes and phenomena, in no case do I call for replacing a live demonstration experiment with a computer version. I am talking about those cases when there is no possibility of demonstration due to the lack of necessary reagents or conditions for conducting. In my lessons, I use various programs on disks that help me to explain new or repeat old topics, consolidate and systematize the knowledge I have gained. An example of one lesson. Topic: "Oxygen subgroup, characteristic. Getting oxygen." During the lesson, a multimedia projector was used, where experiments that could not be demonstrated in the school laboratory were shown on the screen. Several tables were also projected on the screen. The guys were asked to analyze, compare and draw a conclusion. From the above, we conclude that computer technology increases the level of learning and arouses students' interest in the subject.

Litaratures:

1. Kolechenko A.K. Encyclopedia of pedagogical technologies: A handbook for teachers. - St. Petersburg: KARO, 2008. - 368 p.
2. Selevko G.K. Encyclopedia of educational technologies. In 2 volumes. M.: Research Institute of School Technologies, 2006.
3. Tomina E.V. Modular technology of teaching chemistry in the modern educational process: An educational and methodological guide. - Voronezh, VSU, 2004. - pp. 3-4