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APPLICATION OF INFORMATION AND COMPUTER TECHNOLOGIES IN TEACHING CHEMISTRY

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ABSTRACT

This article deals with the problem of activating and improving the effectiveness of the educational process today with the help of a personal computer that performs several functions at the same time. The most important task is education, with the help of which you can gain extensive knowledge on a particular subject. A computer provides access to the Internet, which provides extensive access to information. On the Internet, you can get a variety of schemes, tables, drawings that significantly increase visibility in the study of chemistry. The computer becomes an effective assistant in organizing practical work. For example, when studying toxic substances (benzene, halogen, etc.), the virtual world allows conducting chemical experiments without harming the child's health.

Information of society provides for the mandatory use of computers in school education, designed to ensure computer literacy and information culture of students in modern conditions. The use of new information and computer technologies (ICT) in the educational process allows directing the intellectual potential of students to positive development.

In teacher-led lessons, students can learn how to use computer technology for the comprehensive development of their intellect, learn how to obtain information to solve educational and then production problems, and acquire skills that will help them continue learning throughout their lives. By studying the information in the right sequence, working with the curriculum, which helps to eliminate gaps in knowledge and not punish for the wrong answer, students experience positive emotions, which is very important for learning new material. This teaching method is very convenient for teachers, as it allows you to better assess the child's abilities and knowledge, understand him, find new, non-traditional forms and methods of teaching, contribute to his professional growth and further development of the computer. However, a large flow of information leads to large overloads, which leads to fatigue and an inability to process it. The use of a computer-based chemistry test develops the intellectual abilities of students, since they can take the same test several times until a positive result is obtained. The use of a computer made it possible to move on to

differentiated, variable learning. This led to an increase in the quality of assimilation of the material, gave impetus to learning.

In addition, the computer serves as the basis for the perception and assimilation of educational material, contributes to a more meaningful transmission of various information. The computer as a demonstration tool helps to establish connections between phenomena in which there are no observations, which is important in the study of chemistry. The word of the teacher in this case acts as a guide to the perception of students.

Today, the problem of intensifying and increasing the efficiency of the educational process is being solved with the help of a personal computer that performs several functions at once. The most important task is education, with the help of which you can get extensive knowledge in a particular subject. The computer provides access to the Internet, which provides wide access to information. At the same time, students can study at a higher level of complexity than provided by the school curriculum.

Expensive things are especially appreciated.

On the Internet you can get various schemes, tables.

Drawings that greatly increase the visibility in the study of chemistry.

The computer will become an effective assistant in the organization of practical work.

For example, when studying toxic substances (benzene, halogen, etc.), the virtual world allows you to conduct chemical experiments without harm to the child's health.

This is of great importance when working with children who are in poor health or who have problems with mental development.

Using electronic textbooks, it is convenient to demonstrate experiments with video graphics that are not always fully implemented in the classroom due to their toxicity or lack of necessary equipment.

In electronic textbooks, you can find three-dimensional images that will help develop spatial thinking.

The use of computer models contributes to imaginative thinking and better assimilation of the material.

The use of computer technology is useful when studying new material (presentations as a design for a lecture), during the initial consolidation of knowledge and skills gained in the lesson, when developing skills and abilities (training tests), when conducting chemical practice, as well as in controlling and consolidating knowledge.

Information and computer technologies (ICT): saving time in the lesson, deep immersion in the material, increasing motivation in learning, an integrated approach to learning, the possibility of forming students' communicative competencies, as students become active participants in the lesson not only at its stage, but also at the stage of preparation, the formation of the structure of the lesson, designed for the active position of students when using various types of activities, those who have sufficient knowledge of the subject are able to independently think, reason, reason, independently search for information.

In addition, another function of machine learning is guidance and control.

The computer can not only check the knowledge of students, but also take into account certain difficulties in delivering the material.

Exercises and calculation tasks on the topic, drawing the student's attention to those sections in which the greatest mistake was made.

The reader himself can control how deeply he studied this or that section.

It is very important to teach students to think independently, to work with information that complements and improves textbooks. ICT is a modern educational technology using a computer, which is recommended to be used in the classroom to enhance the cognitive activity of students. For example, when presenting new material - knowledge visualization (demonstration-encyclopedic programs, Power Point presentation program); consolidation of the presented material (training-various training programs); control and verification system (testing with assessments, program control); independent work of students (learning process such as «tutor»). programs, encyclopedias, developing programs); teaching specific abilities of students (thinking, attention, memory, etc.).

The demonstration of video fragments has a number of features compared to a «live» experiment:

1. The risk of failure of the experiment is excluded: the positive performance of a chemical experiment of any level of complexity matters in the limited time of the lesson.
2. The teacher's time spent on preparing and conducting the experiment is released.
3. The experiment can be played back several times on the video.
4. The experience will also be completely safe for students.

So for the teacher.

Often, due to the lack of the necessary equipment or reagents, the teacher cannot demonstrate this or that experience. Some students may have an allergic reaction to odors. Therefore, any, even the most harmful reaction can endanger the health of students.

Curriculum makes it possible to track any experience without compromising student health. Therefore, the main advantage of the computer is the display of chemical processes. The use of ICT contributes to the development of students' independence, taking into account the individual pace of their learning, the effective use of a student-centered approach to learning, and control through various tasks: tests, self-control tasks.

- The use of the interactive complex is possible at different stages of the lesson: explaining new material, consolidating the topic being studied, conducting and checking independent work, repeating the topics covered, performing virtual practical work.

Outside of lessons, this equipment can be successfully used in extracurricular activities to prepare students for scientific and practical conferences, olympiad.

- Using a computer allows you to move on to differentiated, variable learning. This leads to an increase in the quality of assimilation of the material, an increase in motivation for learning.

The computer also serves as the basis for the perception and assimilation of educational material, contributes to a more meaningful transmission of various information. The computer as a demonstration tool can help to establish connections between phenomena that cannot be reached by an observer, which is important in the study of chemistry. It should be remembered that ICT in a single educational environment does not change the various ways of interaction between participants in the educational process, including a teacher and a student; they solve certain problems, such as freeing up the teacher's time, an individual

approach to the student, supporting the student's independent and creative work, and supporting collective forms of work.

The teacher is still the main link in the educational process, these are two important functions of supporting and interpreting the motivation of a group or a particular student. However, the electronic educational environment supports the formation and new role of the teacher. In such a highly informative environment, teacher and student have equal access, so the teacher can no longer be the only source of truth.

Ideas, principles and other information, her new role in education, can be described as mentoring.

There are 22 students in the middle class, 12 have access to the Internet at home, the rest use this service from time to time in the informatics classroom. The duties of a teacher - mentor include not only support for pedagogical communication, interaction, coordination of the educational process, but also the development of global and critical thinking skills that are in demand by the modern world community, the ability to communicate effectively orally and in writing, work in a group, quickly adapt to changes in ICT, as well as the acquisition of intellectual skills to solve problematic issues. new didactic tasks are questions of search and systematization of acquired knowledge.

The computer provides access to the Internet, which greatly simplifies: finding the necessary information to perform various tasks, lectures, abstracts, design and research work; testing; familiarization with different points of view on a particular problem; exchange of collected material. The use of ICT in the classroom in combination with other pedagogical technologies allowed the teacher to go beyond his topic. Deeper disclosure of the topic being studied, increasing the effectiveness of training.

New modern information technologies provide ample opportunities for the teacher and student.

-Firstly, they equalize opportunities in teaching rural and urban schoolchildren, as they open up broad opportunities for students and teachers to receive information, communication, and research.

-Secondly, they are forced to keep up with the times as a student and teacher. Now the teacher is not the only source of information after the textbook, so he must constantly replenish his knowledge. Traditional school textbooks are indispensable, but they can be supplemented, the content of certain topics can be expanded, the approach to solving certain issues can be changed, tasks can be added, and modern content can be supplemented. No matter how the teacher uses technology, the textbook remains the primary learning tool, the core upon which everything rests.

The teacher who conducts his lessons using ICT has a clear and qualitative advantage over teachers who remain faithful to the textbook, blackboard and wolf. Conversely, it cannot be said that they should be replaced by computers. ICT and paper-and-chalk technologies should be used in a balanced way. International experience shows that information technology is not a dogma for a teacher. Some teachers have strong ICT resources but do not receive lessons, while others, on the contrary, use minimal resources effectively in the teaching process, and the external learning outcome is very high. Therefore, it is not computer technology that is important, but the ability to use it.

In addition, it is necessary to take into account not only the psychological aspect. Teachers, using ICT in teaching practice, raise their status in front of students. Therefore, a chemistry teacher should use ICT in his lessons. However, the textbook is an important component of information culture and is an integral part of self-development, self-education of the teacher and student. A lesson that skillfully combines textbook and ICT can only be effective. However, it is impossible to abuse the use of a computer during chemistry lessons, as this can lead to the opposite result: distracting children from real experimental chemistry. From a large list of reactions, the greatest number of advantages in terms of accuracy and informative should be highlighted. Of course, a computer lab cannot replace a real chemistry lab. However, when chemistry experiments are shown on a computer, students have skills that are useful for real experiments.

There are many ready-made electronic products for teaching chemistry. They contain chemical models that can be placed in space, visible at different angles. For example, the model of Pi-bonds in organic chemistry. With the help of a computer, you can indicate this connection, which clouds were formed, their connection and location. All this is not visible in a simple picture from a chemistry textbook, since the textbook has only a picture and a description. Therefore, the formation of the information abilities of students in chemistry lessons occupies one of the leading places. When conducting lessons, I use educational multimedia products. But the need to resort to them arises only in cases where they provide a higher level of the educational process compared to other methods. I also suggest that students use computer programs in preparing speeches, lectures, and creative works.

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