The use of innovative technologies to enhance the cognitive activity of students

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Abstract. The modern educational system has a peculiarity: acting as a user, it simultaneously stimulates the development of information and digital technologies. This characteristic is especially come out in the higher education system. At the same time, despite the objective and subjective attractiveness of modern information and digital technologies, it is necessary to realize that their adaptation is, although effective, but still an auxiliary tool in the organization and implementation of the educational process. The introduction of information technologies into the educational process makes it possible to significantly enrich the process of transferring knowledge from teacher to student, to facilitate understanding of complex topics, to level the repetitive monotony in the classroom, to increase the motivation of educational activities, to intensify the activities of students in the classroom, to form a conscious attitude to the educational process, etc. At the same time, the use of information and digital technologies should be justified, logically expedient, designed to complement (and not replace) the teacher's activities in the classroom.

1 Introduction

The concept of sustainable development, adopted in 1992 by the Organization of The United Nations has outlined further ways for the development of human civilization. At the same time, education was to become one of the leading instruments of sustainable development. In particular, within the framework of the topic under development, Annex I of the draft and work plan for the implementation of the UNECE Strategy on Education for Sustainable Development after 2019 is of interest. The third area identified in it is "Digital education, information and communication technologies and education for sustainable development" [9, p. 56], which concerns the development of digital resources, blended learning (a combination of stationary and e-learning), the application of analytical teaching methods to education for sustainable development (ESD), and the development of social networks as a key tool for ESD.

At the same time, the ubiquity of computers, cellular communications, and free access to the Internet have increased the requirements for the professionalism of employees, forming a natural social order for training specialists who can effectively work with a large amount of information using the latest processing and presentation tools [1].

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Moreover, today the objective circumstance of the rigid introduction of distance education and online learning technologies into the educational process is the global spread of the "new disaster" of the 21st century - COVID-19. In completely new conditions, in a short time, it is necessary to restructure the educational process and, in particular, its methodological component. But until recently, one could hear about the use of digital technologies, online learning, including distance learning, as an innovative form of the educational process, and now the use of digital distance learning technologies in education does not surprise anyone and does not raise doubts. Improving the educational process in a modern university today includes not only updating the content of the studied disciplines, but also changing teaching methods, expanding the arsenal of methodological techniques, improving students' performance during classes, implementing the topics studied in real life, considering situations and finding solutions to problems.

Currently, most of the methodological innovations are associated with the use of interactive teaching methods that stimulate and develop the cognitive activity of students, their ability to think independently, creatively and professionally.

In accordance with two parallel processes, the requirements for the organization of training at all levels of the educational system are changing. Initially, the educational process was equipped with electronic educational and methodological catalogs, electronic libraries were rapidly developing, computer training programs, online and offline simulators appeared. The new requirements were the development of didactic support for the educational process, taking into account the constant increase in the volume of knowledge in all disciplines and the complexity of the content of the material. The use of computer and telecommunications tools and technologies allows us to take into account the requirements (adaptability of the educational material to the personal characteristics of students, taking into account the complexity of the educational process) and develop adapted educational and methodological material [3; 18].

The goal of increasing the cognitive activity of students is one of the main goals of pedagogy. The significance of the increase in the student's cognitive activity is determined by the developments, as well as the need to study suitable methodological methods based on the logical approach of disciplinary methods, as well as training manuals [4].

2 Materials and methods

The analysis and generalization of scientific literature on the problem, expert assessment, methods of qualitative and quantitative processing of the data obtained, meaningful interpretation of the results and conclusions were carried out.

3 The results

The question of increasing the recognition activity of students is dealt with by many experts. But there are a large number of tasks that call for a painstaking study of the problems posed. For example, the establishment of effective ways, methods, and technologies for improving the cognitive work of students, but also the basics of its organization configurations and administrative data is considered one of the most well-known components of the study of teaching students. This article explains the interest in activating the cognitive work of students in the framework of teaching at the institute, exploring the problems of this process, what is the kinetics of the relationship between the reproduction of knowledge, as well as the creative dynamism of students in the process of studying the abstract material used, in actual exercises and in the circumstances of independent activity [8; 15].

Computerization of education is one of the main directions of the global process of computerization of the modern society. Psychological and educational goals are now achieved through various information and digital technologies. Currently, a number of synonymous concepts co-exist in the scientific literature, such as "modern information technologies", "new information technologies", "digital technologies", "e-learning tools", etc., which suggests that this terminology refers to informatization. Modern education is still in its infancy.

The main distinguishing features of modern educational information technologies are shown in the Figure 1.

Fig. 1. The main distinguishing features of modern educational information technologies

Information technologies are used in the educational process in order to obtain information for its subsequent analysis and to make a decision on the commission of an action based on it.

The use of information technology tools in the educational process performs a number of the following functions:

- developing (development of the educational and creative potential of the individual, cognitive and psychological processes of personality, development of learning skills, development of decision-making skills and realization, formation of skills for finding relevant information and processing it);
- preparing students for social and professional life in the modern information society.
- the use in the educational process of modern technical and informational capabilities of the organization and implementation of educational activities (which should be adequate to the goals, objectives, principles of pedagogical activity, as well as the features of the educational process, age and individual development of students).

The implementation of this function, subject to the above conditions, will lead to an increase in the effectiveness of the educational process, as well as to the optimization of cognitive activity, and to the deepening of interdisciplinary ties [5; 12].

In the educational process, you can use various computer tools for educational purposes (information technologies) [7; 13]. Various types of educational computer tools are presented in the Figure 2.

Fig. 2. Various types of educational computer tools

The introduction of computer tools in the educational process is beginning to take on an increasingly broad character: there are more and more electronic programs, courses of distance learning, and automated knowledge control processes. Therefore, teachers at the university need to clearly understand the strengths and weaknesses of the use of information technologies in the classroom in order to understand the causal nature of their own actions in organizing educational activities using information technologies and be able to predict their consequences.

4 Discussion

Thus, the use of information technologies in educational activities allows, first of all, to teach the student to work with information resources in an individualized form: to learn the principles of information search, criteria for its selection, features of structuring, presentation, understanding, practical application (in particular, in professional activities), in some cases – high emotional and personal involvement, etc. These results are closely related to another important complex result – the formation of an active student position, the development of skills professional and critical thinking [6] and, ultimately, the training of a specialist who meets the requirements of the modern information society. All of these results are characterized by the advantages of using information technologies [10;18].

At the same time, the disadvantages of using them logically follow from the advantages of these technologies. For example, if the teacher does not pay enough attention to them, individualization can take on a total character, which will manifest itself in the replacement of an oral dialogue (with the teacher, other students) with a "dialogue" with the computer. This problem is particularly acute in the context of distance learning, where there is no "live" teacher as an organizer and regulator of educational activities. The consequence of the "exclusion" of direct dialogue between the teacher and the student from the training period will be an underdeveloped (or completely undeveloped) ability to formulate thoughts in a professional language and an unprepared type of professional thinking. The next step in this sequence of events will be the inability to apply knowledge in practice (due to the problem of moving from thought to action, which is solved by direct interaction between the teacher and the student in the context of practical activity).[14].

The next disadvantage is the greater freedom of choice in the search and use of information. This freedom is associated with the risk that a simple click on the links will distract the student from the main course material, its structure.

There is another risk associated with the thoughtless use of information technology in educational activities – the risk of emotional and intellectual overload. If the teacher makes excessive use of information technology in the classroom (too often, for too long, or the content of the discipline is too complexly structured, etc.), the opposite effect may occur.

Thus, the student may develop "immunity" to the perception of information transmitted in this form, there is psychological resistance, and such technologies lead to rejection. Or perhaps another option, even more dangerous: the student will lose the ability to learn outside the context of information technology. In other words, he can't (won't want to) learn if the training material does not have an attractive, entertaining component. In this case, it will be possible to talk about the risk of forming a consumer attitude to the educational process by its participants [16; 11].

The described advantages and disadvantages justify the importance of a balanced relationship with any educational technologies. Information technology should not replace the teacher or replace his main functions.

5 Conclusion

Thus, the modern educational system has a special feature: acting as a user, at the same time stimulates the development of information technologies. This characteristic is particularly evident in the higher education system. At the same time, despite the objective and subjective attractiveness of modern information technologies, it is necessary to realize that their application is, although effective, but still an auxiliary tool in the organization and implementation of the educational process. The introduction of information technologies in the educational process allows to significantly enhance the transfer of knowledge from teacher to student, to facilitate the understanding of complex issues, to reverse repetitive monotony in the classroom to increase motivation of educational activity, increase the activity of students in the classroom, form a conscious attitude to the educational process, etc. At the same time, the use of information technology must be justified logically appropriate, designed to complement (not replace) the work of the teacher in audience. Only in this case, IT tools can open up new opportunities for both teachers and students.

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