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54.	Кармазіна І.С., Богдановська В.Ю.	305
	РОЛЬ ГУМОРАЛЬНОЇ ЛАНКИ АНТИНОЦИЦЕПТИВНОЇ СИСТЕМИ У ФІЗІОЛОГІЧНОМУ КОНТРОЛІ БОЛЬОВОЇ ЧУТЛИВОСТІ	
55.	Кармазіна І.С., Чернякова О.Є.	310
	THE WAYS OF IMPROVEMENT THE STRESS RESILIENCE	
56.	Оліфіренко Д.Є., Білошапка А.В., Овчар А.В., Дунаєва І.П.	313
	ТЕРАПЕВТИЧНА ЕФЕКТИВНІСТЬ КАПТОПРИЛУ ПРИ ЗАСТІЙНІЙ СЕРЦЕВІЙ НЕДОСТАТНОСТІ	
PEDAGOGY		
57.	Dubel B., Shtainer T.	317
	PROCESS OF TRAINING FUTURE TEACHERS OF TECHNOLOGY AND COMPUTER SCIENCE TO USE NEW INFORMATION TECHNOLOGIES	
58.	Kaharman D.	322
	THE ROLE OF ARTIFICIAL INTELLIGENCE IN MODERN SCIENTIFIC RESEARCH	
59.	Nazhmadinova A.	327
	INNOVATIVE TECHNOLOGIES IN THE EDUCATIONAL PROCESS AND THEIR IMPACT ON FORMING CORE COMPETENCIES	
60.	Tymenko K.	332
	DEVELOPING LEXICAL COMPETENCE IN HIGH SCHOOL STUDENTS THROUGH THE USE OF VOCABULARY LEARNING APPS	
61.	İbragimova M.E.	334
	THE LATEST TECHNOLOGIES IN THE EDUCATIONAL PROCESS	
62.	Бондар В.Г., Караульна К.О.	337
	ОСОБЛИВОСТІ УСНОГО МОВЛЕННЯ ДІТЕЙ СТАРШОГО ДОШКІЛЬНОГО ВІКУ З ДИСЛАЛІЄЮ	
63.	Дворядкіна Т., Лісогор А.	340
	ВПЛИВ ЕТИЧНОГО ВИКОРИСТАННЯ ШТУЧНОГО ІНТЕЛЕКТУ НА ФОРМУВАННІ ЕТИЧНИХ АСПЕКТІВ УЧНІВ СЕРЕДНІХ КЛАСІВ	

PROCESS OF TRAINING FUTURE TEACHERS OF TECHNOLOGY AND COMPUTER SCIENCE TO USE NEW INFORMATION TECHNOLOGIES

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Information technologies are an integral part of modern life. The process of informatization covers all spheres of our life, including economics, education and science. This includes the possibilities of obtaining information and the penetration of information technologies into the scientific, industrial and state sectors.

One of the main directions of the social informatization process is the informatization of education. This is due to the fact that the process of acquiring new knowledge becomes easier, more accessible and makes it possible to acquire knowledge without leaving home. IT contributes to the development of more effective approaches to learning and improving teaching methods, and also activates the interest of students. It is no secret that various devices are the main attribute of a modern person [9].

Information technology provides students and teachers with the ability to:

- Make learning more efficient.

- Reduce time spent searching for and recording information, increasing time spent on real activities.

- Provide opportunities for individual learning and make the curriculum public.

- Make the learning process interesting for categories of students with different abilities, learning styles, and students with health problems.

- Diversify educational activities.

Modernization of the educational process requires a transition from passive teaching methods, mainly lectures, to active ones, such as independent and collective work, research activities and practice orientation. We must not lose sight of the fact that the volume of information and knowledge is constantly increasing, while the time allocated for studying subjects remains unchanged. The process of informatization allows teachers to expand the volume of students' knowledge, which, in turn, has a positive effect on the overall level of students' training [1].

Let us briefly describe the main ways of introducing information technologies into the process of teaching future teachers of technology and computer science.

Electronic textbook (ET). Electronic textbooks are electronic educational publications that replace paper publications. It contains not only the materials of the basic curriculum, but also applications in the form of tables, illustrations and tests. The use of electronic textbooks, as noted by teachers, is characterized by simplicity, ease of use and completeness of content. Students can read the text directly on the screen of their phone, laptop or tablet. This is something new and interesting, since it allows each student to participate in the learning process. Another advantage is that the use of EC is cost-effective. Not all students are ready to purchase expensive printed publications, and some do not have the opportunity to visit library centers often. Electronic versions are much cheaper and are constantly updated and supplemented. An important advantage of electronic publications is interactivity. Students can expand their knowledge by opening copies of audio files, videos and various documents and clicking on the corresponding links [4].

Despite its many advantages, the electronic version needs improvement. In particular, the inability to play electronic versions on some devices and the lack of technical support in schools leave parents perplexed about the safety of using electronic devices for their children's health.

To test whether the utility of the ET really corresponds to the declared one, it was used in lectures for 9th graders and 1st year university students (future teachers of technology and computer science).

Future teachers of technology and computer science and students were impressed by this experiment. The experiment lasted one month, after which a survey was conducted and the following information was obtained: Students liked that they did not need to bring paper publications, and they played audio and video content several times. Constantly, if there were problems with understanding the material. Some students downloaded electronic publications to their smartphones and used them during lectures. Students experienced a surge in cognitive activity, many noted that working with educational materials was more interesting and convenient than working on book publishing. According to the results of the experiment, we can draw an unfortunate conclusion that the use of ET in the educational process has positive results.

Electronic simulator. Electronic simulators are teaching tools that contain tips and recommendations that allow students not to be afraid of making mistakes. Electronic simulators have a number of advantages: Objectivity and timeliness of grading. The simulator assigns grades immediately after completing the task. Ease of use: students select or enter the correct answer. Possibility of multiple use and long-term storage of results; This is your opportunity to immediately correct your mistakes and check yourself again. Modern simulators do not require a lot of effort from the teacher. Most of them come ready-made, or you can "mix" the answers yourself so that there is no risk of matching tasks and answers [6].

During the experiments described above, an attempt was made to implement this method into the learning process using electronic textbooks. The results have never surprised me. The knowledge test conducted after using the electronic simulator showed an improvement in understanding and memorizing complex scientific material

in more than 80% of 9th grade students and at least 60% of college students (future teachers of technology and computer science). This indicates the high usefulness of this method of implementing IT. But, unfortunately, it is not always possible to implement this for reasons that we will discuss later when discussing issues of implementing IT.

Multimedia support for the learning process. Multimedia support is one of the most common applications of IT in education. Its distinctive features are informativeness and entertainment value. Visual examples, videos and audio files help students easily understand the material. Correctly selected elements help teachers make lessons interesting and meaningful [3].

However, as further use of multimedia support becomes more widespread, this may not have the desired effect in the future.

Distance learning (DL). DL is the interaction of teachers and students at a distance. The main means of further education is information technology. DL can reduce the costs of teachers and students (housing costs, rent of buildings, etc.), teach a large number of people at the same time at a considerable distance from each other, improve the quality of education with the help of electronic libraries. The most important advantage of DL is its flexibility. Students can gain knowledge at any time and in any place, whenever it is convenient for them. All of the listed types of IT are available [5].

Mobile app. BrainPop project manager Dean Hamer said, "It's important for kids to understand and appreciate the importance of having devices in their hands. Kids now have the ability to learn wherever they are." And this quote is not just for kids. Many teachers have a negative attitude towards students using smartphones during lectures. However, this phenomenon can be redirected and used in the educational process. There are many applications based on Android and Apple operating systems that can solve many problems. But most students and even teachers do not know about this. Proper use of mobile applications during lectures can help solve the tasks set and focus the students on the topic being studied [8].

Creating videos that show real activities outside of the classroom is another way to use information technology to activate students' cognitive activity outside of class time. By demonstrating videos at seminars and conferences, you can not only share your experience with colleagues, but also improve your skills in using technical means of information processing.

We conduct video conferences to exchange knowledge with people from other regions of Ukraine and other countries. The experience and knowledge of us and our foreign colleagues will help students master their future profession. However, traveling abroad is a luxury for many students. That is why it is much more practical to communicate with people from other countries via video conferences.

In addition to the above methods, I will suggest a few more methods, although there is no detailed explanation. Using a laptop to take notes from lectures, installing an automated voting system, and studying robotics to model various processes; 3D walks through interesting places.

Modern problems of implementation of information technologies in education. Analysis of literature and generalization of our experience allow us to identify a number of problems related to informatization of the educational process.

Limit the time of using PC and other devices during lectures. This issue is related to hygiene and hygienic standards. These criteria are so reasonable that the time allocated for IT during lectures should be regulated.

The material and technical base of educational institutions is absent. Usually, sufficient computer equipment is available only in computer classes. The solution to this problem is to create a schedule for using the IT office using personal mobile devices, laptops and tablets.

Competition from traditional education systems, unprepared teachers. In most cases, teachers are not ready to implement information technology in their curriculum. This is due to the lack of computer literacy, lack of time and logistics, and unwillingness to move away from the time-tested traditional education system. The solution to this problem is the use of information technology to train and improve the skills of teachers, demonstrating the benefits that they can bring to the educational process, and demonstrating the possibility of joint use of computers with other technology [7].

The students' level of PC proficiency is insufficient. Since students mainly use computers for leisure, the teacher's role is to show students how computers can help them in their studies. Systematic and targeted work on using PCs and developing students' understanding that computers and information technology, when used correctly, can become key assistants in solving various problems are important here [2].

The possibility of using information technologies in the educational process. This problem is a generalization of all the problems mentioned above. The need of society for training personnel qualified in the IT sphere is growing every day.

Therefore, it is obvious that the problem of introducing information technologies into the educational process is multifaceted and should be solved comprehensively. Solutions contribute to the modernization of educational courses, making them convenient, flexible and accessible. Computerization of the educational process increases the level of students' cognitive activity, thereby increasing their overall professional education.

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