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Using The Possibilities Of Digital Technologies In The Educational Process

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Abstract: The article describes the concept of informatization of the educational process, the basic concepts used in the process, the possibilities of informatization of education and their use. The main means of informatization of education are information, a computer, an information system, information technologies, operations with information and their role, content and significance. In the process of traditional and information education, the content and essence of pedagogical science are comparatively studied. Information about the role, opportunities and shortcomings of informatization of the educational process is given.

Key words: education, information, pedagogy, computer, informatization, computerization, development, comparison.

Introduction. The future of every society is determined by the level of development of the education system, which is an integral part of it. Today, the reform and improvement of the continuous education system of our country, the introduction of advanced pedagogical and information technologies into it, and the improvement of educational efficiency have risen to the level of state policy. It is known that the continuous education system expands the moral and intellectual potential of the society, ensures the stable development of production as a factor of improving the social and scientific-technical development of the state, the rapid change of information technologies for every person in his professional life. strengthens his preparation and skills.

Research object and used methods. The general pedagogical problem related to all stages of education is to improve the efficiency of independent work of students, increase their interest in science, deepen their professional knowledge and increase their activity. The possibility of modern information technologies to increase the interest and activity of students is limitless. The process of educational informatization, opportunities and their use was taken as the object of the research. Observation, comparison and generalization methods were used in the research work.

Results and their analysis. Today's task of education is to teach learners to be able to work independently in the conditions of the information-educational environment that is overflowing every day. For this, it is necessary to create conditions for their continuous independent work [1].

The educational process is constantly faced with the issues of information gathering, processing and information exchange. Naturally, for this reason, the information supply of education - forms, means and methods of its reflection in some carriers of information have been created. We provide information about them in the comments below [1], [2], [5]:

A computer (ingl. computer - calculating-machine) is a device or system that can perform a given, openly defined variable sequence of actions, a large number of calculations.

The introduction of the computer into our society fundamentally changed human activity and caused the emergence of such concepts as information, information technologies, information communication technologies, informatics, computerization, education informatization, computerization.

Information - (lat. informatio - explanation, statement) - information transmitted and stored about persons, objects, evidence, events, phenomena and processes using conventional signs, regardless of the form of their description.

Information retrieval is the process of selecting information from stored information for a particular request. Usually, queries take into account the order of the stored information.

Presentation of information is the process of converting information into a convenient form for use after receiving (transmitting) or storing (retrieving) information in solving specific problems.

Information transfer - the process of transferring information in the form of necessary presentation to solve specific issues.

Data protection is the process of keeping data as it is and restricting access to it.

Technology (from the Greek techne - téchnē - art, skill and logos - lógos - concept, teaching) is a method that is used consecutively to obtain some product (in education - teaching students). rational (stable) combination of several actions.

Computer technology (CT) or information technology (IT) is a general name for technologies that respond to the storage, processing, transmission, protection and development of information using computers. It is difficult to imagine areas of modern production, science, culture and economy where computers are not used.

Computer technology of education is a process of collecting, processing, storing and transferring information to the student using a computer. Currently, such technological directions are widespread, in which the computer:

• a tool for providing educational material for the purpose of imparting knowledge to students:

• a means of informational support for educational processes as an additional source of information;

• a tool for determining the level of knowledge of students and controlling the mastery of educational materials;

• a universal trainer for acquiring the skills of practical application of knowledge;

• serves as one of the important elements in the future professional activity of students.

Information technology is a set of processes and techniques for searching, collecting, storing, processing, presenting, and distributing information, as well as methods and means of implementing such processes and techniques.

Improvement of information technologies is an important factor in informing society. Information technologies are improved based on the laws of informatics. In this sense, information technology, factors influencing its development, directions of informationalization of society and characteristics of information technologies are studied.

It is no exaggeration to say that the terms information and computer technologies are the most frequently used concepts in our daily life. Because no matter what sphere of life we take, no matter what actions we perform, we will certainly work with information. That is, the use of information, exchange of information, their transmission, assimilation are the main basis of human activity.

Currently, information technology is the most important factor affecting the rapid development of society. Although information technology has existed at various stages of human development, the characteristic feature of today's information society is that for the first time in the history of civilization, the effort spent on obtaining and producing knowledge is energy, raw materials, materials and material consumption. has exceeded spending on goods, that is, information technology is taking a leading place among the new technologies available [3].

The information technology industry includes computers, communication systems, data warehouses, knowledge warehouses and related activities. Even people who do not directly work in the field of information technology use its capabilities in their daily work. Information technologies are more and more integrated into all spheres of life and become its driving force.

In your daily life, you work with information in various forms, for example, text, graphics, tables, sound (audio), pictures, videos, etc. Each type of information processing (collection, storage, etc.) requires different information devices and they have different technical characteristics.

Modern progress and achievements of information technologies show the necessity of informatization of all spheres of science and human activity. Because this field is the basis and important ground for the information of the whole society.

Information technology consists of several technical tools. Technical tools perform the role of production tools in labor activities and constitute the indispensable and most important constituents of information technologies [4].

The main task of the technique is to ease and increase the level of efficiency of human labor; expansion of his capabilities in the course of labor activity; exemption (full or partial) from working in conditions dangerous for human health.

Information technology tools and methods include: a set of technical tools; technical complex management tools; organizational and methodological support.

A set of technical tools is a set of tools, devices, machines, mechanisms and automatic devices that directly change information. Management tools of the technical complex provide an opportunity to implement targeted use of technical tools by a person to introduce informational changes.

Organizational-methodological support connects the introduction of technical means and all actions of a person into a single monological process in accordance with the goal of informational changes and includes the following:

— regulatory and methodological materials on the preparation and formalization of various documents within the framework of solving a specific issue;

— instructional and normative materials on the use of technical tools, including technical safety of operation and conditions that support the normal operation of equipment;

— demonstrative and normative-methodical materials on the organization of a person's work within the framework of specific computer information technology.

If the basis of technical means is computer equipment, then we are talking about computer information technologies.

The introduction of new information technologies into the educational process is determined by the following indicators [6], [7]:

- if it satisfies the main principles of pedagogical technology (pre-design, goal setting, integrity);
- solving previously unsolved theoretical or practical problems in didactics (the computer serves as a means of preparing and transmitting information);
- fully and systematically describes all components of the information supply of the teaching process;
- provides an opportunity to solve the necessary didactic issues on the basis of information technologies at each of its stages.

Informatization of society is understood as the process of using information as a wealth of society, which ensures the development of the economy, the scientific and technical development of the country, and the acceleration of the processes of democratization and intellectualization of society.

In fact, informatization of society is an objective process related to increasing intellectual activity and role in all aspects of human life.

Informing the society serves to improve the standard of living of the people of our republic, to meet social needs, to grow the economy, and to accelerate scientific and technical development.

Information technology has gone through several stages in its development:

The first step is manual execution. Information technology has become a writing tool and an accountant's book. Communication was carried out by sending a letter. This stage is characterized by low productivity of information processing.

The second stage is mechanical. This stage is characterized by the fact that typewriters and telephones were used to process information.

The third stage is electronic processing of information. Electronic typewriters and copiers began to be used for information processing.

The fourth stage is computer technology. Information technology, the minimum of information processing: accounting; takes three components, such as analysis and decision-making, and the center of gravity of the development of automated systems is formed, with the maximum use of human-machine processes, moving to these components.

The fifth stage is the emergence of personal computers. The transition from computing centers to distributed computing capacity has resulted in the rise of homogeneity of data processing technology.

The sixth stage is the stage of new information technologies.

The introduction of personal computers into the information field and the use of telecommunication means of communication led to the development of a new stage of information technology.

New information technology is an information technology with a "perfect" interface for the user of personal computers and telecommunication tools. New information technologies are based on the following basic principles:

- an interactive (communicative) work procedure with a computer.
- integration with other software products.
- flexibility of the process of changing information and issues.

The main types of information technology include:

1. Data processing (collection, processing, storage, creation of documents) information technologies.
2. Management information technologies (creation of various reports).
3. Automated office information technologies.
4. Information technologies that use decision-making.
5. Expert systems information technologies.
6. Billing systems (automated mutual accounting with customers - a business that makes books - a weapon).

Common types of software products are used as information technology weapons. Taking this into account, the concept of "New information technology tools" can be defined in a simple way **[2], [5]**:

New information technology tools - microprocessor technology, modern telecommunication tools and systems, as well as information exchange, audio-, video-technique, etc. operating on the basis of which provide information collection, compilation, storage, processing and transfer operations: computers of various classes (from super to palm-top), word processors, speech input device, scanners, etc. information and knowledge storage management systems, multimedia systems, video and teletext, modems, computer networks, information retrieval systems, digital cameras, expert training systems, graphic information output devices, hypertext systems, television, radio, telephone and fax, voice e-mail, teleconferencing, electronic tables, electronic calendars, electronic bulletin boards, Internet navigation software tools, electronic libraries, educational software tools, secret storage hardware, editor-publishing systems, CD-ROM, text-aware systems, software packages (programming languages, translators), text-to-speech synthesizers, data transmission tools, pagers, "virtual reality" systems, geo-information systems, information systems for special tasks and other hardware and software tools and devices.

Computer information technologies (CIT) can be understood as computer equipment and software designed for receiving, storing and transmitting information.

Computerization - widespread introduction of electronic computing machines (computers) to various aspects of human activity.

Computerization of education is the process of equipping educational institutions with modern computer technology, i.e. computers.

Computerization is a necessary but not sufficient condition for computerization. In education, the computer is a weapon, and its use should lead to a radical change in the teaching process. Because teaching consists of imparting information to the student. Then, according to B.N. Glushkov (information technologies - processes related to information processing), information technologies are always used, that is, optional pedagogical technology is informative. After the widespread use of computers in education, the concept of "new information technology of education" appeared.

Informatics - (German Informatik, Eng. Information technology, fr. informatique, Eng. computer science - computer science - in the USA, Eng. computing science - computing science - in Great Britain) - receiving, collecting, storing, changing information , the science of methods of transmission and use.

Informatization of education is a process aimed at optimal use of computer-aided teaching information. It is pedagogical in the literal sense, because pedagogical issues are solved in it. The list of these issues, eligibility criteria, input information and required outcomes are all determined by the training process.

In education, the concepts of "pedagogical technology" and "information technology" are synonyms in a certain sense.

Communication (lat. communication — information, transfer; lot. communion — generalization) - exchange of information (communication) between living organisms.

Communication technologies are the processes and methods of information transfer and their implementation.

Information and communication technology (ICT) is an integrated set of methods, production processes and software-technical tools for the purpose of collecting, processing, storing, transmitting, displaying and using information for the benefit of users.

Information and communication technologies are technologies designed for joint implementation of information and communication processes.

The main priority of ICT in education [2], [5]:

- With the help of ICT, images can be easily used in the process of teaching and learning, affecting the memory of both the student and the teacher.

- With the help of ICT, teachers can easily give complex instructions to the students while providing a lot of understanding.

- With the help of ICT, teachers can create interactive classrooms and make the lesson more interesting, thereby improving the attendance of students.

The main disadvantages of ICT in education:

- adjusting the technique can be quite dangerous;
- purchase is quite expensive;
- The emergence of specific difficulties for teachers who do not have experience in dealing with ICT.

The introduction of ICT into education changes the basic conditions of the science of pedagogy. We present the process of comparing the changes in the main characteristics of pedagogy in the use of modern ICT tools in the educational system (Table).

Table

Use of ICT in the educational process	
Traditionaleducation	Informatization education
The theory of education and training, which studies the educational process as a controlled process, the purpose of which is to inform the sum of knowledge, develop skills and competencies of educational activity, and intellectual development of students.	The theory of education as a system of knowledge about the process of student personality development, aimed at achieving educational goals that correspond to the modern level of informatization of society in the conditions of pedagogical influence.
The educational process is an objective and subjective influence, as a social experience and learner's opportunities that turn into knowledge, skills and abilities, as well as mental development and general culture.	The educational process is the influence of subjective opportunities and results of pedagogical influence aimed at achieving educational goals that ensure the disclosure, development and implementation of the student's intellectual potential and correspond to the modern level of informatization of society.
Educational process: - educational content introduced in curricula, programs and textbooks; - educational tools; - organizational forms, teaching methods; - the educational importance of the educational process; - conditions that facilitate the student's active and creative work and mental development.	Educational process: - the educational content introduced both in educational and methodical materials and in the subject content of modern information and communication technology tools that correspond to the modern level of informatization of society and the specific level of the student's intellectual development established through psychodiagnostic tests; - a system of teaching tools intended for the use of ICT; - forms and methods of organizing education aimed at accelerating the process of student personality development and corresponding to the established level of his intellectual development.
Establishing the most favorable interaction of the main components of education for the maximum effectiveness of knowledge acquisition and mental development of the student.	Creating conditions for an information-subject environment that ensures the student's development and self-awareness, the introduction of his intellectual potential in accordance with the educational goals (for example, with embedded elements of educational technologies).
- determining the structure, size and content of education; - to determine effective methods of equipping students with knowledge, skills and abilities;	- to determine the structure, size and content of education corresponding to the modern level of informatization of the society and the level of possible intellectual development of the student;

- to reveal the technical laws of the teaching process that provide an opportunity to effectively acquire educational materials.	- to determine the individual possibilities of the student to know the laws of objective reality; - development of methods and organizational forms of teaching that are adequate to the identified opportunities and abilities of the student and are suitable for the modern level of providing and receiving knowledge.
- authoritarian mentoring form of teaching; - more educational and methodical information targeting at the teacher; - lack of participation of students in choosing the teaching method and organizational forms, the order of educational activities; - influencing the student to acquire knowledge (usually) by persuasion or coercion.	- independent acquisition and presentation of knowledge; - independent choice of educational activities; - independent selection of organizational forms and methods of teaching; - to master the educational material through general knowledge methods and strategies: development, self-awareness, introduction of intellectual potential, providing the student with a tool for research, creation, measurement and formalization of knowledge about the subject world.
- acquisition of knowledge, skills and competences, the level of which (both qualitatively and quantitatively) is often lower than that of the informants, at least on an equal level; - educating an individual in accordance with the set goals and tasks.	- to open and develop the potential of an individual, to know his possibilities and abilities, to introduce him to creative initiatives, to constantly improve them; - development of consciousness; - formation of skills of independent presentation and acquisition of knowledge; - formation of abilities to "micro-invent" studied laws; - aesthetic education; - educating the culture of educational activity and information culture of students and teachers.

Conclusion. The use of modern ICTs provides an opportunity to organize optimal interaction between the student and the teacher in order to achieve the result of education, and at the same time: means of visualizing problematic content; provides for the use of programmed teaching tools and control.

The following problems arose during the introduction of ICT: changing the educational course for computerization; organizing the educational process using a computer; control what tools and what knowledge, assess the level of mastery of skills and qualifications; What kind of ICT should be used to solve the pedagogical and didactic issues?

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