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**INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT),  
THEIR DEVELOPMENT AND IMPROVEMENT IN MODERN  
EDUCATION**

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**Abstract:** At present, it is difficult to imagine existence outside the field of information and information technology. The growing volume of various types of information makes it necessary to introduce new, more improved methods and means of its processing, and modern living conditions impose ever higher demands on the methods of its storage, transmission, and ensuring its security.

**Key words:** information, ICT, modern education, process, method, security.

Informatization of modern society and, in particular, educational activities are characterized by the processes of improvement and mass dissemination of modern information and communication technologies (ICT). In the field of education, these technologies are actively used to transfer information and ensure interaction between teacher and student in modern systems of open and distance education. A modern teacher should not only have knowledge in the field of their subject, but also be able to apply ICT in their professional activities.

The word “technology” (from the Greek) in the most general sense means science, a set of methods and techniques for processing or processing raw materials, materials, semi-finished products, products and converting them into consumer goods. In a narrower sense, technology is a complex of scientific and engineering knowledge implemented in labor methods, sets of material, technical, energy, labor factors of production, methods of combining them to create a product or service that meets certain requirements. The modern understanding of this word includes the application of scientific and engineering knowledge to solve practical

problems. In this case, information and telecommunication technologies can be considered technologies aimed at processing and transforming information.

Information and communication technologies (ICT) is a generalized concept that describes various devices, mechanisms, methods and algorithms for information processing. The most important modern ICT devices are a computer equipped with appropriate software, and telecommunications facilities, together with information posted on them.

Information technology can be classified from various points of view:

- depending on the area of the tasks being solved;
- depending on the objective activity;
- depending on the type of information being processed;
- depending on the type of user interface;
- depending on the degree of interaction, etc.

## 1.2 Information technology as a system

Information technology is a set of methods and methods for obtaining, processing, presenting information aimed at changing its state, properties, form, content, and carried out in the interests of users.

Information technology can be considered at three levels:

1. the first level - theoretical, at which a complex of interrelated models of information processes are created, compatible in their parameters and criteria;
2. the second level is research, the main task of which is to develop methods that automatically design optimal information technologies;
3. the third level - applied, associated with the specifics of individual subject areas. At this level, the ways and means of implementing information technologies are also determined.

Information technology is based on the implementation of such information processes as:

- information extraction;
- transportation of information;
- data processing;

- data storage;
- presentation of information;
- use of information.

Information extraction is understood as the process of transition from a real representation of the subject area to its description in a formal form (in the form of data).

When transporting information, it is transmitted over a distance for accelerated exchange and organization of quick access to it.

Information storage is the process of accumulating and long-term storage of data, as well as ensuring the relevance, integrity, security and availability of data.

The presentation and use of information is the ability to access information in a user-friendly manner.

As already mentioned, the educational sphere is influenced by modern information and communication technologies. Currently, they are used to varying degrees at all levels of education, since they allow solving the following didactic tasks:

- improve the quality and organization of the teaching process, increase the level of individualization of teaching;
- to improve the quality and productivity of students' independent work;
- to individualize the work of the teacher;
- to provide more free access to materials and developments prepared by the teacher;
- increase motivation to learn;
- to intensify the learning process, to involve students in research activities;
- to provide flexibility in the learning process.

The main ICT tool for the information environment of any education system is a personal computer, the capabilities of which are determined by the software installed on it. The main categories of software are system programs, application programs, and software development tools.

System programs include:

- operating systems that ensure the interaction of all other programs with equipment and the interaction of the user of a personal computer with programs;
- utility or service programs.

Application programs include software that is a toolkit of information technology - technologies for working with texts, graphics, tabular data, etc.

Currently, universal office applications and ICT tools are widely used in education systems: word processors, spreadsheets, presentation preparation programs, database management systems, organizers, graphic packages, etc.

With the advent of computer networks and similar ICT tools, education has acquired a new quality associated primarily with the ability to quickly receive information from anywhere in the world. Through the global computer network Internet, instant access to world information resources (electronic libraries, databases, file storages, etc.) is possible. The most popular resource on the Internet - the World Wide Web, has published about two billion multimedia documents.

Other common ICT tools are available on the web, including e-mail, mailing lists, newsgroups, chat. Special programs have been developed for real-time communication, allowing, after establishing a connection, to transmit text entered from the keyboard, as well as sound, images and any files. These programs allow remote users to work together with a program running on a local computer.

With the advent of new data compression algorithms, the sound quality available for transmission over a computer network has significantly improved, and began to approach the sound quality in conventional telephone networks. As a result, a relatively new ICT tool - Internet telephony - began to develop very actively. With the help of special equipment and software, audio and video conferencing can be carried out via the Internet.

To ensure effective search for information in telecommunication networks, there are automated search tools, the purpose of which is to collect data on information resources of the global computer network and provide users with a fast

search service. With the help of search engines, you can find documents of the World Wide Web, multimedia files and software, address information about organizations and people.

With the help of ICT network tools, it becomes possible to have wide access to educational, methodological and scientific information, to organize operational consulting assistance, to simulate research activities, to conduct virtual training sessions (seminars, lectures) in real time.

There are several main classes of information and telecommunication technologies that are significant from the point of view of open and distance education systems. Some of these technologies are video recording and television. Videotapes and related ICT tools allow a huge number of students to listen to the best teachers. Videotapes with lectures can be used both in special video classes and at home.

### **Literature**

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